

Dear Friends,

The Annual research day was initiated half a decade ago with an intent to encourage young medical and paramedical scientists to pursue research with greater vigour.

The intent to showcase the best there is in our institution in a single day, was always a challenge. We would like to congratulate the contributors of scientific papers for this years programme, which has reached an overwhelming deluge of submissions in excess of 250 abstracts.

We trust that most of these papers would be converted into meaningful publications of translational importance and generate further questions that need to be answered.

We would also like honour and congratulate the awardees of the oration for this years orations: Prof Mammen Chandy, Prof Jayaprakash Muliylil, Prof Ajit Varki and Prof Nissi Varki--- for the work that they have done over several decades and their research contributions to the international and national community at large.

A special word of thanks to Prof Ajit and Nissi Varki for their generous contribution towards the support of this year's annual research day.

Best wishes,

Dr. Nihal Thomas  
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**ANNUAL RESEARCH DAY – 2015**  
**MEDAL AND ORATION FOR DISTINGUISHED RETIRED FACULTY**

Ajit Varki is currently Distinguished Professor of Medicine and Cellular & Molecular Medicine, Co-Director, Glycobiology Research and Training Center (GRTC), and Executive Co-Director, UCSD/Salk Center for Academic Research and Training in Anthropogeny (CARTA) at the University of California, San Diego, and Adjunct Professor at the Salk Institute for Biological Studies in La Jolla, California.

Varki was the top-ranked student in his class throughout high school education at Bishop Cotton Boys' School, Bangalore, and medical training at the Christian Medical College, Vellore. Following postgraduate training and US board certification in medicine, hematology, and oncology, he did a research fellowship with Stuart Kornfeld at Washington University in St. Louis, before joining the UCSD faculty in 1982. Varki is an elected member of the American Academy of Arts and Sciences, the National Academy of Medicine, USA.

The American Society for Clinical Investigation, and the Association of American Physicians and executive editor of the primary textbook in his field, *Essentials of Glycobiology*. He has served as Editor-in-Chief of the *Journal of Clinical Investigation*, President of the American Society for Clinical Investigation and President of the Society for Glycobiology, and received many awards throughout his career, including the two highest honors in Glycobiology, the Karl Meyer Award and the International Glycoconjugate Organization (IGO) Award.

His published work has been cited more than 40,000 times (h-index >100), and his current major research efforts focus on fundamental studies of cell surface sugars called sialic acids and their roles in biology, evolution, and disease—particularly his discovery of multiple differences between humans and our closest evolutionary cousins, which appear relevant to understanding unique aspects of human biology and disease. The latter interests also led him to propose a novel Mind over Reality theory about human origins, in the book, *DENIAL*.

For his outstanding his contribution in research in the field of Cellular & Molecular Medicine and Glycobiology Research and Training Center (GRTC) Prof. Ajith Varki is awarded the Annual Research Day distinguished retired faculty medal and oration for the year 2015.

Dr. Sunil Chandy,  
Director, CMC Vellore

Dr. Nihal Thomas,  
Additional Vice Principal (Research)

Dr. Alfred Job Daniel,  
Principal, CMC Vellore



**ANNUAL RESEARCH DAY - 2015**  
**MEDAL AND ORATION FOR DISTINGUISHED RETIRED FACULTY**

Dr. Nissi Varki completed her MBBS degree in 1974 from Christian Medical College, Vellore, India. She then completed pathology residencies at Creighton University, Omaha, Nebraska, and at St. Louis, Missouri. and was Board Certified in Anatomic and Clinical Pathology in 1983. She went on to postdoctoral training in tumor immunology, first at Washington University in St. Louis, Missouri, and then at the Research Institute of Scripps Clinic, La Jolla, CA. In 1984 she was an Assistant Professor in the Department of Pathology at the University of California, Los Angeles, where she started her NIH funded research in cancer metastasis. She then moved to her joint appointment in the Departments of Medicine and Pathology at the University of California, San Diego, where she used her funded NIH RO1 grants to continue her work on lung carcinoma metastasis and in developing athymic mouse models of carcinoma metastasis. She also started four histopathology core laboratories, helping investigators analyze genetically altered animals.

She is on the School of Medicine Recruitment and Admissions Executive Committee and as a Board-certified pathologist, she teaches histology and pathology laboratory sessions for first and second year medical students at UC San Diego School of Medicine. She teaches immunohistochemistry and histopathology during one-on-one sessions with medical and graduate postdoctoral fellows. She helps students attain histotechnology certification and teaches undergraduate elective courses for graduate and medical students entitled "Practical Histopathology in mouse models of human disease".

Originally trained as a physician, pathologist and cancer biologist, she now devotes most of her time to basic and translational research that makes maximum use of her skills in the set-up, analysis and interpretation of samples processed using histo-chemical and immuno - histochemical assays. For more than two decades, she has been involved with the interpretation and analysis of the comparative histopathology of humans and mice, in the fields of Cancer Biology and the Glycosciences

For her outstanding his contribution in research in the field of histo-chemical and immuno - histochemical assays and comparative biology between Mice and Humans Prof. Nissi Varki is awarded the Annual Research Day distinguished retired faculty medal and oration for the year 2015.

Dr. Sunil Chandy,  
Director, CMC Vellore

Dr. Alfred Job Daniel,  
Principal, CMC Vellore

Dr. Nihal Thomas,  
Additional Vice Principal (Research)



**ANNUAL RESEARCH DAY – 2015**  
**MEDAL AND ORATION FOR DISTINGUISHED RETIRED FACULTY**

Prof. Mammen Chandy joined the MBBS program at the Christian Medical College, Vellore in 1966 and completed his MD General Medicine in 1978. He was a brilliant student and received the first rank in both his final undergraduate and post graduate University examinations. After completion of his post graduate degree he joined the Department of Medicine under Dr. Benjamin Pulimood in the year 1979. While he developed his interest in Hematology in his student days it was during his early years as a faculty member in the Department of Medicine that he could actually put this to practice. The Medicine unit that he worked with was involved in the evaluation and management of hematological disorders in close collaboration with the 'Clinical Pathology' department. It is important to recognize that in those days with his academic background he could have got into any of the already existing and much sought after specialty training programs in the institution. It was a very deliberate and conscious decision to stay on in the Department of Medicine and concentrate on Hematology. This determination and need to follow his passion rather than the norm would be a consistent feature of his subsequent career path.

Recognizing the limitations of Hematology training in the country in those days he went to Westmead Centre, Sydney, Australia for specialty training in Hematology in 1980. He completed his training and acquired the 'Fellow of the Royal Australasian College of Physicians' (FRACP) and the 'Fellow of the Royal College of Pathologists of Australasia' (FRCPA) in 1983.

He then returned to the Christian Medical College, Vellore and started the Department of Clinical Haematology in 1983. This initially functioned from a small room within the Department of Medicine Unit 1. This has over the years expanded to one of the largest hematology departments in the country. He is often affectionately considered the 'father of allogeneic stem cell transplant in India'. The transplant program at the Christian Medical College was started in 1986 and has steadily grown in strength. The 'Thalassemia' transplant program in the country was started by him. As with the hematology program the transplant program also had very humble beginnings and every aspect of the program such as infra structure, personnel and standard operating systems were meticulously put in place by him and people that he trained. Many of the current transplant programs in the country owe their training and establishment directly to his leadership. Prior to retiring from Christian Medical College in 2009 he was instrumental in the development of the 10 bed transplant area from where transplants are currently done in this institution. The program currently does about 150 allogeneic stem cell transplants and 40 autologous stem cell transplants a year. He was generous with his time and was an exceptional mentor to his students who he continued to nurture long after they had completed their training. His exceptional work in this area was recognized nationally and internationally. In February 2014, the American Society of Blood and Bone Marrow Transplantation bestowed on him the prestigious 'CIBMTR award' which recognizes his contribution to this field.

Beyond stem cell transplantation Dr. Mammen Chandy's has contributed significantly to every aspect of hematology training, teaching, service and research. He established the first MCI recognized specialty training in 'Clinical Hematology' in the country which had a major impact in popularizing this branch of Medicine in the country. Since retiring from the Christian Medical College he has gone onto establish the 'TATA Medical Center' in Kolkata. As with everything else that he is involved in it has, in a very short period of time, become an institution of repute in the country. He continues to be an active member in the scientific community of this county and he heads the 'Human Genome and Genetics' task force in the Department of Biotechnology.

For his outstanding his contribution in research in the field of Hematology and Medicine Prof. Mammen Chandy is awarded the Annual Research Day distinguished retired faculty medal and oration for the year 2015.

Dr. Sunil Chandy,  
Director, CMC Vellore

Dr. Nihal Thomas,  
Additional Vice Principal (Research)

Dr. Alfred Job Daniel,  
Principal, CMC Vellore



### **ANNUAL RESEARCH DAY – 2015**

#### **MEDAL AND ORATION FOR DISTINGUISHED RETIRED FACULTY**

Prof. Jayaprakash Muliylil joined CMC in 1969 and was conferred the MBBS degree in 1974 and the MD (Preventive Medicine) degree in 1981 by the Madras University. He joined the department of Community Health at CMC, Vellore in 1981 and continued there till retirement as Professor and Head of the Community Health Department in 2009. With his keen interest in epidemiology, he pursued further studies at the Johns Hopkins University School of Public Health, Baltimore and obtained the MPH degree in 1986 and the Dr.PH (Epidemiology) in 1988. In 2008, he was awarded the honorary Doctor of Medicine degree by the University of Copenhagen, Denmark.

The ERC course had been initiated in 1984, and upon Dr. Jayaprakash' s return from his further studies in USA, he was given the responsibility of coordinating this course, which he continued until his retirement in 2009. His love for teaching and his unique style of teaching was reflected in the increasing numbers of participants who attended this course. He initiated and coordinated the MSc Epidemiology Course in CMC from 1995 until his retirement.

He was in charge of the leprosy control programme of the Community Health Department, covering a population of 300,000 rural, urban and tribal population.

In addition to his clinical and teaching responsibilities in the department, he was also given the additional responsibility of Vice-Principal in charge of Undergraduate MBBS studies from 1998-2002 and as Principal of the Christian Medical College, Vellore from 2002-2007. Following his retirement in 2009, Dr. Jayaprakash was appointed as Academic Officer of CMC until 2012.

In the area of research, Dr. Jayaprakash has guided several postgraduate students in the department as well as helped numerous students and faculty across the institution from various specialties. Even after his retirement, he continues to teach, guide and mentor others within the institution and elsewhere.

As a researcher, he has over 110 publications and has been an investigator on Indian and internationally funded grants in the areas of leprosy, rheumatic heart disease, vaccine preventable illnesses and diarrheal disease.

He is a member of several committees of ICMR and its allied institutions and has also been a consultant on national and international programs and organizations such as the National Leprosy Eradication Programme, SIDA, DANIDA, and WHO. He has been a visiting faculty to many institutions in India and abroad and is currently the Medical Consultant to the Leprosy Mission International.

He continues to serve on the Institutional Review Board for research in CMC as well as other organizations.

For his outstanding his contribution in research in the field of Epidemiology and Research Prof. Jayaprakash Muliylil is awarded the Annual Research Day distinguished retired faculty medal and oration for the year 2015.

Dr. Sunil Chandy,  
Director, CMC Vellore

Dr. Nihal Thomas,  
Additional Vice Principal (Research)

Dr. Alfred Job Daniel,  
Principal, CMC Vellore

**POSTER PG MEDICAL**

## **DRUG PRESCRIBING PATTERN IN PREGNANCY IN A SECONDARY CARE HOSPITAL IN SOUTH INDIA: A RETROSPECTIVE STUDY**

Saibal Das<sup>1</sup>, Blessed Winston A<sup>1</sup>, Deepasree Sukumaran<sup>1</sup>, Aniket Kumar Verma<sup>1</sup>, Margaret Shanthy FX<sup>1</sup> and Jasmin Helen Prasad<sup>2</sup> <sup>1</sup>Departments of Pharmacology, <sup>2</sup>Community Health and Development, Christian Medical College, Vellore

### **BACKGROUND**

In pregnancy drug treatment presents a special concern due potential teratogenic effects of drug and physiologic alterations in mother. Pharmaco-epidemiological studies can help in minimizing the use of potentially dangerous drugs by establishing a profile of drug consumption, by monitoring the health services and by investigating interventional measures.

### **AIM**

This study was done to evaluate the drug prescribing pattern in pregnancy retrospectively among all the pregnant women, attending the ante-natal clinic (out-patient department), irrespective of the duration of pregnancy in Community Health and Development Hospital, Christian Medical College, Vellore, a secondary care hospital.

### **METHODS**

This cross sectional retrospective study was done for 3 months (from October to December, 2014) using pre-formatted forms and patient's records.

### **RESULTS**

A total of 326 including 46 different types of drugs were prescribed to 606 pregnant women. Of these 46 different drugs, 3 fall under category A, 14 fall under category B, 19 under category C and 3 under category D. The pregnancy categories of 7 of these drugs are undetermined (category N). 8 different types of medications were started before being seen at the ante-natal clinic. Of these 8 types of drugs, 2 fall under category A, 2 under category B, 2 under category C and 2 under category N. No history of any addiction or intake of 'over the counter' medication was recorded.

### **CONCLUSION**

This study reflects a very good, safe and rational medication practice during pregnancy in various common disorders in a secondary care hospital and can be cited as an example to similar primary and secondary care hospitals in the country.

## **CEREBROSPINAL FLUID OTORRHINORRHEA AS A CAUSE OF RECURRENT LOWER RESPIRATORY TRACT INFECTION AND MENINGITIS**

**AUTHORS:** Dr. Manusrut, Dr. Mary John Dept: ENT UNIT 2 – Pediatric ENT, CMC, Vellore

### **BACKGROUND**

Cerebrospinal fluid (CSF) Otorrhinorrhea is the discharge of CSF through the middle ear and eustachian tube into the nose. Cochleovestibular malformations are a rare cause of CSF otorrhinorrhea. Patient can be asymptomatic or present with hearing loss or recurrent meningitis.

### **CASE REPORT**

We report a 3 year old boy who presented with recurrent episodes of high grade fever, nocturnal cough, breathlessness and clear watery nasal discharge since 3 months of age. Child was treated for bronchopneumonia. He also developed an episode of pneumococcal meningitis. Magnetic resonance imaging was done for CSF rhinorrhea which showed CSF intensity fluid in the right middle ear. Subsequent High-resolution computed tomographic scan of temporal bones confirmed the diagnosis of Right Cochleovestibular malformation (Interpartition Defect Type 2). The site of leak could not be identified on imaging. Auditory brain stem response showed right sided profound hearing loss. Surgery revealed CSF leak through a hole in the stapes footplate. The defect was successfully closed with soft tissue and the middle ear obliterated with plugging of eustachian tube.

### **CONCLUSION**

Recurrent Lower respiratory tract infection and meningitis with rhinorrhea in a child should be investigated for inner ear malformations. A high index of suspicion of CSF otorrhea and early imaging with surgical intervention can prevent complications.

## **TO ASSESS THE CARDIO-VASCULAR STATUS AND MORBIDITY OF PATIENTS WITH COPD PRESENTING IN PULMONARY MEDICINE OPD- A PILOT STUDY**

Dr. Sapan Kumar, Dr D.J Christopher, Dr Balamugesh T., Dr Lijo Verghese, Department of Pulmonary Medicine

### **BACKGROUND**

COPD is fifth leading cause of death worldwide. Cardiac cause is attributed to 60% of all mortality.

### **AIM**

To assess cardiovascular comorbidities, echocardiographic changes and its correlation to pulmonary functions in patients COPD

### **METHODS**

A Cross sectional observational study for a period of 1 year from 1st July 2014 to 30th July 2015. Patients were recruited from outpatient department of Pulmonary Medicine, CMC Vellore. A total of 122 COPD patients who fulfill the study criteria were recruited by random sampling. A detailed medical history along with physical examination was done. Patient's cardiac and respiratory functions were assessed by appropriate blood tests, ECG, ECHO and PFT.

### **RESULTS**

Of 122 COPD patients - 8.2% had mild, 48.3% had moderate, 29.5% had severe and 13.9% had very severe grade of COPD (GOLD criteria) The most prevalent cardiovascular co-morbidity was hypertension 40.2% followed by coronary artery disease 20%, previous MI 7.4% and cerebrovascular accident 4%. Prevalence of PAH as determined by transthoracic ECHO was 61% with 59.2%, 27.6% and 13.1% being mild, moderate and severe respectively. Increasing trend of PH was observed from 50.8% in mild, 77.7% moderate, 88.2% in very severe COPD, of these 23% had cor pulmonale. We observed increase in CP with severity of COPD and PH. LV and RV systolic dysfunction observed in 14% of the patients. LV diastolic Dysfunction was observed in 65.57% patient.

### **CONCLUSION**

There is significant prevalence of cardiovascular co morbidities in COPD We recommend regular cardiovascular screening in all COPD patients for early identification, monitoring and early treatment.

# **SEROLOGICAL CHARACTERIZATION OF AUTOANTIBODIES IN AUTOIMMUNE HEMOLYTIC ANEMIA AND ITS CLINICAL IMPLICATIONS-A STUDY FROM A TERTIARY CARE CENTER IN SOUTH INDIA**

Author- Dr. Rajeshwari B, Dr. Biju George, Dr. Visalakshi, Ambily Nadaraj, Dr.Dolly Daniel

## **BACKGROUND AND AIM**

Autoimmune hemolytic anaemia (AIHA) has a wide range of clinical presentation from mild to fulminant life threatening anaemia. Immunoglobulin class, subclass, titre, ability to activate complement, thermal amplitude and strength of direct antiglobulin test (DAT) have been implicated as factors affecting severity. This study was undertaken to analyze factors which influence the severity of AIHA.

## **MATERIAL AND METHODS**

In this crosssectional study, patients with evidence of haemolysis and positive for polyspecific DAT were included. Monospecific DAT done to identify presence of IgG, IgM, IgA, IgG subtypes and complement. Correlations were drawn between the severity of AIHA and Immunoglobulin class, strength of DAT, IgG subtype and the titre of the latter.

## **RESULTS**

Among 94 patients included in the analysis, the median age was 35.2(Range1-77 years), with a male: female ratio of 1:1.9. Primary AIHA was identified in 54.3% and secondary AIHA in 45.7%. Spread of autoantibodies identified included, 28.7% with solitary IgG followed by complement alone in 8.5% as opposed to 62.8% of patients who had a combination of autoantibodies. Severe haemolysis was greater in patients with primary AIHA (71.2%) as compared to patients with secondary AIHA(28.7%,  $p < 0.001$ ).

Severe haemolysis was seen in 89.1%, of patients who had a combination of autoantibodies as compared to 10.9% patients, with solitary IgG( $p < 0.001$ ). IgG subtyping revealed the most common subtype to be IgG1(58.1%) followed by combination of IgG1 & IgG3 (11.6%).The remaining 30.2% were negative for IgG1or IgG3. Presence of IgG1 and IgG3 in combination, or IgG1alone showed statistically significant association with severity of haemolysis ( $p = 0.04$  and  $0.012$ respectively).

Correlating strength of DAT revealed that severe haemolysis occurred in 80.8% patients with DAT strength of 4+ ( $p = 0.006$ ). This association was consistent with all the IgG subgroups.

## **CONCLUSION**

This association in our study of DAT strength, IgG1 and IgG3 positivity, and complement fixation on severity of haemolysis suggest that an algorithm of following up DAT positivity, in patients with AIHA, with a monospecific DAT and IgG subtype analysis will allow for identification of this critical subgroup of patients in whom more intense clinical intervention and close follow up might be indicated.

## **HPV TESTING IN SURVEILLANCE OF PATIENTS AFTER TREATMENT FOR CIN 2-3 OR CERVICAL CANCER**

DHANYA THOMAS<sup>1</sup>, Vinotha Thomas<sup>1</sup>, Anantharam Raghavendran<sup>2</sup>, Ajit Sebastian<sup>1</sup>, Anitha Thomas<sup>1</sup>, Priya Abraham<sup>2</sup>, Abraham Peedicayil<sup>1</sup>

1. Department of Gynaecologic Oncology and 2. Department of Clinical Virology, Christian Medical College, Vellore.

### **BACKGROUND**

Persistent infection with hr- HPV following treatment for CIN or carcinoma cervix is associated with increased risk of recurrence.

### **AIM**

To study the role of cervical HPV testing in patients treated for CIN or cervical cancer

Methods: A retrospective study was done with data collected from medical records. During the period from Aug 2013 to Dec 2014, a total of 239 patients with CIN or Carcinoma cervix attended the Gynaecologic Oncology Unit at CMC, Vellore. Of these, 48 patients who had undergone HPV testing post treatment for CIN 2-3 or cervical cancer were included in the study. HPV testing was done by Hybrid Capture II and Pap smear by Thin Prep LBC.

### **RESULTS**

Of the study population, 24 had treatment for cancer and 24 for CIN. The follow up Pap was positive in 4 of the cancer patients (16.6%). All 4 tested positive for hr-HPV and underwent further evaluation. HPV was positive in a patient with negative Pap. Both the tests were negative in 19 patients. The OR for an abnormal Pap with positive hr-HPV after cancer treatment was 117 (95% CI 4.1 to 1371; p-value= 0.006).

Pap was positive in 8 out of 24 patients (33.3%) who were treated for CIN 2-3. HPV was positive in 3 of these 8 patients (37.5%). All 3 patients underwent biopsy and 2 had carcinoma. HPV was positive in 3 patients with negative Pap. Both the tests were negative in 13 patients. The OR for an abnormal Pap with positive hr-HPV was 2.6 after treatment of CIN 2-3 (95% CI 0.4 to 17.5; p-value = 0.32).

### **CONCLUSION**

HR HPV testing may prove to be a useful initial test in surveillance of patients after treatment of cervical neoplasia. Further studies are required to decide the frequency of HR HPV testing in post treatment surveillance.

## **USE OF NINTENDO WII™ GAMING CONSOLE FOR REHABILITATION OF CHILDREN WITH CEREBRAL PALSY**

Jane Elizabeth Sajan, Judy Ann John, George Tharion, Department of Physical Medicine and Rehabilitation (PMR), Christian Medical College, Vellore.

### **BACKGROUND**

Cerebral palsy is a condition caused by non-progressive injury to the immature brain resulting in motor and postural impairment. Nintendo Wii (Wii) is virtual reality gaming console that has been shown to be useful in the rehabilitation of patients with stroke. The aim of this study is to evaluate the potential of using Wii as an adjunct to routine therapeutic regimen in the rehabilitation of children with cerebral palsy (CP).

### **METHODS**

The study was designed as a pilot randomized controlled trial with 20 CP children. The children in the intervention group played Wii games for 18 sessions in 3 weeks as part of their routine therapy. The children in the control group received routine therapy alone. The outcome measures were posture control and balance, upper limb and hand function, visuo-perceptual skills and walking speed and endurance. These were measured before and after the intervention in each group. The Wilcoxon signed-rank test (for paired data) and Mann Whitney tests (for independent variables) were used for statistical analysis of the data.

### **RESULTS**

A significant improvement in upper limb and hand function was seen in the post-test compared to pre-test in the intervention group, which was not seen in the control group. No statistically significant effects of the intervention were seen on the other outcomes measured compared to the control group. Children in the intervention group were highly motivated and enjoyed playing Wii games as part of their therapy sessions.

### **CONCLUSION**

Wii games-based therapy may be offered as an effective adjunct to routine therapy in CP rehabilitation. However, larger studies will have to be done in order to come to definite conclusions regarding the beneficial effect of this intervention.

## **PREDICTIVE VALUE OF PULMONARY FUNCTION TESTS FOR RESPIRATORY INFECTIONS IN CERVICAL CORD INJURY**

**AUTHORS:** Abhita Braganza, Judy Ann John, Balamugesh Thangakunam, Department of Physical Medicine and Rehabilitation, Christian Medical College, Vellore.

### **BACKGROUND**

Respiratory complications are the leading cause of mortality, morbidity and decreased quality of life in persons with complete high level spinal cord injury, with an incidence of 50% to 100% in the acute stage. Respiratory infections significantly increase the length of hospital stay and hospital costs. Previous studies have demonstrated that pulmonary function tests can be used to predict respiratory infection in a community setting. Pulmonary functions in patients with cervical spinal cord injury have not been evaluated as predictors of respiratory infection during hospital stay.

### **AIM**

To determine whether pulmonary function tests can predict respiratory infection in persons with cervical spinal cord injury of less than one year duration.

### **METHODS**

Pulmonary function tests and bedside measures of pulmonary function were assessed for all patients. Patients were followed up during the course of hospital stay and at 3 months after discharge to determine the incidence of respiratory infection. The differences in pulmonary function in patients who developed and those who did not develop respiratory infection were assessed and receiver operated characteristic curves were plotted to determine the predictive value of each test.

### **RESULTS**

The Percentage predicted values of Forced vital capacity (FVC%) and Forced expiratory volume in 1 second (FEV1%) were the best predictors of respiratory infection. Using cut-offs of 44.7% for Forced vital capacity (FVC%), and 43.7% for Forced expiratory volume in 1 second (FEV1%), the sensitivity of these tests for prediction of respiratory infection was 100%, with a specificity of > 85%. Among the bedside measures of pulmonary function, the Index of Pulmonary dysfunction correlated well with FVC% and FEV1% with slightly reduced sensitivity.

## **“RIGHT MEDIAN NERVE ELECTRICAL STIMULATION TO IMPROVE AROUSAL AND RESPONSIVENESS OF PATIENTS IN VEGETATIVE OR MINIMALLY CONSCIOUS STATE FOLLOWING ACQUIRED BRAIN INJURY- A RANDOMIZED CONTROLLED TRIAL”**

**Dr. Raji Thomas**, Professor, Department of Physical Medicine and Rehabilitation, Christian Medical College, Vellore.

### **AIM**

To study the effectiveness of right median nerve electrical stimulation to improve arousal in patients in vegetative and minimally conscious states following acquired brain injury, of less than one and a half years duration.

### **OBJECTIVES**

1. To test whether electrical stimulation of right median nerve produces statistically significant difference in the CRS, WHIM, GOSE and RLA scores.
2. To test whether electrical stimulation of right median nerve produces variation in the EEG pattern indicating arousal.

### **SUBJECTS AND METHODS**

STUDY DESIGN-Randomized controlled double blind trial PARTICIPANTS- Patients in vegetative and minimally conscious states.

Following acquired brain injury were recruited from the inpatient wards of CMC hospital and Rehabilitation Institute. Total number of patients who completed the study was 24, with 11patients in the experimental group and 13patients in the control group. Statistical analysis was done for 24 patients.

### **INTERVENTIONS**

In the experimental group, stimulation was done with Functional Electrical Stimulator (FES) with the standard operating protocol as Frequency= 40 Hz; Current=20mAmps; Pulse width=300µsec; on duration=20sec/min. Total 40 sessions of therapy, each session lasting for one hour was given. The control group received sham stimulation. Both groups received the standard coma stimulation programme.

### **OUTCOME MEASURES**

The primary outcome measures were 1. CRS-R (Coma Recovery Scale Revised) 2. WHIM Score (Wessex Head Injury Matrix score), 3. RLAS (Rancho Los Amigos Scale) and 4. GOSE (Glasgow Outcome Scale Extended) . The secondary outcome measure was EEG.

### **RESULTS**

The improvement in the level of consciousness as measured by CRSR, WHIM Total, WHIM

Maximum, GOSE and RLA scores of patients in the intervention group was not significantly different from that observed in the control group. ( $p=0.57$ ,  $p=0.36$ ,  $p=0.68$ ,  $p=0.97$ ,  $p=0.80$  respectively) Analysis of the CRSR subscales also did not show any statistically significant difference between the two groups. Subgroup analysis of patients with positive SSEP median showed statistically significant difference between the two groups in the improvement in CRSR score ( $p=0.02$ ). The highest scores attained in the CRSR, WHIM Total and GOSE scores was seen in the intervention group. The maximum score attained in the Visual, Motor, Oromotor and Communication scales were higher in RMNS group in comparison with the control group. The change in the EEG Pattern was not different between the two groups.

In both the groups, patients with DAI had a better percentage increase in the median value of CRSR score ( $p=0.02$ ). Patients with absence of abnormal posturing and positive BERA results had statistically significant association with the improvement in WHIM Maximum ( $p=0.01$  and  $p=0.04$ ) and WHIM Total scores. ( $p=0.04$  and  $0.008$ ). Patients in minimally conscious state showed statistically significant improvement in the RLA ( $p=0.006$ ) and GOSE scores. ( $p=0.02$ ).

Normal cortical wave pattern in SSEP median, VEP and BERA studies and presence of P14 wave obtained in SSEP median study are associated with better outcomes. None of the patients had any adverse effects during the procedure which was completely non-invasive.

More careful selection criteria for inclusion of patients and a larger sample size with more hours of stimulation over a longer duration may show significant results, so that right median nerve stimulation can be an useful adjunct in the management of patients in vegetative and minimally conscious states.

## **KEY WORDS**

Disorders of consciousness, Vegetative state, Minimally conscious state, Right Median nerve stimulation, CRSR, WHIM, RLA and GOSE scales, SSEP Median, BERA, Diffuse axonal injury, Coma stimulation.

# **AN EVALUATION OF THE CLINICAL PREDICTORS OF THE CARTILAGE INVASION, EXTRA LARYNGEAL SPREAD AND THYROID GLAND INVOLVEMENT IN PATIENTS WITH LARYNGEAL AND HYPOPHARYNGEAL CANCERS (STAGE 3 AND STAGE 4)**

Dr. M. Mohamed Abdul Kathar, Dr. Rajiv charles Michael, Departments and institution  
Department of ENT, Christian medical college, Vellore.

## **BACKGROUND**

The aim of this study was to individually assess the accuracy of pre-operative CT scan, MRI and clinical/endoscopic staging of laryngeal cancers by comparing imaging and histopathological findings and the need for thyroidectomy along with laryngectomy

## **AIM**

To evaluate the clinical predictors of cartilage invasion and extra laryngeal spread and thyroid gland involvement in patients with laryngeal and hypo pharyngeal cancers (stage 3 and stage 4).

## **METHODS**

All clinically diagnosed patients with T3 and T4 lesions were subjected to do contrast enhanced CT scan (from skull base to mediastinum) as a standard protocol of management. Those patients with doubtful cartilage invasion were subjected to undergo limited MRI cuts (STIR sequence) of the neck. They were later planned for the direct laryngoscopy and biopsy. The biopsy proven laryngeal malignancies (T3 and T4 with cartilage erosion and extra laryngeal spread) were advised to undergo total laryngectomy with the post-op specimen sent for histopathology. These all total laryngectomy were subjected to histopathological evaluation were noted for cartilage invasion, extra laryngeal spread and thyroid gland involvement.

## **RESULTS AND CONCLUSION**

In our study, a Primary laryngectomy was done in patients where cartilage invasion was noted on imaging and in individuals where extra laryngeal spread of tumour was evident without cartilage involvement. Salvage Laryngectomies were also done in irradiated individuals with post RT recurrences where conservative/ endoscopic or open partial laryngectomies were not possible. Contrast enhanced Computed tomography scan helped in identification of thyroid cartilage invasion accurately in 91.3 % of cases and this has immensely contributed in the staging and treatment planning of Stage 3 and Stage 4 laryngeal cancers. The addition of a 3tesla MRI scan STIR sequence axial cuts through the larynx in our study improved the accuracy and aided in detecting cartilage erosion in these cases (100% positive predictive value).

We therefore conclude that 3 Tesla MRI limited high resolution axial section should be considered as routine protocol for all patients in whom there is doubtful cartilage invasion on contrast enhanced CT scan. Since only limited cuts are done both the costs involved and time factors are kept to a minimum. All patients in our study in whom laryngectomy was done had one of the laryngeal cartilage invaded on CT scan or MRI scan or had extra laryngeal spread except post RT recurrences.

Our study showed that 3 tesla MRI STIR sequence axial cuts scan should also be considered to evaluate all patients where cartilage erosion is clinically suspected but not confirmed on CT scan and also in patients where CT scan shows extra laryngeal spread without any obvious cartilage invasion. The sensitivity of detecting extra laryngeal spread in CT scan was only 60%.

In our study we looked at the indications for ipsilateral thyroidectomy in patients undergoing total laryngectomy. Contrast enhanced CT scan suggested thyroid gland infiltration in four out of the forty cases. Histopathology was negative in all these four cases. Two other cases showed thyroid gland infiltration on histopathology but not on CT scan. These two cases were with thyroid gland involvement on histopathology were both transglottic tumours with extra laryngeal spread. Hence an ipsilateral hemithyroidectomy is probably still indicated in transglottic cancer with cartilage invasion and/or extra laryngeal spread.

## **CHORIONIC VILLOUS SAMPLING IN PRENATAL DIAGNOSIS – OUR EXPERIENCE**

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### **BACKGROUND**

Chorionic villous sampling (CVS) is known to be the gold standard for prenatal diagnosis . It is done transvaginally or transabdominally between 10-13 weeks of gestation.The complications of CVS include miscarriage,amniotic fluid leakage and infections.

### **AIM & OBJECTIVES**

To analyze the feasibility , indications, results and complications of chorionic villus sampling for prenatal diagnosis in patients attending the perinatal medicine clinic .

### **MATERIALS & METHOD**

This was a descriptive analytical study conducted in the department of Obstetrics and Gynaecology unit 4 , from August 2014-2015. Data of women undergoing chorionic villous sampling for various indications was retrieved from hospital records. Maternal characteristics ,indications , results and complications were analyzed.

### **RESULTS**

Fifty five patients underwent CVS during the study period. Majority of women were from Tamil Nadu (56.5%) whereas 35.8% were from rest of India. Eight per cent women were from overseas. The mean maternal age was 29.09 yrs and mean gestational age at the time of procedure was 12 weeks and 3 days. Twenty four women (43.6%) had CVS to rule out chromosomal abnormality,20( 36.6%) had CVS to rule out genetic syndromes, and 9(16.3%) had previous babies affected with major haematological disease. All procedures were carried out transabdominally.

Abnormal results were found in 17 (30.9%) cases in comparison to normal result which was found in 32 (58.2%) foetuses. In 2 (3.6%)patients, chorionic villi could not be retrieved due to technical difficulty. All women were followed upto 3 weeks post procedure and none of them were found to have miscarriage, infection or amniotic fluid leakage.

### **CONCLUSION**

CVS is a safe and reliable prenatal diagnostic technique. If done by experienced operators, the risk of complications is low

# PROSPECTIVE OBSERVATIONAL STUDY TO DETERMINE THE CAUSES OF HYPOKALEMIA AND IN MEDICAL WARDS AND ITS ASSOCIATION WITH OTHER COMORBIDITIES AND DEATH

**Authors:** Roshni Sharma, Soumya Satyendra, J.V Punitha, Nisha Jose, Ronald Carey, Ramya I. General Medicine. Christian Medical College and Hospital, Vellore

## BACKGROUND

Hypokalemia is a common clinical problem. Not much of data on its presentation in an Indian hospital setting is available.

## OBJECTIVES

1. Calculate proportion of patients with hypokalemia and its causes in adult medical wards.
2. Dose and duration of potassium required for correction
3. Correlation of Hypokalemia and mortality
4. Association of hypokalemia with other comorbidities
5. Association of ECG changes with severity of hypokalemia

## METHODS

Total of 201 patients were recruited after taking a written informed consent. Every tenth consecutive patient was a control (patients with serum potassium more than or equal to 3.5 meq/l). Cases were all patients who had serum potassium <3 meq/l on day 1 of hospital admission. Data was collected with the help of a data abstraction sheet. All patients were followed up till the point of death or discharge. Data collected at follow up were the dose, duration and route of potassium required for achieving eukalemia, final diagnosis and final outcome. Data entry was made using Epidata 3.1. Analysis was done using SPSS software.

## RESULTS

Proportion of hypokalemia: 48% (CI 0.42-0.53); mild, moderate and severe hypokalemia 37% (CI 0.32-0.42), 8% (CI 0.05-0.11) and 3% (0.01-0.05) respectively. Underlying causes: undetermined (80.7%), vomiting (33.7%), loose stools (15.5%). Mortality rate: cases (4.4%), control (0.4%). Mortality rate based on severity of hypokalemia: Mild (3.9%), moderate (0%), severe (0.04%). Mild hypokalemic became eukalemic with an average dose of 1.5 gram for an average duration of 4 hours). Moderate hypokalemic required an average total dose of 6 grams for an average duration of 12 hours. Severe hypokalemic needed an average of 15 gram for 28 hours. ECG changes occurred both in cases and control at equal frequency. Decreased T wave amplitude, QT prolongation and flattening of T waves were seen more among cases. U waves were observed only among cases.

# **INDUCTION IMMUNOSUPPRESSIVE THERAPY IN LIVING RELATED DONOR KIDNEY TRANSPLANTATION IN INDIA**

## **AUTHORS :**

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## **Type of presentation poster**

## **ABSTRACT**

### **INTRODUCTION**

Most transplant centres in the west use induction agents as part of their immunosuppression protocol as they have been shown to reduce acute rejections without increase in infections. There is no data from India regarding the need for induction in living related donor kidney transplantation, the ideal induction agent and their consequences in our population.

### **METHODS**

Consecutive living related kidney allograft recipients at Christian Medical College, Vellore from January 2005 to December 2013 were included in the study. They were divided into three groups based on the induction agent used: The IL2RB group (Simulect (Basiliximab) 20 mg on D0 and D4), the ATG group (single dose Thymoglobulin 3mg/Kg on D0) and the No-induction group.

### **RESULTS**

678 renal allograft recipients received grafts from 606 living donors and 72 deceased donors. 606 living related transplant recipients (M:F=3.6:1, mean age 35.2±11.9 yrs) were followed up for 35.1±23.7 months. No induction was given for 160 (26.4%) while 404 (66.7%) received IL2RB and 42 (6.7%), ATG. They were predominantly on Tacrolimus (75.6%) and Mycophenolate (81%). Induction group contained a greater percentage of

high-risk patients (18.1% in no-induction vs 24.0% in induction,  $p < 0.001$ ). IL2RB, ATG & no-induction groups were compared in terms of HLA AB  $< 2$  antigen match (29.7, 35.7 & 6.3% respectively), historical cross match positive patients (3.0, 47.6 & 3.1%) and second transplants (0.7, 0.5 & 0.3%). Primary outcomes of death (4.5, 4.9, 11.9%) and graft loss (5.3, 2.4 & 15.7%) were calculated for the three groups.

Use of Induction agents significantly decreased deaths (11.9 vs 4.5%,  $p = 0.001$ ) and graft loss (15.6 vs 4.9%,  $p < 0.001$ ). Comparing IL2RB and ATG groups, there was no difference in deaths (4.5 vs 4.8 %,  $p = 1.000$ ) or graft loss (5.2 vs 2.4%,  $p = 0.710$ ). Biopsy proven acute rejections were significantly less in induction vs No induction group (17.5 vs 25.6%,  $p = 0.026$ ) but there was no significant difference between IL2RB and ATG groups despite increased immunological risk in ATG group (17.3 vs 19%,  $p = 0.780$ ). Despite increased cross match positive patients in ATG group than IL2RB group (50.0 vs 3.0%,  $p < 0.001$ ), there was no significant difference in AMR (2.4 vs 5.4%,  $p = 0.712$ ). There was no difference in multiple rejection rates among the 3 groups.

There was decreased incidence of CMV (11.7 vs 23.1%,  $p < 0.001$ ), tuberculosis (6.3 vs 11.9%,  $p = 0.024$ ) and trend towards reduced fungal infections (3.6 vs 6.9%,  $p = 0.084$ ) in induction group compared to no induction group while urinary tract infections, BK virus infection and incidence of leucopenia were similar. When IL2RB and ATG groups were compared, there was increased incidence of BK virus infections in ATG group (5.7 vs 14.3%,  $p = 0.044$ ). Tuberculosis, Varicella Zoster, HSV and urinary tract infections were similar in both groups though there was a trend towards more CMV infections in ATG group which was not statistically significant.

## **CONCLUSION**

In living related renal transplantation, use of induction agent reduces acute allograft rejections and graft loss and improves survival even in high immunologic risk group. Even when used in high risk groups, ATG induction has rejection, death and graft loss rates comparable to basiliximab which was generally more used in lower risk group. Infection risk profile appears to be similar for these 2 agents except for an increased risk of BK virus with ATG.

# IS CHARCOT'S ARTHROPATHY A SYSTEMIC SKELETAL DISORDER: A CASE-CONTROL STUDY

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## OBJECTIVE

To study the bone mineral density (BMD) and bone turnover markers in patients with Type 2 Diabetes Mellitus and Charcot's neuroarthropathy.

## METHODS

A total of 86 subjects were evaluated in this cross-sectional case control study, which included Type 2 Diabetes Mellitus (T2DM) patients with Charcot's arthropathy (n-20), T2DM subjects with distal peripheral neuropathy (n-18), T2DM subjects without peripheral neuropathy (n-23) and non-diabetic controls (n-25). The BMD of lumbar spine and hip were measured in all patients using the Hologic Dual energy X-ray absorptiometry (DEXA) machine. The bone turnover markers beta crosslaps (Carboxy terminal cross linked telopeptides of Type 1 collagen) and P1NP (total procollagen type 1 amino terminal propeptide) were measured by electro-chemiluminescence immunoassay (ECLIA) (Roche Elecsys 1010/2010 and MODULAR ANALYTICS E170 (Elecsys module) immunoassay analyzers). The software SPSS version 17 was used for the statistical analysis. The results within the groups were evaluated by paired t-tests, and those between the groups were evaluated using ANOVA with Bonferoni correction.

## RESULTS

The mean age of the subjects in our study was  $57.4 \pm 6.9$  years. Overall, among 86 subjects, 49 (57%) were male and 37 (43%) were female patients. The average duration of the study groups with diabetes were  $14 \pm 5$  years and the mean HbA1c was  $8.15 \pm 7.40\%$ . The microvascular complications like retinopathy and nephropathy were more frequent in those with Charcot's arthropathy. All the patients with Charcot's foot had asymmetrical involvement of limbs. Based on the Sanders and Mrdjenovich classification, isolated pattern 1 and 2 type of Charcot were seen in 3 patients, pattern 1,2&3 were seen in 7 patients, Pattern type 1,2,3&4 were seen in 3 patients, pattern type 1,2 &5 were seen in 1 patient. All pattern types of Charcot were seen in 6 patients. The bone turnover markers, the mean P1NP and the mean beta cross-laps levels were found to be higher in control patients in comparison to other groups. However, there was no significant difference in amongst the female subjects between the groups regarding lumbar spine, femur neck and hip BMD values. However, there was significant difference between the groups in male subjects with respect to femur neck and hip BMD values (Charcot's arthropathy had lower BMD when compared to patients with DM and control groups).

## **CONCLUSIONS**

These findings suggest that Charcot's neuroarthropathy in diabetes is primarily a low turnover bone metabolic disorder involving the bones in the feet.

# **A CASE CONTROL STUDY TO ASSESS PERINATAL RISK FACTORS FOR EARLY ONSET GROUP B STREPTOCOCCAL SEPSIS IN NEONATES AFTER INITIATION OF RISK FACTOR BASED INTRAPARTUM ANTIBIOTIC PROPHYLAXIS**

Authors: Sumitha Arun, Santhanam Sridhar, Jolly Chandran, Department of Neonatology, Christian Medical College, Vellore.

## **BACKGROUND**

The incidence of Group B Streptococcal (GBS) sepsis was 0.86/1000 live births between 1998-2003. Since 2004 our hospital has initiated risk factor based Intrapartum antibiotic prophylaxis (IAP) following which the incidence decreased to 0.55/1000 live births. However we still continue to report cases of GBS sepsis.

## **AIM**

To assess the perinatal risk factors for early onset GBS sepsis in neonates in the pre and post IAP era.

## **METHODS**

This is a retrospective case control study. All babies with blood culture positive for GBS (at <72 hours of age) from 1998-2013 were the cases. The 2 babies born prior and two babies born after each baby with sepsis were the controls. The case: control ratio was 1:4. Based on a previous study the OR for per vaginal examination (PV) >3 after rupture of membrane (ROM) was 18.41 and assuming 10 % of controls having GBS, sample size needed was 27 in each arm. The data on perinatal risk factors was collected from neonatal and maternal records and analyzed as two groups – pre IAP 1998-2003 and post IAP 2004-2013 and the perinatal risk factors were identified. After univariate analysis odds ratio and 95% confidence interval were reported.

## **RESULTS**

There were 46 cases from 1998-2003 and 71 cases from 2004-2013. The major risk factors for GBS sepsis in pre IAP era were ROM >18 hours OR - 3.86 95%CI (1.71-8.69), ROM >24 hours OR - 5.95(2.12-16.71) and PV >3 after ROM OR- 10.24(3.63-28.87).

In the post antibiotic era the previously identified risk factors - ROM > 18 hours OR 0.45 (0.10-1.96) and ROM > 24 hours OR 0.88(0.19-4.09) were not found to be significant. However 3 PV after ROM OR 4.81(1.82-12.71) was significant.

## **CONCLUSION**

In the post risk factor based intrapartum antibiotic prophylaxis era, more than 3 per vaginal examinations after rupture of membranes continues to be a risk factor for GBS sepsis.

## **CONGENITAL CHYLOUS ASCITES – A CASE REPORT**

Author : Shajin Co – authors : Arul premanand lionel, Naresh, Leena, Sarah mathai.

### **INTRODUCTION**

Congenital chylous ascites is characterised by accumulation of chyle in peritoneal cavity in infants less than three months of age. The incidence of this disease is very rare. The most important causes includes delayed maturation of lacteals, malformation of lymphatic vessels.

### **CASE PRESENTATION**

Two months old girl baby was brought with abdominal distension noticed since birth. Antenatal scan done at eight months gestation showed ascites. There was no history of jaundice, bleeding manifestations or fever. She had poor weight gain, abdominal distension with fluid thrill on examination. Ultrasound and CT scan abdomen showed gross ascities without any other abnormality. Ascitic fluid was suggestive of chylous ascites with triglycerides 887 mg%. Lymphoscintigraphy was deferred in view of practical difficulty in infant. She was treated with Octreotide infusion, fat free diet with medium chain triglyceride. Her ascites gradually settled and she was discharged on high MCT fat free diet. She is on follow up for past one and half years. She is tolerating the slow introduction of normal diet and growing normally.

### **CONCLUSION**

Congenital chylous ascites is one among the rare surgical cause for ascites. The diagnosis of this condition lies in ascitic fluid analysis ultrasonogram of abdomen and lymphoscintigraphy. Conservative treatment, with fat free MCT rich diet and administration of somatostatin seems to be advantageous, as it shortens the time of treatment and hospitalisation.

Key words: Congenital Chylous acites, Lymphatics, Octreotide.

# **AN OPEN LABEL RANDOMIZED CONTROLLED TRIAL COMPARING 'STANDARD THERMAL CARE' WITH 'EMBRACETHERMOPOD' OR 'POLYTHENE BAG' TO PREVENT HYPOTHERMIA SOON AFTER BIRTH IN LOW BIRTH WEIGHT BABIES**

Authors Name: Shabeer MP ,Abiramalatha T,Devakirubai,Grace Rebecca , Sumita Arun, Santhanam Sridhar , Niranjan Thomas, Department of Neonatology ,CMC Vellore

## **BACKGROUND**

Neonatal hypothermia is a significant problem immediately after birth among preterm and low birth weight babies even when routine thermal care guidelines are followed.

## **OBJECTIVE AND DESIGN**

The randomized controlled trial was designed to evaluate the feasibility and efficacy of adding 'Embrace thermopod' or polythene bag to the standard thermal care to prevent hypothermia in relatively larger low birth weight babies (1500g to 2499grams) soon after resuscitation and during transport. This study was conducted from January 2015 to August 2015.

**Setting** .Tertiary care neonatal unit in CMC Vellore,T.N,India

## **SUBJECTS AND INTERVENTION**

Low birthweight infants (1500–2499 g) with gestational age  $\geq 32$  weeks were eligible to be included in the study. Babies were randomized into one of the 3 arms – the control arm and the 2 intervention arms. Babies in the control arm were given the WHO recommended standard care to prevent hypothermia. In the intervention arm 1, plastic bags were used in addition to the standard thermal care. In the intervention arm 2, in addition to the standard thermal care, babies were placed in the Embrace thermopod warmer.

## **OUTCOME MEASURES**

Primary outcome was axillary temperature of the babies at the time of nursery admission. Secondary outcome measures included hypoglycemia, respiratory distress, coagulopathy, sepsis and death.

## **RESULTS**

76 babies were randomized into polythene bag arm ,75 babies into embrace arm and 78 babies in the standard arm. The mean temperatures in the polythene bag group and embrace arms were 36.4 and 36.3 degree Celsius as compared to 36.1 in the standard thermal care arm (Table 2).The difference was statistically significant between polythene bag group and standard thermal care arm ( $P=0.005$ ),where as the difference was not significant between embrace and standard arms ( $P=0.16$ ). The difference between the two

interventional arms was not statistically significant ( $P=0.67$ ). None of the secondary outcomes were significantly different among the groups.

## **CONCLUSION**

As the incidence of hypothermia was found to be high despite following the WHO recommended standard thermal care, we would strongly recommend the use of additional thermal protection measures in the immediate postnatal period. The use of plastic bags seems to be an effective, cheaper and feasible option especially in developing countries.

## **KEY WORDS**

Neonatal hypothermia, polythene bag , embrace thermopod.

## POINT OF CARE SONOGRAPHY FOR CONFIRMATION OF CENTRAL INTRAVASCULAR CATHETER TIP POSITIONS IN NEONATES

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### BACKGROUND

Central intravascular catheter insertion is a common procedure in neonatal intensive care units (NICU) and confirmation of position with X-ray is the norm. Disadvantages of X-ray include time delay, radiation exposure, disturbing a sick baby with resultant destabilization and inability to visualize catheter position. Hence, this study was conducted to see if ultrasound could be used instead of X ray to reliably detect central intravascular catheter tip position.

### METHODS

**Design:** Prospective observational study.

**Study period :** May 2015 to September 2015

All neonates admitted in the NICU and requiring central intravascular catheters like umbilical venous (UVC), arterial (UAC) and peripherally inserted central venous lines (PICC) were included in the study. Bedside ultrasound examination was done in all the babies for catheter tip positions soon after insertion. Simultaneously, X ray was ordered. Catheter tip position determined by ultrasound examination was compared with the position in the corresponding X-rays. Time taken to get ultrasound done was compared against time taken to obtain the X-ray film.

### RESULTS

Forty neonates with mean gestational age of (GA)  $33.6 \pm 4.1$  weeks and mean birth weight (BW) of  $1851 \pm 798$  g were studied for UVC tip positions. Ultrasound and X ray agreed in 32 (80%) of patients. In the remaining 8 (20%), 1 classified as in RA by X ray was normal by ultrasound, 3 classified as cavo-atrial junction by X ray was seen to be at lower level by ultrasound and 4 classified as low by ultrasound was in the portal vein as per X ray.

Total 41 neonates with mean GA  $36.3 \pm 4.1$  weeks and BW  $2438 \pm 876$  g were studied for UAC tip positions. Ultrasound and X ray agreed in 38 (93%) of babies. In the remaining 3 (7%), ultrasound failed to identify the correct tip position when it was in an abnormally high position.

PICC line tip positions were studied in 24 neonates with mean GA  $33.5 \pm 33$  and BW  $16973 \pm 505$ g. USG and X ray agreed only in 7 (29%) babies. USG identified the exact catheter tip position in 20 (83.7%) babies, whereas X ray could identify only in 9 (37.5%) babies.

It took significantly longer time to get X-ray done as compared to ultrasound (mean  $175 \pm 97$  vs  $88 \pm 71$  mins,  $p < 0.001$ ).

## **CONCLUSION**

Our study suggests that point of care ultrasound is reliable and faster and can replace plain radiograph for the identification of the central intravascular catheter tip positions especially for PICC line and UVC tip positions.

## **DYNAMIC TESTING IN MODY (MATURITY ONSET DIABETES OF YOUNG) PATIENTS, TO ASSESS THE PATTERN OF INSULIN SECRETION**

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### **Departments and institution:**

Department of Endocrinology, Diabetes and Metabolism, Department of Biochemistry  
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### **BACKGROUND**

MODY, Maturity Onset Diabetes of the Young, is a lesser known but unique form of diabetes Mellitus. Till date, 13 types of MODY have been identified. The most common gene mutations seen in our population are Neuro- D1, HNF4 $\alpha$ , HNF1 $\alpha$ , and HNF1 $\beta$ . Interestingly, our data from CMC Vellore reported more novel mutations, in patients with MODY, which were not frequently reported in the western population. Though the specific gene mutations for the various types of MODY have been identified, the pattern of insulin secretion in these patients has not been studied in detail.

### **AIM**

To study the first and second phase insulin secretion patterns in MODY gene mutation positive patients through FSIVGTT ((Frequent Sampling Intravenous Glucose Tolerance Test)

### **METHODS**

13 MODY gene mutation positive subjects, age more than 18 years, were subjected for FSIVGTT (Frequent Sampling Intravenous Glucose Tolerance Test) to look for the first and second phase insulin secretion patterns and compare with the MODY negative normal controls.

FSIVGTT Method- After an overnight (8-12 hours fast) a catheter was inserted into an antecubital vein for blood sampling. Another catheter was inserted into the contralateral antecubital vein for bolus glucose infusion (300mg/kg). A basal sample (glucose, insulin, C-peptide) was drawn at 2 minutes prior starting the FSIVGTT. At 0 Minute, glucose was injected over one to three minutes. Samples for plasma glucose, serum insulin and serum C-peptide were also drawn at 2, 4, 6, 8, 10, 12, 15, 17, 20, 25, 30, 40, 50, 60, 90, 100, 150 and 180 minutes.

Deconvolution technique was used to draw the insulin secretion pattern from the measured C-peptide levels.

## **RESULTS AND CONCLUSION**

We infer that, the glucose disposal pattern following a weight based glucose bolus infusion was similar among all the different types of MODY. Also it was similar to the normal MODY mutation negative controls. However there was a difference in the insulin secretion pattern among the different types of MODY .We also noticed a defect in the first phase insulin secretion pattern in MODY positive individuals, on comparing the controls.

# **A Prospective Observational Study To Develop A Paediatric Acute Care Score (PACS) For Early Prediction Of Clinical Deterioration Requiring Intensive Care In Children Presenting To Paediatric Emergency Services In A Tertiary Care Hospital**

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## **AIMS & OBJECTIVE**

To develop and validate a simple scoring system- PACS (Paediatric Acute Care Score) using the clinical vital variables and co morbidities, for sick children admitted to paediatric wards through emergency department ;To determine early prediction of clinical deterioration requiring intensive care or high dependency.

## **METHODOLOGY**

This was a prospective observational study to analyze the hypothesis that the clinical assessment using the simple scoring system- PACS at the time of presentation to emergency room (T0) and at the time when admission was decided (T1) can predict the clinical deterioration early. The study was conducted in the Paediatric Emergency Department and the paediatric wards of CMC, Vellore. All children (aged between 28 days of life to completed 17 years), who require admission to the paediatric ward are enrolled into the study after obtaining the written informed consent from the parents and their demographic details, primary diagnosis, co-morbid factors and PACS are documented in a standardized proforma. The children who need ICU Care as per the Physician's opinion at admission itself and neonates were excluded from the study The primary outcome of "Clinical Deterioration" was defined as 1. Cardio-pulmonary arrest ,2. Respiratory failure requiring intubation,3. Worsening respiratory distress leading to respiratory support in the form of Non-invasive ventilation or high flow oxygen therapy ,4. Worsening of shock requiring > 10 mcgm/kg/min Dopamine and or addition of a catecholamine / vasopressin and or increasing lactate level of more than 2 from the baseline/metabolic acidosis,5. Deterioration of sensorium –i.e. drop in Glasgow Coma Scale (GCS) >/= 2 since admission to the ward and 6. Persistent, uncontrolled seizures after two long active anticonvulsants, requiring continuous anticonvulsant infusion.. The admitted children were followed up for 48hours to look for any clinical deterioration.

## **RESULTS**

Among the 560 patients who are admitted, 443 (80%) were discharged after complete recovery. The remaining 117(20%) children deteriorated during the course of hospital stay. Among which 101(87%) children deteriorated within 48 hours of admission and 16(13%)children deteriorated after 48 hours of admission. The most common type of clinical deterioration within 48 hours of admission(n=101), was respiratory failure requiring intubation, n=48(48%) followed by worsening of respiratory distress requiring Non-invasive ventilation or high flow oxygen therapy, n=23(23%). The other forms of

clinical deterioration are worsening of shock requiring hiking of inotropes (n=17,17%), cardiopulmonary arrest (n=11, 11%), worsening of sensorium (n=1,1%) and Persistent, uncontrolled seizures (n=1, 1%).At a score of  $\geq 4$  The score has sensitivity of 87% with specificity of 99% and AUC of 0.95.Hence children with PAC score of  $\geq 4$  at the time of admission have more risk of deterioration within 48 hours of admission

## **CONCLUSION**

1.The PAC score is a fairly accurate scoring system (AUC-0.95) in identifying the risk of 'clinical deterioration' of sick children within 48hours of admission.2. The children with PAC score of  $\geq 4$  have more chance of clinical deterioration within 48 hours of admission compared to those with PAC score of  $<4$ .(Sensitivity-87% and Specificity-99%).



# **THE IMPACT OF PRIMARY HYPERPARATHYROIDISM AND ITS TREATMENT ON BONE MINERAL DENSITY, BONE MINERAL PARAMETERS, INSULIN RESISTANCE, BODY COMPOSITION AND QUALITY OF LIFE - A PROSPECTIVE PILOT STUDY FROM INDIA**

**Authors:** Dr Shrinath Shetty<sup>1</sup>, Dr. Nitin Kapoor <sup>1</sup>, Dr. Sahana Shetty <sup>1</sup>, Dr M.J Paul<sup>2</sup>, Dr Deepak Abraham <sup>2</sup>, Dr Pooja Ramakanth<sup>2</sup> , Mr Joesph Dian<sup>3</sup>, Dr Nihal Thomas<sup>1</sup>, Dr Thomas Paul<sup>1</sup> . <sup>1</sup>Department of Endocrinology, <sup>2</sup>Department of Endocrine Surgery, <sup>3</sup> Departments of Clinical Biochemistry Christian Medical College, Vellore, India.

## **BACKGROUND**

Primary Hyperparathyroidism presents with clinical features of varying severity in the form of fractures, renal stones, pancreatitis and neuropsychiatric manifestations like depression and anxiety. An increase in insulin resistance along with cardiovascular morbidity and mortality has also been reported. However, most of the Indian literature is rather cross sectional or retrospective and hence this prospective study was planned to study the changes in bone mineral density, bone mineral parameters, metabolic profile, body composition and quality of life at base line and 6 months following parathyroidectomy, in subjects with primary hyperparathyroidism.

## **AIMS**

To study the changes in bone mineral density, bone mineral parameters, metabolic profile, body composition and quality of life at base line and 6 months following parathyroidectomy, in subjects with primary hyperparathyroidism.

## **METHODS**

A prospective study was conducted between 01<sup>st</sup> May 2014 to 31<sup>st</sup> August 2015 after obtaining an IRB approval vide 9004; dated 04/0/02015. Sixteen patients who had confirmed diagnosis of primary hyperparathyroidism who completed baseline and 6 months follow up were included in this study. Subjects were assessed for changes in bone mineral density (BMD), bone mineral parameters, body composition and insulin resistance parameter (HOMA-IR). Patients were also assessed with a quality of life (QoL) questionnaire before surgery and during follow up.

## **RESULTS**

The mean ( $\pm$ SD) age of subjects in our study was 44.1  $\pm$  11.5 years. Among the 16 subjects, 11 were males and 5 were females. The most common presentation was renal calculi (56.25%) followed by bony pains. The mean increment in BMD at the 3 sites was 5.9%, 6.7 % and 1. 4% after 6 months at forearm, femoral neck and lumbar spine respectively. All 16 patients had normalised calcium and phosphorus at 6 months. There was also a significant

decline in alkaline phosphatase from  $174 \pm 100.2$  IU/ml to  $92.4 \pm 70.8$  IU/ml (P value is 0.002). There was significant increase in total fat mass from  $15762 \pm 5389$  gm to  $18812 \pm 5902$  gm. However, despite an increment in HOMA-IR from  $1.9 \pm 1.5$  to  $2.3 \pm 1.7$ , it failed to achieve statistical significant probably due to small sample size. The Quality of life questionnaire showed a significant improvement from a mean score of  $12 \pm 1.7$  to  $5.3 \pm 0.1$  among the patients who had depression, which was statistically significant (P value <0.01).

## **CONCLUSION**

There was a significant improvement in the bone mineral density, bone mineral parameters, total fat mass and quality of life, post parathyroidectomy. However, further long term studies are needed to validate these findings in association with definite clinical outcomes.

# **TO COMPARE THE DOSIMETRY OF THREE- LINEAR ACCELERATOR BASED STEREOTACTIC RADIOTHERAPY (SRT) TECHNIQUES STATIC CONFORMAL FIELD (SCF), STATIC CONFORMAL ARC (SCA) AND DYNAMIC CONFORMAL ARC (DCA) FOR PITUITARY ADENOMA AND CRANIOPHARYNGIOMA.**

**Authors:** M G Giriyappagoudar, Sunitha Susan Varghese, Susan K Abraham, Timothy Peace, Rabi Raja Singh, Selvamani B.

## **AIM**

To compare the dosimetric outcomes of three linear accelerator based stereotactic radiotherapy techniques, Static Conformal Field (SCF), Static conformal Arc and Dynamic conformal arc (DCA), for the treatment of Pituitary adenoma and Craniopharyngioma.

## **MATERIALS AND METHODS**

Computer image sets of 20 patients who have been diagnosed either as Pituitary adenoma or Craniopharyngioma and treated with Stereotactic radiotherapy (SRT) were selected for the study. For each data set, three SRT plans, one each with SCF, SCA and DCA techniques were generated using Brain LAB, iPlan RT V.4.5.3, TPS software. The Conformity index (CI), Homogeneity index (HI), Quality of coverage of the target, Dose volume histograms for the target and organs at risk and the time taken to deliver treatment were compared across these three sets of plan.

## **RESULTS**

There were 12 patients with Pituitary adenoma and eight patients with Craniopharyngioma. All patients had surgical excision of the tumour prior to radiotherapy. The conformity and homogeneity indices were comparable across three techniques. The quality of coverage was comparable in static conformal field and DCA techniques, where as it is slightly inferior in static conformal arc technique. The organs at risk are better spared in SCF and DCA techniques compared to SCA technique. The time taken to deliver treatment was lesser in SCF compared to SCA and DCA.

## **CONCLUSIONS**

The Conformity Index and Homogeneity Index were comparable across the three plans but Quality of target coverage was superior in DCA. Dynamic Conformal Arc (DCA) technique was the best technique among the three in achieving all the indices. Doses to normal organs, Optic Chiasm and Brain stem were better controlled in SCF technique than SCA and DCA technique.

## **BLOOD AND BLOOD COMPONENTS UTILIZATION PATTERN IN A TERTIARY CARE HOSPITAL**

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### **INTRODUCTION**

Clinicians should aware of ordering and indication of blood use, to avoid its misuse and also to avoid unnecessary exposure of the patient to adverse reactions.

### **AIM**

To study the pattern of blood and blood component utilization in a tertiary care Hospital.

### **MATERIALS AND METHODS**

This retrospective study was conducted in Blood Bank CMCH at Department of Transfusion medicine and immunohematology over six month duration. All blood requests daily came to blood bank for blood and its components were reviewed. Data regarding patient's relevant information in the request form was collected. Relevant laboratory parameters were also gathered up. Month wise utilization patterns, CT ratio, Transfusion index and Transfusion probability were analysed.

### **RESULTS**

Total 20,399 requests came to our blood bank in six months. A total of 10,364 patients utilized total 32,608 units of blood and its components. Total 14,195 units of packed red cells, 5062 units of FFP, 10,118 units of platelets, 2751 units of cryoprecipitate and 482 units of cryosupernatant were utilized. Most of the requests for blood were from the inpatients (wards). Most of the blood was requested and utilized in age group of 21-30 years with male predominance. Most of the blood and its components were utilized for diagnosis neoplasm group. Patients in the division of medicine utilized most blood. Surgical division utilized only 1/3<sup>rd</sup> of the requested product. Among the medical specialties, Haematology utilized most of the blood and components. Overall anaemia was the most common indication for red cell utilization. In surgical group Spine surgery had a maximum CT ratio. Neurosurgery and Hand Surgery had the lowest transfusion index and lowest transfusion probability. Overall utilization rate in our study was 59.8%.

### **CONCLUSION**

Regular review of blood component usage and utilization patterns act as quality indicator for quality management of blood bank.

# **PREVALENCE OF HYDROURETERONEPHROSIS IN WOMEN WITH PELVIC ORGAN PROLAPSE**

**CAROLIN SOLOMI, ARUNA KEKRE**

## **INTRODUCTION**

The life time risk of developing pelvic organ prolapse is 11% with a reported incidence of hydronephrosis is 7- 17%. In most of the cases it is bilateral and secondary to mechanical obstruction, kinking of lower ureters and extrinsic urethral compression. If undetected or untreated it would lead to renal dysfunction. Prompt recognition and treatment can resolve hydronephrosis and protect kidney function.

Hence, a prospective study was designed to study the prevalence and to identify the potential risk factors causing hydronephrosis in pelvic organ prolapse.

## **OBJECTIVES**

- To evaluate the prevalence of hydronephrosis in a cohort of patients with Pelvic organ prolapsed.
- To assess the degree of hydronephrosis with relation to the severity or duration of prolapse or other co morbid conditions.
- To assess the resolution of hydronephrosis following treatment of prolapse.

## **MATERIALS AND METHODS**

A prospective cohort study was done at Department of obstetrics and gynaecology, Christian Medical college Hospital, Vellore, during the period of January 2012 until March 2014. A cohort of 219 patients with pelvic organ prolapse who were planned for pelvic reconstructive surgery were included in the study. Written consent was taken from all patients.

## **RESULTS**

Two hundred and nineteen(219) patients who had underwent surgical repair for pelvic organ prolapse during the period of Jan 2012 to March 2014 are included in the study. All patients had trans abdominal scan preoperatively to look for hydrouretronephrosis. Of the 219 patients,15 patients had hydroureteronephrosis preoperatively and they were followed up post operatively for resolution of hydrouretronephrosis and was found to be resolved in 8(54%) patients and persisted in 3(20%) patients.(4 patients lost to follow up).In this study,it was also concluded that duration of the prolapse and the associated medical comorbidities are strongly associated with the development of hydrouretronephrosis.

## **CONCLUSION**

Prevalence of Hydronephrosis in women with pelvic organ prolapse is 6.85% Duration of pelvic organ prolapse of more than 5 years is a risk factor for development of hydronephrosis. Patients with moderate to severe HUN should be followed up post operatively with ultra sound for a minimum period of 1 year to document resolution.

Advanced stage of prolapse of more than 5 year duration with co morbidity of diabetes should be screened for hydronephrosis. Bed side USG can be suggested as a part of evaluation in advanced POP to prioritize the patient in busy units to intervene without delay & to counsel patients who refuse or are reluctant to treatment.

KEYWORDS: Hydroureteronephrosis, Pelvic organ prolapse, POP-Q

**POSTER PG – FACULTY MEDICAL**

## **CRYPTOCOCCAL MENINGITIS AND STROKE: A CASE SERIES**

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### **BACKGROUND**

Cryptococcal meningitis continues to be one of the common causes of chronic CNS infection in India. It is an important opportunistic infection in patients with a compromised cellular immune response, and is mostly seen in patients with HIV. Literature regarding CNS infarct in patients with Cryptococcal meningitis is mostly from a single study with only 11 patients of Cryptococcal meningitis. Literature regarding CNS infarction, stroke among patients with Cryptococcal meningitis is scanty.

### **AIM AND OBJECTIVES**

To assess the demographic characteristics, risk factors, clinical profile, vascular territory involved, and role of central nervous system vascular involvement in morbidity and mortality among Inpatients with Cryptococcus meningitis in a tertiary care centre in South India.

### **METHODS**

In this retrospective study, we included all consecutive patients with culture proven Cryptococcal meningitis managed under the various General Medicine Units. All patients confirmed to have Cryptococcal meningitis and a CNS imaging, between the time periods 2004 to 2015 were analysed. We also compared HIV positive adult patients with Cryptococcal meningitis and CNS infarcts/stroke with HIV negative patients with Cryptococcal meningitis and CNS infarcts.

### **RESULTS**

Out of 151 patients with a culture proven diagnosis of Cryptococcal meningitis most had a CT C- as the principle form of CNS imaging. Only 26 imaging's [17%] were MRI brain. While 14 had an evidence of stroke, only 8 of these had evidence of acute infarction. All the 14 patients were included in the analysis. The mean age of patients presenting with meningitis and stroke was 42 [20-59]. Male to female ratio being 4:1. Of all patients with meningitis and stroke 6 [40%] were without HIV. Most common clinical presentation in this subgroup of patients was chronic fever, head ache, depressed sensorium and presence of meningeal

signs which was present in all patients. Mean MRS, GCS of patients with meningitis and stroke was 3, 12. Morbidity and mortality was higher in this subgroup of patients irrespective of seropositivity status

## **CONCLUSION**

Cryptococcal meningitis is becoming an increasingly common cause of chronic meningitis in our country. Vascular involvement leading to CNS infarct is common in the above patients. These infarcts are common irrespective of patient's seropositive status. CNS infarctions are associated with significant morbidity in patients with Cryptococcal meningitis.

# **THE IMPACT OF ASD AND OTHER NEURODEVELOPMENTAL DISORDERS ON THE FAMILY: COMPARISONS AND PREDICTORS**

Beena Koshy, Rachel Beulah, Lincy Glory, S Suganthi and Reeba Roshan

## **BACKGROUND**

Autism spectrum disorders (ASD) and other neurodevelopmental disorders (NDD) impact families adversely. Published studies state that families of children with ASD report a higher impact than those with other NDD. There is a paucity of data evaluating these concepts in the Low Middle Income Countries (LMIC).

## **OBJECTIVES**

1. To evaluate whether families of children with ASD report a higher impact than those with other NDD
2. To understand the predictors for the impact on families of children with either disorder

## **METHODS**

All families who were welcomed to an inpatient residential facility attached to the Developmental Paediatrics Unit in a tertiary care centre in India for detailed assessment and interventions from January 2015 to June 2015 were included in the analysis. The child was diagnosed by a multidisciplinary team of physicians, psychologists and therapists. The ASD diagnosis was confirmed by DSM-V and Childhood Autism Rating Scale (CARS). The Revised Impact on Family questionnaire was administered to all families to assess the impact.

## **RESULTS**

130 children were included in this study. Both families of children with ASD and other NDD reported high impact on the family. There was no significant difference between the reported impact of ASD and NDD (38.17 and 38.13 respectively;  $p=.981$ ). Being a girl child (45.8 vs 36.84 respectively;  $p=.004$ ) and having associated developmental delay (39.82 vs 28 respectively;  $p=.022$ ) had higher impact on families of children, which remained significant in a linear regression.

## **CONCLUSIONS**

Both ASD and NDD have high impact on families. Additional support need to be provided for families of children with ASD and associated developmental delay. The impact of gender on ASD and other NDD needs to be explored further incorporating the local cultural milieu.

## **CLINICAL PROFILE, TREATMENT AND OUTCOME OF CULTURE CONFIRMED BRUCELLOSIS FROM SOUTH INDIA.**

**Key words:** Brucellosis, culture, disease spectrum, treatment, South India

### **Background:**

Brucellosis is the most common zoonosis worldwide. There were only few case series reported from India despite having significant rural population and exposure to livestock. The exact burden of the disease in India is unknown due to paucity of reports and the disease misdiagnosed as other conditions like tuberculosis.

### **Objectives:**

This retrospective study was conducted to determine the disease spectrum, complications, antibiotic susceptibility patterns, treatment and outcome of culture confirmed brucellosis from South India.

### **Methodology:**

This retrospective study was conducted among patients who presented to Christian Medical College, Vellore from January 2009 to July 2015. A total of 22 patients who had culture confirmed brucellosis were included in this study. Diagnosis of brucellosis was confirmed by culturing the sera or body fluids by standard BACTEC method. Electronic medical records of those patients with culture confirmed brucellosis were reviewed. Microsoft Excel was used for data entry and SPSS 16 was used for statistical analysis.

### **Results:**

A total of 22 patients with culture confirmed brucellosis were included in this study. Out of 22 patients, 21 patients (95.5%) were male. The median age at presentation was 40 years ranging from 25 to 85 years. Thirteen out of 22 patients (59%) were from rural area. Majority of the patients were from Tamil Nadu (12 patients, 54.5%) followed by Andhra Pradesh (5 patients, 22.7%). Eleven out of 22 patients (50%) had history of exposure to livestock and 5 patients (23%) had history of consumption of unpasteurized milk/milk products. Co-morbidities at presentation were type 2 diabetes mellitus (6 patients, 27%), malignancies (2,9%), HIV infection and chronic liver disease ( 1 patient each,4.5%).

Most common type of presentation based on duration was acute (12 patients,55%) followed by sub acute (6 patients, 27%). Various presentations of brucellosis were systemic brucellosis (18 patients, 82%), osteo articular involvement (2 patients, 9%), Genital (1 patient, 4.5%) and endocarditis (1 patient, 4.5%). Osteo articular involvement and endocarditis were seen in sub acute type of presentation. Common clinical features at presentation were fever, asymmetrical large joint arthralgia, low back pain, loss of weight and appetite, hepatomegaly and splenomegaly. Treatment regimen in 10 out of 18 patients included an amino glycoside and doxycycline with a mean duration of 6 weeks. Mean

duration of follow up was 18 months. None of the patients who had completed appropriate treatment had relapse during follow up.

**Conclusion:**

1. Brucellosis although rare in India, can present with protean manifestations with high morbidity. Hence high clinical suspicion is required for diagnosis especially in patients with significant exposure history.
2. Automated culture techniques like BACTEC method should be employed to facilitate early and sensitive diagnosis.
3. Treatment with Doxycycline and an amino glycoside is a good treatment option with excellent outcome.

## **CLINICORADIOLOGICAL FEATURES AND OUTCOME OF MOYA MOYA DISEASE (MMD) AND SYNDROME IN A TERTIARY LEVEL TEACHING HOSPITAL IN SOUTH INDIA**

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Moya Moya disease is an idiopathic vasculopathy affecting terminal internal carotid arteries.

### **Type:**

Retrospective chart review

### **Methodology:**

Chart of patients diagnosed to have Moya Moya disease (MMD) and syndrome (2003 to 2013) were analysed for demographic characteristics, clinical presentation, radiological features, management and outcome.

### **Results and discussion:**

115 patients (62 males and 53 females) were studied. Age at onset of stroke was 15.4 years (Range 6 months - 60 years). Children formed majority (70%). 85% of patients hail from eastern India. Anterior circulation was involved in all, posterior circulation in 69 patients (60%) with 32 patients having posterior circulation infarcts. Most common presentation was hemiparesis (44%), followed by seizure (43%), headache(6%), language disturbances(2%), cognitive decline(0.08%), chorea(0.08%), visual symptoms(0.08%) and asymptomatic(0.08%). Family history was positive in 7 belonging to 3 families. 13 had syndromic diagnosis (Neurofibromatosis (4), tuberous sclerosis(1), downs syndrome(1), PHACES syndrome(1), EBV infection(1), Sickle cell anemia(2), thalessemia(1) and megaloblastic anemia(1) and a syndromic moya moya with cataract). All children presented with ischaemic events and 4 adults presented with hemorrhage. 26 patients (22.6%) underwent indirect surgical revascularisation with total of 36 procedures (16 patients with unilateral and 10 patients with bilateral procedures). Mean follow up was 2.19 years (Range 3 months to 10 years). Residual deficits, gain in mRS and frequency of events were comparable in surgical and non surgical group.

### **Conclusion:**

Higher prevalence of MMD is found in North Eastern states of India and is an important cause for stroke in young. There is a lesser incidence of hemorrhage and posterior circulation involvement in children compared to adults. This is the first series in India to report familial cases.

Future directions:

Genetic studies in familial cases are under way National registry and outcome analysis.

## **SENITIVITY AND SPECIFICITY OF CRP IN NEONATES AT RISK OF SEPSIS IN A SECONDARY HOSPITAL-A COHORT STUDY**

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### **Objective:**

To determine the utility of CRP in the diagnosis of sepsis in neonates with maternal risk factors of sepsis.

### **Design:**

Prospective observational cohort study.

### **Setting:**

Secondary level hospital in Vellore, South India.

### **Participants:**

Neonates with maternal risk factors of sepsis (Maternal fever; maternal UTI; any ungloved per vaginal examination, or >3 gloved per vaginal examination after rupture of membranes; chorioamnionitis; spontaneous preterm delivery; prolonged rupture of membranes and pre labor rupture of membranes).

### **Methods:**

Neonates with maternal risk factors of sepsis were recruited. Demographic data, birth data and timings of blood culture, antibiotics and CRP were recorded. Clinical signs of sepsis were determined using the Singh Sepsis Score (grunting, abdominal distension, increased pre-feed aspirates, tachycardia, hyperthermia, chest retractions and lethargy). Results of blood culture, CRP and clinical signs of sepsis were compared.

### **Results:**

CRP had a sensitivity 28.6%, specificity 81.9%, negative predictive value 80.9% and positive predictive value 30% when compared to clinical diagnosis of sepsis. Only 9 blood cultures grew possible pathogens. CRP by latex agglutination correlated with CRP values by nephelometry with a correlation coefficient of 0.684.

**Conclusions:**

A negative CRP excluded sepsis with reasonable confidence in blood culture negative neonates with maternal risk factors of sepsis.

## **EFFECT OF DYSEMBRYOGENESIS IN CHILDREN WITH AUTISM**

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### **Background:**

Autism Spectrum Disorder is a behaviourally defined disorder characterised by deficits in social communication (both verbal and non verbal) and presence of repetitive, restricted patterns of behaviour and interest. It is a heterogeneous condition with varying etiologies, most of them being genetic or environmental. Children with autism are known to have increased prevalence of dysmorphic features, suggesting altered embryogenesis. There is a lack of studies evaluating the effect of dysembryogenesis in children with autism.

### **Objective:**

Evaluate the effect of dysembryogenesis on the development of children with autism.

### **Methodology:**

The Miles Autism Dysmorphology measure was used to classify 30 children with autism into complex autism (if they had dysmorphic markers) or essential autism (no dysmorphic markers). The development and the clinical severity of both groups were compared using standardized measures.

Prevalence of dysmorphic markers was also estimated among 140 normal children.

### **Results:**

Dysmorphic markers were more prevalent among autistic children compared to normal controls ( $p=0.0002$ ). Among the autistic children, 30% had complex autism and these children had earlier onset of stereotypic symptoms ( $p=0.0138$ ), earlier age of regression of language and social milestones ( $p=0.027$ ) and more developmental delay ( $p=0.0257$ ).

### **CONCLUSIONS:**

Dysembryogenesis in the prenatal period may contribute to the heterogeneity seen in children with autism

**Keywords:** Autism; dysmorphism; complex autism; essential autism

## PREDICTORS OF MORTALITY IN VERY LOW BIRTH INFANTS IN A TERTIARY HEALTH CENTRE

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### Background:

Very Low birth weight (VLBW infants, <1500g birth weight) are vulnerable to many neonatal complications because of the immaturity of the organs. This prospective observational study which was done to determine the relationship between the neonatal complications and the mortality in the Neonatal intensive care unit (NICU). 703 of these infants were followed up till death or discharge from the NICU.

### Aim:

To determine the predictors of mortality in VLBW infants who were admitted into the NICU

### Results:

The mortality rate of the cohort was 7.73% (5.85%-9.61% 95% CI). There was no difference between in the mortality rate between girls (8.9%) and boys (8.1%), [OR 0.9067 (0.53 to 1.5495% CI)  $p = 0.718$ ]. 30.7% of the infants were small for gestational age, however there was no difference in the mortality of the SGA infants as compared to that of appropriate for gestational age infants.

On the univariate analysis the following factors were significantly associated with mortality – Birthweight less than 1000 g ELBW infants, gestational age less than 28 weeks, perinatal asphyxia, septicemia, Grades 3 & 4 Intraventricular hemorrhage, Patent ductus arteriosus, Respiratory distress syndrome, Severe necrotizing enterocolitis, and Acute kidney injury. No antenatal or perinatal factors were significantly associated with mortality. Severe intraventricular hemorrhage and respiratory distress syndrome (RDS) were significantly associated with male sex.

In the multivariate logistic regression model the following factors predicted mortality - **birth weight of less than 1000g** [OR 3.39 (1.51-8.03, 95% CI,  $p < 0.001$ ], **gestational age of less than 28 weeks** [OR 10.73 (3.2-36.0 95%CI)  $p < 0.001$ ] **septicemia** [OR 6.4 (3.39-12.11, 95% CI,  $p < 0.001$ ], **severe Necrotizing enterocolitis (NEC)** [OR 15.81 (3.88-64.5, 95% CI,  $p = 0.003$ ], **perinatal asphyxia** [OR 12.77 (4.99-32.6, 95% CI,  $p < 0.001$ ] and **acute kidney injury** [OR 12.48 (4.0-38.96 95% CI),  $p < 0.001$ ] were the predictors of mortality. The final predictive model yielded an area under the ROC curve of 0.853 (0.798-0.909 95% CI;  $p < 0.001$ ) indicating good discrimination.

**Conclusions:** The survival rate of VLBW infants is comparable to that of the Western standards. Unfortunately septicemia remains a major cause of mortality in this country.

**CLINICAL FEATURES, BIOCHEMICAL PROFILE, RADIOLOGICAL CHARACTERISTICS, TREATMENT MODALITIES AND CORRELATION OF CLINICO-RADIOLOGICAL FEATURES AS MARKERS OF DISEASE SEVERITY IN INDIAN TYPE 2 DIABETES MELLITUS SUBJECTS WITH CHRONIC CHARCOT'S FOOT : EXPERIENCE FROM A SINGLE TERTIARY CARE CENTRE.**

**Riddhi Dasgupta**, Mahesh DM, Damien Cheema, Anna Cheema, Chaithanya Murthy, Surjit Singh, Bharthi , Sunitha , Anand<sup>1</sup>, Swapna Patil<sup>2</sup>, Henry Prakash<sup>2</sup>, Jyoti Panwar<sup>3</sup>, Koyeli M<sup>3</sup> , Sunil Agarwal<sup>4</sup>, Dukhabandhu Naik , Nihal Thomas

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**Background:**

Charcot foot is a serious and potentially limb-threatening lower-extremity complication of diabetes. First described in 1883, this enigmatic condition continues to pose challenges for clinicians.

**Objectives:**

1. To study the clinical, biochemical and radiological characteristics of T2DM patients with chronic Charcot's foot including Meary's angle and Calcaneal pitch as markers of disease severity.
2. To assess the different therapeutic modalities employed in them.

**Material and methods:**

A retrospective study was carried out in 300 consecutive patients with Type 2 Diabetes Mellitus attending the Integrated Diabetes Foot Clinic ,Department of Endocrinology, CMC Vellore from January 2012- December 2014. Out of these patients , 112 feet of 90 patients were identified as chronic Charcot neuroarthropathy based on clinical and radiological criteria and categorized according to Sanders and Mrdjencovic classification system. Meary's angle and Calcaneal pitch were calculated in them. IRB approved the study while data analysis was performed with the IPSS 17.0.

**Results and analysis:**

Forty-four patients (49%) presented with right-sided Charcot arthropathy, twenty four (27%) patients with left and twenty-two (24%) patients had both right and left sided

Charcot feet on first presentation. The mean duration of diabetes was 14.3 years ( $\pm 7.5$  years). Seventeen patients (19%) had a duration of 1 month or less, fifty-three patients (59%) had a duration of between 1-12 months and twenty (22%) had a duration of more than 12 months. Radiographically multiple regions of the foot were involved in 62 cases (55%) while the forefoot (101 feet, 90%) was the most commonly involved region. Calcaneal pitch  $< 17^\circ$  is significantly associated with midfoot ulcer, Meary's angle  $> 15^\circ$  with midfoot Charcot while both Meary's angle  $> 15^\circ$  and calcaneal pitch  $< 17^\circ$  are significant for joint instability ( $p=0.001$ ). Total Offloading was the gold standard of treatment for Charcot to reduce ulcer healing time.

### **Conclusions:**

Patients with significant neuropathy should have baseline X-ray with calcaneal pitch and Meary's angle assessed. Customised footwear (moulded insole) for all patients with Meary's angle  $> 15^\circ$  +/- calcaneal pitch  $< 17^\circ$  in order to prevent forefoot and midfoot ulcers.

## **STUDY OF DERMATOSCOPIC FINDINGS IN RELATION TO ACTIVITY IN VITILIGO**

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**Background:** Stability in vitiligo is a matter of debate and most of the time, assessment is based on patient's history which may be unreliable. A stable vitiligo patch without any signs of activity is a must before attempting any surgical procedure in Vitiligo. Dermatoscopy in vitiligo is a relatively under used technique and a study of its use in defining stable vitiligo is yet to be reported in literature.

**Aim:** To analyse the various dermatoscopic findings in Vitiligo to define patterns in stable as against unstable lesions.

**Methodology:** A prospective study was conducted in the Department of Dermatology on patients with a clinical diagnosis of Vitiligo and who are willing to participate in the study from September 2014 to September 2015. Clinical examination was done using Wood's lamp and dermatoscopic analysis using a handheld Dermlite DL3 dermatoscope. Vitiligo disease activity (VIDA) scoring was performed for the subjective assessment of disease activity.

### **Results:**

Chi-square test was used to test association between categorical variables and sensitivity and specificity was calculated with 95% CIs. Six dermatoscopic findings were assessed namely border of the lesions, pigment network within the lesion, perilesional hyperpigmentation, perifollicular pigmentation, presence of satellite lesions and micro-koebner phenomenon.

### **Conclusion:**

Stable lesions were defined as lesions with sharp borders, absence or reticular pigmentation within the patch, presence of perilesional and perifollicular pigmentation, absence of satellite lesions and micro-koebner's phenomenon.

## CLINICAL FEATURES AND OUTCOMES OF PATIENTS WITH VIRAL ENCEPHALITIS - 10 YEAR DATA FROM THE DEPARTMENT OF GENERAL MEDICINE

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### Abstract

We did a retrospective chart review of patients admitted and discharged with a diagnosis of viral encephalitis over a period of 10 years from 2004 to 2013. IRB and Ethics board clearance was obtained. We searched the discharge diagnoses using the terms 'encephalitis' and 'meningoencephalitis.' We looked at patterns in clinical presentation, laboratory features, radiological features, treatment and outcome. Cases due to non viral etiologies like tuberculosis, scrub typhus, fungi, autoimmune disorders and malignancies were excluded. We also excluded Rabies. There were a total of 175 patients of which 58.3% were males and 62.9% belonged to the age group < 40 years. Fever was present in 92.5% and seizures in 76.5%. Headache was present only in 48% and vomiting in 38%. The duration of illness was < 2 weeks in 92.3%. Aetiological diagnosis was available only for 16 out of 139 patients tested with CSF PCR. An adverse outcome (death or discharged against medical advice) was seen in 26.85% of patients. Univariate analysis revealed association of mortality with presence of seizures, altered sensorium, and fever; absence of headache; and thrombocytopenia. Viral encephalitis continues to have high mortality and the aetiology in majority of them remains undiagnosed.

# **FEMORAL ARTERIAL BLOWOUT POST GROIN RECURRENCE IN VULVAR CARCINOMA – NOVEL ENDOVASCULAR MANAGEMENT**

PS BHAGEERATHY<sup>1</sup>, Anitha Thomas<sup>1</sup>, Vinotha Thomas<sup>1</sup>,Ajit Sebastian<sup>1</sup>,Vinu Moses<sup>2</sup>,  
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## **Background:**

Femoral artery blowout is an extremely rare complication described in advanced vulvar malignancy with groin recurrence. Though clear-cut management algorithm for the management of primary vulvar carcinoma exists based on evidence, there is no standard of care available for groin recurrence complicated with femoral artery rupture due to the rarity of the condition.

## **Case:**

We report a rare case of life-threatening haemorrhage due to right femoral artery blowout in a 60 year old postmenopausal lady with recurrent vulvar carcinoma after palliative radiotherapy. Digital subtraction angiography followed by covered stent deployment across the arterial defect was done successfully to achieve haemostasis while salvaging the lower limb perfusion thereby saving the life of the patient with less perioperative morbidity when compared to a major palliative surgery.

## **Conclusion:**

Minimally invasive endovascular approach is a highly desirable, safe and effective palliative management option with reasonably good quality of life post-procedure when compared to complex and morbid surgeries in the setting of femoral arterial blowout following groin recurrence in advanced vulvar cancer.

## **OUTCOME OF EARLY STAGE CERVICAL CARCINOMA TREATED WITH RADICAL HYSTERECTOMY**

S. Angeline Gnanamalar, Anitha Thomas, Ajit Sebastian, Vinotha Thomas, Rachel Chandy, Abraham Peedicayil, Department of Gynecologic Oncology Christian Medical College , Vellore Tamil Nadu-632004, India

### **Objectives:**

The objective of this study was to evaluate the survival outcome, prognostic factors and complications of Radical hysterectomy for the treatment of early stage (I-IIA) cervical carcinoma at our institution.

### **Methods:**

The medical records of cervical cancer patients who underwent Radical hysterectomy and pelvic lymphadenectomy at Christian Medical College Hospital over 10 years between January 2001 and December 2010 were reviewed. There were 61 patients in the study period. Survival rate was analyzed using Kaplan-Meier life table analysis. Chi-square test was used for statistical analysis for significance wherever appropriate. Survival outcome and pattern of recurrence in subgroups were analyzed by using Log rank test.

**Results:** The 5 year survival rate was 95% with a follow up of 88% . 8 (14.8%) of the 54 patients available for follow up had recurrence of disease within 5 years which were mostly local(88%) . Our study group had 7(12%) stage IA , 44(72.2%)stage IB1, 5(8 %) stage IB2 ; and 5(8 %)stage IIA. The most common histology was squamous cell carcinoma (79%) followed by adenocarcinoma (18%). Deep stromal invasion was seen in 39% and LVSI in 25%. Pelvic nodes positivity was seen in 9(14%), parametrial involvement in 4(7%) and vaginal margin involvement in 12(20%) Intra-operative complications were seen in 11(18%). In the post-operative period, 18(30% )of patients had urinary tract infections, 14(23%) developed voiding dysfunction, 6( 10%) had wound dehiscence and 1(1.6%) had ureteric fistula. Late complications included 2(3.7% )bladder dysfunction, 2(3.7%) bowel complications and 1(1.8%) lymphedema. 22(41%) received adjuvant Radiation Therapy due to presence of intermediate and high risk factors..

### **Conclusion:**

Early stage cervical cancer patients treated with radical hysterectomy with pelvic lymphadenectomy have favorable survival outcome and minimal morbidity with proper case selection and good operative technique.

## **IGG4 RELATED DISEASE-INTERESTING CASE REPORT**

Dr. Joyce Pascal Rozario , Dr Ann Mary, Dr John Mathew, Dr Anjali Lepcha Dept. - ENT 4,  
Christian Medical College.

**Category: Surgical speciality**

**Type :**

**Poster presentation.**

**Background:**

IgG4-related disease (IgG4-RD) is a novel clinical disease entity characterized by: a tendency to form tumefactive lesions at multiple sites, a dense lymphoplasmacytic infiltrate rich in IgG4 plasma cells, fibrosis and elevated serum IgG4 concentrations.

**Objective:**

IgG4-RD is an under-recognized disease process that can affect numerous organ systems with high morbidity.

**Methods & Results:**

We present a patient a 63 year old man, presented with complaints of right earache and discharge since twenty five days, associated with right facial weakness, known diabetic. On examination, patient had stenosis of bilateral external auditory canal, right grade IV LMN facial palsy and hyperpigmented plaque lesion. After investigation, including CT temporal bone, patient underwent right canal wall down mastoidectomy and canaloplasty and PORP. Extensive granulation was seen in mesotympanum, hypotympanum, attic, aditus, antrum and along the facial nerve, which was cleared. The material was sent for IGG4 special stains and serum IGG and IGG4 levels and ratio were estimated. Patient was treated with preoperative and postoperative steroids and antibiotics. Postoperatively patient had grade II facial palsy and improvement of ear discharge. Patient was subsequently followed up in rheumatology for further treatment.

**CONCLUSION**

Although the combination of histopathological features and immunohistochemical stain results can provide strong supportive evidence for the diagnosis of IgG4-related disease, careful correlation with the clinical scenario and imaging characteristics of a particular patient is often required to arrive at a definitive diagnosis. More awareness of this diagnosis and its expanding treatment options will significantly improve patient care.

## **OXYTETRACYCLINE AS A SCLEROSANT IN THE MANAGEMENT OF MOREL-LAVELLE LESIONS: A PILOT STUDY IN TWO PATIENTS**

### **Abstract:**

Morel-Lavallee lesions are haemolympathic collections that occur following blunt trauma. These are due to closed degloving injuries which cause shearing injury deep to the subcutaneous plane, causing disruption of capillaries and lymphatics. This results in a persistent collection containing blood, lymph and necrotic fat. Magnetic resonance imaging is the investigation of choice in the evaluation of these post-traumatic lesions. Early diagnosis and management is beneficial and can avoid infection or skin necrosis. Surgical excision, including complete excision of the capsule of the Morel-Lavallee lesion, is required. For recurrent lesions and to prevent recurrence after the primary excision, oxytetracycline instillation, as a sclerosant, is a novel adjunct as experienced in management of two cases.

## **SINO ORBITAL PERIPHERAL GIANT CELL TUMOUR-A RARE CASE REPORT**

Dr Mary John<sup>1</sup>, Dr Apar Pokharel<sup>1</sup>, Dr Arathi Simha<sup>2</sup>, Dr Anne Jenifer Prabhu<sup>3</sup>, Dr Sunithi Mani<sup>4</sup>, Dr Mary Kurien<sup>1</sup>

<sup>1</sup>Department of ENT-2, <sup>2</sup>Department of Ophthalmology, <sup>3</sup> Department of Pathology, <sup>4</sup>Department of Radiology, Christian Medical College, Vellore.

### **Salient Features:**

Giant cell reparative granulomas are non-neoplastic reactive tumours, thought to arise as a reparative hyperplastic response to an insult.

### **Case Report:**

Six year old boy presented to our outpatient department with complaints of right sided watery discharge from the eye followed by rapidly progressive swelling in the medial canthal region for three months. On examination, a lobulated firm swelling was palpable in the medial canthal area with significant proptosis and lateral displacement of the right eyeball. Ophthalmological evaluation suggested vision to be 6/18 in right eye and 6/6 in left eye.

### **Treatment:**

The mass was excised in toto with endoscopic assistance through a lateral rhinotomy incision with superior eyelid extension. Histo pathological examination of the specimen was consistent with peripheral giant cell tumor.

### **Conclusion:**

Although rare, Peripheral Giant Cell Tumour should be still considered as one of the possible differentials for any rapidly progressive mass in the sinorbital region. Treatment of choice is en bloc surgical excision. Peripheral Giant Cell Tumour of sinorbital areas is extremely rare and this case is presented in view of developing insights about management of such a rare clinical entity.

## **“EFFECTIVENESS OF CAPILLARY LACTATE LEVELS IN MONITORING PERFUSION OF THE FREE AND PEDICLED TISSUE TRANSFER.”**

### **Introduction:**

It has been reported that the salvage rate of free and pedicled flaps is inversely related to the time interval between the onset of pedicle impairment and their clinical recognition. In most reconstructive plastic surgical centres, routine clinical flap monitoring has been the most frequently used non-invasive and low cost technique. Therefore there is a need for efficient, accurate and cost effective flap monitoring tool for accurate early detection of impairment in perfusion of flap.

### **Methods:**

In this prospective observational study, a novel method was used and flap capillary lactate levels were measured at regular intervals and clinically co-related. This biochemical parameter was compared to standardized clinical monitoring during the first four days. Two sets of data (eventful versus uneventful postoperative period) were analyzed to define the thresholds of lactate values for diagnosis of pedicle complications, and to establish parameters for this screening test.

### **Results:**

Over a period of 12 months, 16 patients were included, with three pedicle impairments, complication threshold was defined as flap capillary lactate of  $\geq 3.5$  mmol/L, in order to obtain a sensitivity of 66.67 % and a specificity of 84.62 %, and a positive predictive value of 50 % and negative predictive value of 91.67 %. Modification of flap capillary lactate measurements appeared in average 5 hours earlier than clinical symptoms in pedicle impairment. The mean cost of four day monitoring was about Rs.1330/-.

### **Conclusion:**

This simple and cost effective technique could be used as a routine technique in monitoring free flaps to improve safety and survival of flaps in reconstructive surgery.

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## **JUVENILE-ONSET RECURRENT RESPIRATORY PAPILOMATOSIS: OUR EXPERIENCE**

**AUTHORS:** Kalaiarasi Raja, Mary John, Syed Kamran Asif, Naina Picardo, Department And Institution: Department Of ENT CMC Vellore.

### **ABSTRACT**

Juvenile onset recurrent respiratory papillomatosis (JORRP) is a benign neoplasm of the upper respiratory tract, involving primarily the larynx, caused by Human papilloma viruses (HPV) type 6 and 11. The most common presenting symptom of JORRP is hoarseness followed by slowly progressive stridor. In the most severe cases, a tracheostomy may be necessary, but this procedure carries a risk of dissemination of lesion to the peristoma and to the lower airway. This case series highlights how we managed the airway without tracheostomy using endoscopic microdebridement (EM) technique.

### **MATERIALS AND METHODS**

Retrospective case series of seven children treated for recurrent laryngeal papillomatosis at our tertiary care institute between 2012 and 2015. They were in the age groups -range of one year eight months to nine years. All of them underwent endoscopic microdebridement of laryngeal and tracheal lesions.

### **RESULTS**

All seven children with JORRP underwent endoscopic microdebridement under spontaneous anaesthesia. Male: Female ratio was 1.6:1. Out of seven children with JORRP, four children were tracheostomized outside for airway obstruction. Out of this four children, two were asymptomatic after surgery and successfully decannulated. Two children were asymptomatic and three are under follow up.

### **CONCLUSION**

Although there is no "cure" for JORRP, repeated surgical excision is the primary treatment modality. The goal of surgery is removal of as much of the papilloma as possible without damaging normal structures. Recently, the EM can quickly debulk papilloma with less operative time, decreased mucosal injury and a cost benefit. EM is a minimally invasive and safe technique which provides accurate removal of papillomas, although recurrence is often unavoidable. Spontaneous ventilation during surgery is ideal. Traditionally many centres end up in doing tracheostomy for airway obstruction, but we could manage our patients without tracheostomy using our anaesthetic and surgical technique

## **SIMPLE DEVICE TO DETERMINE THE PRESSURE APPLIED BY PRESSURE CLIPS FOR TREATMENT OF EAR KELOIDS**

Authors: Dr Gaurav Chaturvedi, Dr Aashish Sashidharan, Prof Dr Ashish Kumar Gupta  
Department Of Plastic Surgery, Christian Medical College and Hospital, Vellore (TN)

### **Background:**

The ear piercing is being practiced from ancient times. Ear piercing is frequently associated with keloid causing cosmetic disfigurement. Various treatment modalities are described for it, but none of this treatment is solely effective and is associated with high recurrence. The pressure therapy following surgical excision and intralesional steroid injection has least recurrence rate and better cosmetic outcome. Pressure can be applied on ear by various methods using spring clips, binder clips and magnet discs but the pressure applied by these clips are not monitored and can cause uncontrolled/suboptimal pressure on its application leading to skin necrosis. We describe a simple device to measure pressure applied by these clips to be optimal for compression therapy.

### **Aim:**

To make Device to measure the pressure applied by pressure clip over ear keloid

### **Methods:**

We devised an instrument with help of our Bioengineering department using following components-

Force sensitive resistor (FSR), electrical wires, resistors, capacitors, converter, amplifier, diode, nine volt cadmium battery and a multimeter.

For pressure assessment the sensors has to be compatible and non-invasive to the human body as the sensor will be applied on the ear along with the pressure clips. We chose the force sensitive resistor (FSR 402, Probots Techno Solutions, Bangalore, India) for assessing pressure applied by the pressure clips on ear. Force sensitive resistor is a polymer thick film device which senses the change in resistance based on the force applied on it. The active area of force sensitive resistor (FSR) detects the force applied over it. So to measure any pressure between the heads of a clip, place the FSR in between the heads of the clips to measure pressure applied by clips. When the clip closes it applies force over the active area of FSR and this is reflected as a change in resistance across its leads. The FSR has two output wires from which signal is transmitted to the circuit and voltage generated get reflected in Multimeter. The voltage developed is directly proportional to the force applied at the force sensitive resistor. The voltage detected is then converted to pressure in millimeters of mercury (mm of Hg) using pressure voltage graph.

**Results:**

Pressure measured for different clips used for ear keloids are

Spring clip: 25-50mmHg Depending on number of coils.

Binder Clip: 55-70mmHg

Magnetic Discs: 30-40mmHg

**Conclusion:**

As these pressure devices can cause uncontrolled pressure if not adjusted as per the requirement can cause pressure necrosis of skin thereby adding to the burden. Our simple and easy to use device can be used to measure pressure applied by these clips before its application and to customise and periodically regularise the pressure clips so that it applies optimal pressure

## **MORBIDITY AND MORTALITY AFTER TONSILLECTOMY IN CHILDREN**

### **AIM:**

To study the morbidity and mortality rates in children and analyse the possible etiological factors

### **MATERIALS AND METHODS:**

Analysis of case records of children below 16 years who underwent tonsillectomy with or without adenoidectomy in past 44 months in a tertiary care centre. Variables analysed were demography, indication for surgery, duration of symptoms before surgery, intraoperative findings, any known comorbidity, post operative day and type of morbidity and its management.

### **RESULTS:**

470 case records of children under 16 years of age who underwent tonsillectomy in past 44 months were studied. Mean age was 6.2 years. Male to female ratio was 1.1:0.9. Most common indication was Chronic hypertrophic adenotonsillitis (98%). Morbidity was 14.68% (69/470) overall, most common being bleeding 7.4%(35/470), followed by pain 4.6%(21/470), fever 0.8%(4/470), observation due to associated comorbidities 0.8%(4/470), and 2 had complications unrelated to surgery (drug reaction and pneumonia). Major morbidity was bleeding comprising of hospital admission more than 48 hours, including 6 re explorations under GA. We had one mortality due to secondary hemorrhage.

### **CONCLUSION:**

Tonsillectomy is one of the most common procedures in children. In spite of our low threshold to admit the patient in postoperative follow up, morbidity and mortality rates are comparable with world literature.

## RESEARCH PAPER ORAL PRESENTATION ABSTRACT

### **Title of the study**

Evaluation of a protocol for Post thyroidectomy PTH measurement as a predictor of hypocalcemia in facilitating early postoperative discharge

Dr. S.Suganya, Department of Endocrine Surgery, Dr. Victoria Job, Department of Biochemistry, Dr. Pooja Ramakant, Dr. Deepak Thomas Abraham, Dr. MJ Paul, Department of Endocrine Surgery.

### **Background**

Thyroidectomy is a commonly done elective procedure with low rate of complications. In a clinical situation of limited bed availability as in the study unit, early discharge of appropriate patients is needed for adequate turnover of thyroidectomy patients. Short hospital stay also significantly reduces the cost of surgical care. Complications like haematoma, bilateral recurrent laryngeal nerve palsy are rare and occur mostly within 24 hours of surgery. Hypocalcemia occurs in the rate of 40% and can be predicted with good sensitivity and specificity by doing serum parathyroid hormone in the post operative period. Hence a new protocol and change in practice has been established in the department based on the serum parathyroid hormone and patients were discharged in the first postoperative day after 24 hours of postoperative stay in the current study.

### **Aim**

To evaluate a protocol using post thyroidectomy parathyroid hormone (PTH) to facilitate early discharge of patients

### **Methods**

This is a prospective observational study done from August 2014 to August 2015. Sample size for the study was 125 patients. Serum PTH, calcium, albumin were done the morning following the surgery. Patients who had normocalcemia, PTH greater than or equal to 6 pg/ml and were willing to get discharged early were discharged in the first postoperative day with adequate contact information in case of any complication and were also followed up in the outpatient department after discharge.

### **Results and conclusion**

Serum PTH was found to have good sensitivity and specificity of 94.5% and 73.5% for predicting hypocalcemia with area under the ROC curve of 0.8.

88.2% patients were discharged in the first post operative day, none of these patients were re admitted with any complication. 1.3% had hypocalcemia on follow up in the

postoperative period and was managed conservatively in the outpatient department with oral calcium and vitamin D supplements.

Hence the protocol is incorporated as a routine standard of care after this study and select patients are now discharged postoperatively on the first day.

## **PHARYNGEAL RECONSTRUCTION WITH SUPRACLAVICULAR ARTERY ISLANDED PEDICLED FLAP – A CASE REPORT**

Authors: Dr. Pranay G., Dr. Cecil T.T., Dr. John C. Muthusami, Dr. K.Vidya, Departments and institution: Surgery Unit-1, CMCH Vellore.

### **Background:**

Reconstruction following resection of head and neck malignancies can be complex and it is often challenging to restore form and function. These patients are often debilitated and poorly nourished, requiring a quick and simple operative procedure with minimal complications to ensure rapid recovery and an easy rehabilitation.

### **Aim:**

To present a case report of pharyngeal reconstruction with a supraclavicular islanded pedicled flap following a total laryngectomy with partial pharyngectomy for supraglottic carcinoma.

### **Methods:**

A 55 year old male was diagnosed with poorly differentiated squamous cell carcinoma of the supraglottis, cT4a N2a M0. He was planned for a total laryngopharyngoesophagectomy with bilateral modified radical neck dissection and a gastric pull-up for reconstruction. Based on the intra-operative findings, the extent of resection was limited to a total laryngectomy and partial pharyngectomy. An on-table decision was taken to perform the reconstruction of the anterior pharyngeal wall with a left sided supraclavicular artery islanded pedicled flap (SCAIF).

### **Results and Conclusion:**

The patient had an uneventful post-operative recovery and on sequential barium swallow studies, showed smooth transit of barium from the residual hypopharynx into the neoconduit, without aspiration into the lower airways. There was no donor site morbidity. He has completed adjuvant radiation therapy and is doing well on follow-up.

SCAIF can be an effective alternative to the conventional pectoralis major myocutaneous flap for pharyngeal reconstruction. It is an easily harvested fasciocutaneous flap with smaller bulk, minimum donor site morbidity, reduced intra-operative time, effort and cost

when compared to a free flap reconstruction. SCAIF has the potential to replace standard regional and free flaps in head and neck surgery.

## **BILATERAL ABSENCE OF THE OMOHYOID MUSCLE – A CASE REPORT**

Authors: Dr. Pranay G., Dr. Cecil T.T., Dr. John C. Muthusami, Dr. K.Vidya, Departments and institution: Surgery Unit-1, CMCH Vellore

### **Background:**

Anomalies of the omohyoid muscle or one of its bellies is an uncommon occurrence. The omohyoid muscle is an important landmark during a selective neck dissection. Absence or duplication of one of the muscle bellies have been reported in literature, as well as anomalous origin or replacement by a different muscle.

**Aim:** We present a case of complete absence of the omohyoid muscle, detected incidentally during a routine neck dissection performed for an oral cavity malignancy.

### **Methods:**

A 63-year-old female with moderately differentiated squamous cell carcinoma of the left retromolar trigone, cT4b N2a M0, was undergoing composite resection, during which it was noted that the omohyoid muscle was not encountered during neck dissection. A complete search of the ipsilateral neck was performed and there was no evidence of either the superior or inferior belly of the omohyoid. A retrospective examination of the preoperative images showed an absence of the muscle bellies on CT scan.

### **Results and Conclusion:**

The omohyoid muscle forms an important and useful landmark to determine the levels of lymph nodes in the neck during lymphatic clearance of the neck for malignancy. Anomalies of the omohyoid muscle or one of its bellies, though unusual, should be borne in mind, especially when performing a selective neck dissection.

## **UNUSUAL METASTASES FROM SALIVARY MUCOEPIDERMOID CARCINOMA – A CASE REPORT**

Authors: Dr. Pranay G., Dr. John C. Muthusami, Dr. K.Vidya, Departments and institution: Surgery Unit-1, CMCH Vellore

### **Background:**

Mucoepidermoid carcinoma of one of the most common neoplasms of the parotid gland. High grade mucoepidermoid carcinomas have a greater risk of locoregional recurrence and systemic metastases even after adequate therapy and the risk is lifelong, necessitating annual follow-up.

### **Aim:**

We present an intermediate grade mucoepidermoid carcinoma of the parotid with local recurrence and an unusual pattern of distant metastases to the colon and adrenal glands, not yet reported in literature.

### **Methods:**

A 69 year old male presented with recent onset of a recurrent swelling in the left parotid region, following a total conservative parotidectomy for intermediate grade mucoepidermoid carcinoma ten years ago. There was no facial palsy. He was found to be anemic and was positive for fecal occult blood. On further evaluation, was found to have a submucosal growth in the colon, 40 cms from the anal verge, which was biopsied and found to be a metastatic deposit. PET-CT revealed more metastatic deposits in the hilar region and both adrenals.

### **Results and Conclusion:**

Due to multiple distant metastatic deposits, the multidisciplinary team had decided to provide treatment with palliative intent.

Malignant salivary gland tumours require a comprehensive evaluation at the initial presentation to rule out distant metastases. Due to the risk of locoregional recurrence and distant metastases, annual and lifelong follow-up of patients is mandatory even after completion of therapy. As demonstrated in the present case, metastases can occur at unusual sites and may take years to develop. Hence, annual surveillance protocols may need to be extended to intermediate grade tumors as well, to enable early detection of potentially resectable metastatic deposits.

## **INFLUENCE OF AGE ON THE STAGE AT PRESENTATION IN ORAL CAVITY SQUAMOUS CELL CARCINOMA**

Authors: Dr. Rajinikanth J., Dr. John C. Muthusami, Dr. K.Vidya, Departments and institution: Surgery Unit-1, CMCH Vellore

### **Background:**

The occurrence of oral squamous cell carcinoma (OSCC), as per Indian data, is traditionally in the fifth decade, presenting a decade earlier than the Western population. Some studies have shown an increasing incidence of OSCC in the younger age group (<40 years) over the past few years. The influence of age on stage at presentation, rate of recurrence or prognosis and disease-specific mortality has been difficult to establish from the studies conducted so far.

### **Aim:**

To look at the influence of age on the stage at presentation in oral cavity squamous cell carcinoma.

### **Methods:**

We collected data from the Head and Neck Oncology multidisciplinary team conferences at CMCH Vellore, conducted from December 2012 to December 2014, pertaining to age, gender, oral cavity subsite involved and clinical stage at presentation, in previously untreated patients of OSCC.

### **Results and Conclusion:**

The patients were divided into two study groups of young and old, either less than or greater than 40 years of age. There were 542 patients brought to the MDT conference in the study period, of which 86 were young and 456 were old. The influence of age on the stage at presentation was analysed and yielded interesting results. The cause for presentation at different clinical stages could be related to the oral cavity subsite involved. The most common cancer in each age group, as well as the difference between the genders is also presented. Further analysis of the habits of these patients could help understand the nature, progression and prognosis of OSCC in the young and old.

## **GRACILIS MUSCLE FLAP FOR ANAL SPHINCTER REPAIR – IS POST OPERATIVE ELECTRICAL STIMULATION NECESSARY?**

**Dr Ashwani Kumar Singh**<sup>1</sup>, Dr Gohil Amish Jayantilal <sup>1\*</sup>, Dr Mark Ranjan Jesudason<sup>2</sup>, Dr Sukria Nayak <sup>3</sup>, Dr Ashish Kumar Gupta<sup>1\*\*</sup>

1. Department of Plastic and Reconstructive Surgery Unit II.
2. Department of General Surgery Unit II,
3. Department of General Surgery Unit IV,

### **Introduction:**

The surgical options for managing anal incontinence where routine procedures have failed include transposition of striated muscles, primarily gracilis and gluteus maximus, and implantation of artificial sphincters. This study presents the results of electrically stimulated graciloplasty in 25 patients with severe anal incontinence in which other surgical procedures had failed.

### **Methods & Materials:**

The gracilis muscle was transposed around the anal canal according to a previously described technique. Both preoperative & postoperative subjective findings and objective findings (using anal manometry) were recorded for each patient. The findings were analyzed using biostatistical parameters.

### **Results:**

The analysis of the subjective and objective findings showed that for majority of the patients rectal compliance (fecal continence) was much better than findings recorded by anal manometry.

### **Conclusion:**

Conventional gracilis flap for anal sphincter repair is an equally useful option for recovery of anal and rectal function in patients with anorectal incontinence as against dynamic or electrically stimulated graciloplasty.

## **NASAL HEMANGIOPERICYTOMA CAUSING ONCOGENIC OSTEOMALACIA**

Dr Jim Divakar<sup>1</sup>, Dr Samantha S Kumar<sup>2</sup>, Dr Naina Picardo<sup>1</sup> <sup>1</sup>Department of ENT-2,  
<sup>2</sup>Department of Endocrinology, CMCH, Vellore

### **Background:**

Oncogenic osteomalacia is a rare paraneoplastic syndrome characterised by hypophosphatemia, overexpression of hypophosphaturic factor and multiple fractures. It is generally associated with benign mesenchymal tumours of head and neck.

### **Case Report:**

34 year old male presented with multiple non-traumatic fractures for one year. He was evaluated to have hypophosphatemia with a TMP-GFR of 1.9mg/100ml. Nasal endoscopy revealed a small vascular lesion in the left nasal cavity. Computed tomography of the nose confirmed a vascular enhancing lesion arising from the left lateral wall while PET scan reaffirmed no more such tumours. Complete resection of the tumour resulted in normalisation of the phosphate levels. Histopathology showed a mesenchymal tumor with a benign angiomatous pattern suggestive of Haemangiopericytoma. Post operatively patient achieved normal ambulation with physiotherapy.

### **Conclusion:**

Oncogenic osteomalacia is an uncommon paraneoplastic syndrome due to tumour induced phosphate dysregulation. Due to the rarity of this entity, the small and obscure nature of these tumours and the non-specificity of the clinical symptoms there can be a long delay between onset of illness and diagnosis. A high index of suspicion is needed to patients with idiopathic fractures to rule out tumour induced osteomalacia. A combination of endoscopic and radiological evaluation can help in early detection of these lesions. Complete resection of tumour can lead to cure of the disease.

## **ASSESSMENT OF ANAL INCONTINENCE AMONG PATIENTS WITH FISTULA IN ANO, AT PRESENTATION AND AFTER SETON TREATMENT**

Komala Abhishek Reddy, Prof Mark Ranjan Jesudasan. Dept of General Surgery – II  
(Colorectal surgery)

### **Objectives:**

- 1- To assess prevalence of baseline anal incontinence among new patients presenting with fistula in ano.
- 2- To determine the incidence of new onset anal incontinence following draining seton surgery for fistula in ano

### **Methods:**

A prospective observational study with a sample size of 196 patients who presented with fistula in the department of General Surgery II (Colorectal surgery) during the study period. All the patients had incontinence assessment by Kamm's scoring and Wexner's scoring system at presentation in outpatient clinic. They also had anal manometry assessment. The set of patients who had a draining seton surgery done, underwent similar assessment 3 months later to assess continence.

### **Results:**

1. As per Kamm's scoring system 26.2% patients and according to Wexner's scoring system 23.5% patients had some form of incontinence at presentation itself.
2. There was no statistically significant post operative new onset of incontinence following draining seton surgery.

## **PROTOCOL FOR BURNS NUTRITION**

Dr Rahul Gorka, Department of Plastic Surgery, CMC VELLORE

### **Background:**

Some specific areas are of concern in burns patients such as maintenance of lean body mass, limitation of protein wasting and to enhance wound healing. After initial assessment and resuscitation of the burns patient the nutrition should be started as early as possible after the admission. Various studies have reinforced the importance of early start of nutrition to decrease hospital stay, mortality and morbidity of the Burns patient.

### **Aim:**

To Perform an audit on burns nutrition protocol at CMC Vellore.

### **Methods :**

About 35 patients were studied out of which 25 were males and 10 were females. All these patients received Burns Formula Diet as major source of calories and protein requirement.

### **Inclusion Criteria**

- All patients admitted with burns ranging from 20 to 80 % Body surface area
- Age group: 16 to 65 years

### **Exclusion Criteria**

- Admission after 72 hours following burns
- Comorbid illnesses:
  - Diabetes Mellitus
  - Psychosis
  - Renal Failure.

### **Results and Conclusion-**

Forty percent of the patients were in the age group of 26-35 years. About 62.85% patients had >30% Total Body Surface Area(TBSA) involvement. Average Calorie intake was 3209.98 kcal and average protein intake was 152.42 gm. Average Admission and Discharge weights were 62.53 kg and 60.80 kg respectively. Twenty five patients(78.12%) suffered weight-loss while 7 patients(21.88%) gained weight. Average Serum Albumin was >3.5 g/dl in 29 patients(82.86%) while serum pre-albumin was >15 mg/dl in 27 patients(84.37%). Twenty four patients(75%) had total lymphocyte count >1500 cells/dl.

Average hospital stay was 26.60 +/- 10.40 days while each patient underwent average 2.30 +/- 0.50 surgeries . Clinically significant Bacteremia ( $>10^5$ ) was present in 68% patients, 30% had blood stream infection while 3% had pneumonia. We have been able to achieve satisfactory nutritional goals by Burns formula diet (BFD) which is cheaper as compared to commercially available enteral feeds for better clinical outcome in burns patients.

## **AZOLES VERSUS AMPHOTERICIN-B AS PRIMARY THERAPY FOR CHRONIC GRANULOMATOUS INVASIVE FUNGAL SINUSITIS**

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### **Background:**

The treatment of chronic granulomatous invasive fungal sinusitis (CGFS), a rare form of chronic invasive fungal sinusitis is controversial. While amphotericin-B was the traditional drug of choice for all cases of invasive fungal sinusitis, there is increasing evidence to support the use of azoles for CGFS.

### **Aim:**

The aim of the present study is to compare the response to treatment of patients with CGFS with amphotericin-B and azoles as primary therapy after definitive surgery at a tertiary care centre over the last 10 years.

### **Methods:**

Retrospective review of the last 10 year clinical records of patients of CGFS who were treated with definitive surgery followed by antifungal therapy was performed. Baseline demographic characteristics, clinical presentation, stage of disease, type of surgery done, fungal organism isolated, histopathology, type of antifungal drug given, disease status at the end of therapy were recorded and analyzed.

### **Results:**

Sixteen male and 5 female patients were diagnosed with CGFS, based on typical histopathological and fungal smear/culture results. *Aspergillus flavus* was isolated from 85.7% cases. Stage 1 patients had resectable sinonasal disease, stage 2 had additional spread to orbit/palate and stage 3 had extensive disease. Follow up ranged from 4 months to 8 years. Residual disease was seen in all but one patient who received amphotericin B as first line therapy and in none of those who received itraconazole or voriconazole ( $p < 0.001$ ). Even those who received azoles as second line therapy were disease free at last follow-up.

### **Conclusion:**

Surgery followed by itraconazole or voriconazole for Stage 1 and 2 disease and voriconazole for stage 3 disease is recommended for a good outcome. Amphotericin B is not recommended as first line therapy for CGFS.

## **PLACENTAL SITE TROPHOBLASTIC TUMOR OF THE VAGINA.**

Authors: Jeyasudha.R, Ajit Sebastian, Anitha Thomas, Abraham Peedicayil. Department and Institution: Obstetrics and Gynaecology, Christian Medical College, Vellore.

### **Introduction:**

Placental site trophoblastic tumour (PSTT) is a very rare tumor and unique form of gestational trophoblastic disease (GTD) arising from the placental implantation site. It constitutes 1–2% of all GTN.

### **Case report:**

28 year old P1L1 ,delivered 9 months back, presented with swelling in the vagina of one month duration. Her cycles were regular. She was evaluated elsewhere , biopsy from the lesion was reported as "Poorly Differentiated Squamous cell Carcinoma" of Vagina. PET- Scan showed hyper metabolic activity in lungs and no demonstrable activity in vagina. She was referred to the tertiary care unit for further treatment.

On examination , suburethral nodule about 2x1.5cm was seen .The Beta-hCG level was 594.1 mIU/ml . Here at CMCH, repeat biopsy of the vaginal lesion was suggestive of PSTT. She was diagnosed with Gestational Trophoblastic Neoplasia , FIGO stage III- High Risk with a WHO – Score of six. She received six cycles of EMACO.

### **Discussion:**

PSTT can occur after a normal pregnancy, abortion, term delivery, ectopic pregnancy or molar pregnancy. It is difficult to distinguish between PSTT and choriocarcinoma on the basis of clinical history and imaging alone. These patients often have persistent low levels of serum hCG .The most common presenting symptoms of PSTT are amenorrhoea and vaginal bleeding . Grossly it is a poorly circumscribed mass with a diffuse infiltration of intermediate trophoblasts . Diagnosis is confirmed by dilatation and curettage (D and E) and hysterectomy but meticulous evaluation of metastasis is mandatory.

The clinical and biological behavior of PSTT is difficult to predict . Poor prognostic factors are an interval of more than 2 years from known antecedent pregnancy, mitotic count >5/10 HPF, extensive necrosis and extension outside the uterus.

### **Conclusion:**

In PSTT, the risk factors are: stage, mitosis rate, elapsed time since last pregnancy at the time of diagnosis, age of the patient, and the degree of myometrial invasion. The role of hysterectomy must be underlined. The possibility of a treatment conservative of fertility can be discussed with patients who wish to become pregnant again.

## **NON SYNDROMIC MULTIPLE BASAL CELL CARCINOMA OF FACE: A CASE REPORT**

Authors: Shruti Venkitachalam, Pranay Gaikwad, John C. Muthusami, Department of Surgery, Unit I, CMC Vellore

### **Background:**

Basal cell carcinoma is the most common malignancy in humans. Multiple basal cell carcinomas are usually syndromic in origin, as part of the Gorlin syndrome, Bazex-Dupre-Christol syndrome, Rombo syndrome, etc. Occurrence of hereditary autosomal dominant non-syndromic multiple BCCs has also been described. Here we present a case of multiple BCCs of non-syndromic, non-hereditary nature in an otherwise healthy elderly female.

### **Methods:**

We present a case report of a 66 year old housewife who presented with the complaints of multiple, painless, pigmented lesions on both sides of the face since two years. She had no history of similar lesions elsewhere and no premalignant skin conditions. She had no congenital deformities and no family history of skin malignancies. On examination, eight suspicious lesions were found on both sides of the face, almost all above the Ohngren's line, with varying degrees of pigmentation. Larger lesions had raised, rolled out edges. Since an incisional biopsy from one of the lesions showed nodular basal cell carcinoma, surgical excision of all the lesions with adequate margins was performed and all defects closed primarily.

The wound healing and resultant cosmesis were satisfactory. Five out of the eight suspicious lesions showed features of basal cell carcinoma, of which two were superficial spreading type and three were nodular type. The patient is currently on follow-up.

### **Conclusion:**

Multiple basal cell carcinomas can be part of a spectrum of manifestations of various syndromes, as described in literature. They can also be part of a hereditary predisposition to multiple cutaneous malignancies. The present case report is an example of multiple BCCs arising in a non-syndromic setting, which necessitates close follow-up and proper evaluation of both the patient and their progeny, to ensure early detection and treatment of any lesions that may develop over the course of time.

## **CLINICAL, RADIOLOGICAL, HISTOPATHOLOGICAL TUMORS OF THE TONGUE- ARE WE REALLY ADDRESSING A SINGLE ENTITY?**

Authors: Shruti Venkitachalam, J. Rajinikanth, John C. Muthusami, Department: Department of Surgery, Unit I, CMC Vellore.

### **Background:**

Oral cancers are the 3<sup>rd</sup> most common cancers in the Indian subcontinent. Cancers of the tongue are the most common oral cancers worldwide and second most common in the Indian subcontinent (after Lower gingiva-buccal complex tumors). Cancers of the tongue are evaluated clinically (inspection and palpation) and radiologically, and these parameters are used to stage the disease preoperatively. Histopathological analysis helps to detect the exact stage and other prognostic factors.

Tumors with extrinsic muscle involvement have been categorized as T4a in AJCC staging of oral cancers, with an associated worse prognosis. Although the involvement of these can be suspected on clinical examination by the presence of ankyloglossia, a more lucid indication of this is via imaging. Histopathological examination is unable to differentiate between intrinsic (not considered as T4a) and extrinsic muscle involvement since both are simply skeletal muscle under the microscope.

### **Methods:**

A retrospective analysis of all consecutive operated patients with tongue cancers from 2011 to 2015, who had a preoperative MRI, was done. The data was assessed to find out correlation between preoperative MRI showing extrinsic muscle involvement and final histopathological, whether pathological skeletal muscle involvement was considered as pT4a and whether that contributed to decision making about adjuvant management.

### **Results:**

It was found that a significant number of patients were staged as pT1/2 (depending on the size of the tumor) in spite of skeletal muscle involvement on HPE. Some of these received adjuvant therapy due to other bad prognostic factors. In spite of comparison with preoperative MRI, it is a matter of debate whether the skeletal muscle involvement reported on the HPE truly represents extrinsic muscles; and that probably leads us to another fallacy of the TNM staging system.

### **Conclusion:**

Careful study of the preoperative MRI (location of tumor, involvement of extrinsic muscle) needs to be assessed while interpreting final HPE reports in tongue cancers. A prospective study in this direction would be suggested to assess the influence of this on survival.

## **'VASCULAR PARAMETERS IN ASSESSMENT AND MANAGEMENT OF JUVENILE NASOPHARYNGEAL ANGIOFIBROMA'**

**Authors:** Dr Raghav Mehan<sup>1</sup>, Dr Rupa Vedantam<sup>1</sup>, Dr Shyamkumar N K<sup>2</sup>, Dr Vinu Moses<sup>2</sup>, Dr Munawwar Ahmed<sup>2</sup>, Dr Suraj Mammen<sup>2</sup>. Department of ENT-3<sup>1</sup> and Radiology<sup>2</sup>, CMC Vellore.

### **Background:**

Juvenile nasopharyngeal angiofibroma (JNA) is a highly vascular tumour affecting adolescent males. These tumours are predominantly supplied by external carotid artery (ECA) circulation via the internal maxillary artery (IMA). Accessory supply may originate from multiple branches of ECA and even branches from internal carotid artery (ICA).

### **Aim:**

To evaluate the relationship between tumour stage and tumour vascularity in patients who underwent preoperative angiography and embolization for JNA.

### **Methods:**

A 10 year retrospective chart review of patients operated for JNA was done. Tumours were staged according to Radkowski system, a clinicoradiological staging system. Patients underwent preoperative angiography and embolization followed by excisive surgery within 24 hours. The pattern of vascular supply of tumours was ascertained. The predominant feeding vessel, number and laterality of feeding vessels, accessory feeders and ICA supply were determined. Any association between tumour stage and vascularity was evaluated.

### **Results:**

Forty one male patients with a mean age of 17 years were studied. Most (80.5%) patients presented with advanced stage (stage III) tumours. JNA is predominantly supplied by the terminal branch of internal maxillary artery. Eight different vessels were seen to supply these tumours, the most common being the distal branch of ipsilateral IMA. Multiple feeding vessels were found more commonly in stage III tumors (75.8%) than early stage tumours ( $p < 0.001$ ). Bilateral supply was seen in only 42.4% of stage III tumours. There is no predominance of bilateral supply over ipsilateral supply even in very large tumours. All tumours having accessory supply were stage III, predominantly from the internal carotid artery (29.3%) and ascending pharyngeal artery (14.6%). No association was found between those with intracranial extension and ICA supply ( $p = 0.27$ ). In those patients who underwent revision surgery, repeat angiography showed new vessel supply in majority (83.3%).

### **Conclusions:**

ICA supply does not separate tumours with intracranial extension from those with deep skull base involvement without intracranial extension. Surgical planning cannot be dependent on staging alone and should include preoperative assessment of tumour vasculature by angiography.

# **TO DETERMINE THE RELIABILITY OF STIMULATED SERUM THYROGLOBULIN (SSTG) LEVELS AS OPPOSED TO UNSTIMULATED SERUM THYROGLOBULIN(USTG) IN THE MANAGEMENT OF POST-THYROIDECTOMY PATIENTS WITH PAPILLARY THYROID CARCINOMA [PTC].**

## **Authors:**

Dr Saumya Sunny, Dr Julie Hephzibah, Dr David Mathew, Dr Nylla Shanthly, Dr Regi Oommen, Nuclear Medicine, Christian Medical College, Vellore

## **Background:**

Post surgery follow up of patients with PTC was done after cessation of T4 supplement for a period of one month prior to their visit. Most patients complained of symptoms of hypothyroidism during this period. This study was aimed at determining the reliability of sSTg as opposed to uSTg.

## **Methods:**

Thyroglobulin of patients who underwent total thyroidectomy for PTC and on follow-up from December 2014 until September 2015 were analyzed retrospectively. Patients with both uSTg and sSTg levels assessed within a gap of maximum 1 year were selected and their profile was reviewed according to ATA guidelines 2009.

## **Results:**

Out of 36 patients studied, 12 were found in each of the low, medium and high risk group. A significant increase (more than 2 ng/ml) in sSTg over uSTg was noted in 40% (5/12) of the low risk, 75% (9/12) of the medium risk and 90% (11/12) of the high risk group. This was corroborated with tumor burden as determined by additional clinical, USG neck and TWBS findings.

## **Conclusion:**

It was noted that less than half of the low risk patients showed a significant difference between stimulated and unstimulated serum thyroglobulin. Majority of the patients in the medium and high risk group showed a significant difference between the two, affecting the final management.

## WHO DOES THIS SHOE FIT? A COMPARISON OF AFRICAN AND INDIAN CLUBFOOT.

Presenting author- Dr Sanjay K Chilbule, Co-author- Dr Vrisha Madhuri, Dept –Paediatric Orthopaedics, Christian Medical College, Vellore, Tamil Nadu, India.

### Introduction

Bracing is the inevitable part of the management of clubfoot. Steenbeek brace is the most commonly used brace in developing world. But templates for the shoes for this brace are designed from African children's data. This study provides the templates for clubfoot brace shoes corresponding with the sizes of corrected clubfeet of Indian children.

### Materials and methods

Prospective measurement of foot sizes was carried out for idiopathic clubfoot after completion of treatment following Ponseti method. Syndromic, arthrogryptic, neurogenic and relapsed clubfeet were excluded. Apart from demography, lower limb length, tibia length, calf circumference, shoulder width was measured. Standardized protocol was developed to measure foot parameters which are important for designing the shoe, which included foot length, forefoot width, forefoot circumference, midfoot circumference, ankle to heel circumference, heel height and heel width. The same parameters were measured from Steenbeek shoe templates. After comparing both measurements, the templates were designed based on sizes of the Indian corrected feet for foot length of 7 to 10 cm.

### Results

Leg and foot parameters were measured for 112 corrected clubfoot patients with mean age of 2.02 years (1.92 SD). There was the statistically significant difference for forefoot circumference ( $p=0.01$ ), midfoot circumference ( $p=0.02$ ), ankle to heel circumference ( $p=0.01$ ) and heel height ( $p=0.04$ ). Forefoot ( $p=0.7$ ) and heel width ( $p=0.6$ ) were not significantly different for both groups. Indian children, for the same foot length, require significantly shorter connecting rod as compared the Steenbeek templates ( $p=0.04$ ).

### Conclusion

This is the first study to provide the templates for the shoe based on objective data from corrected clubfoot which can be fixed over any type of connecting rods. Indian children require the clubfoot brace shoes with less high heel counter and lateral flaps and shorter connecting rod.

## **IATROGENIC ABDOMINAL WALL NON TUBERCULOUS MYCOBACTERIAL INFECTIONS: A MAJOR CONCERN**

Dr. Suchita Chase, Dr. Vijayan P, Dr. Abinaya R N, Surgery IV, Department of General Surgery, CMC Vellore.

### **Background:**

Non tuberculous mycobacteria are opportunistic pathogens. They are classified based on rate of growth and pigmentation pattern. Rapidly growing mycobacterial pathogens are implicated in delayed postoperative wound infections. They are found in soil, dust, water, animals and hospital environments. Nosocomial transmission usually occurs through improperly sterilized medical equipment. Unsterile water is also a frequent source of rapidly growing mycobacteria. In chronic postoperative wound infection, a high index of suspicion is necessary to diagnose these infections and minimise delay in treatment. Clinical manifestations include abscesses, nodules and discharging sinuses. Diagnosis is confirmed by culture of the specific pathogen from discharged material or tissue biopsy. Treatment involves surgery and antibiotic therapy based on in-vitro susceptibility.

### **Objective:**

The aim of this study is to assess the demographic profile, clinical presentation, sensitivity of imaging and treatment response in patients with iatrogenic anterior abdominal wall non tuberculous Mycobacterial infections.

### **Methodology:**

This was a retrospective study of all patients who presented to CMC Vellore with iatrogenic abdominal wall non tuberculous mycobacterial infections from 2012 to 2015. The data was collected retrospectively from the hospital's electronic database and included demographic profile, investigations and treatment performed.

### **Results:**

A total of 52 patients were included in this study, out of which 43 were female and 9 were male. Their ages ranged from 22 to 63 years, with a median of 34 years. All patients presented with discharging sinuses on the anterior abdominal wall. The time between operation and development of symptoms ranged between 2 and 48 months. Out of 52 patients, one had infection following insulin injection, 28 patients had infections following laparoscopic surgery and 23 patients had infections following open surgery. All patients who developed infection following a surgery had been operated elsewhere. 50 patients were evaluated with abdominal imaging (41 patients had CT scan of the abdomen and 9 patients had ultrasound of the abdomen), which demonstrated intra-abdominal extension in 9 patients and multiple tracts in 25 patients. Intra-operatively, 9 patients were found to have intra-abdominal extension and 34 patients had multiple tracts. Correlating the two, the sensitivity and positive predictive value of CT abdomen in detecting intra-abdominal extension were both found to be 44.4%. The sensitivity and positive predictive value of CT abdomen in detecting multiple tracts were 69.7% and 92.0% respectively. All 52 patients underwent debridement, followed by antimicrobial therapy in 51 patients. Tissue cultures showed 8 patients positive for MGIT culture, of which 1 was positive for TbPCR as well. Of

these 8 patients, *Mycobacterium fortuitum* was noted in 7 and *Mycobacterium tuberculosis* was seen in 1. The remaining 44 patients did not show any growth on tissue culture or PCR. Histopathological examination showed evidence of necrotizing granulomatous inflammation in 51 patients. 3 patients had recurrence, of which 1 had not receive antimicrobial therapy.

**Conclusion:**

The incidence of non tuberculous Mycobacterial surgical site infection has increased, probably due to increased awareness and improved atypical mycobacterial culture techniques. A strong suspicion based on the clinical presentation is imperative to prevent delay in diagnosis and for the initiation of correct treatment. Histopathological examination and mycobacterial cultures are mandatory for diagnosis. We recommend routine preoperative imaging with CT abdomen for all patients. Although its sensitivity to identify the intra-abdominal extension is low, the predictive value to identify multiple tracts is high. This will aid in complete removal of all foci of infection, which will decrease chances of recurrence. Treatment involves wide excision of all lesions and administration of a combination of antibiotics based on in-vitro susceptibility. As per our hospital infection control guidelines, a combination of amikacin, clarithromycin and levofloxacin is the preferred antibiotic regimen . Antibiotics are continued for a minimum period of 3 months to ensure complete healing to prevent recurrence.

## **NEXT DAY PTH AS A PREDICTOR OF POST-THYROIDECTOMY HYPOCALCEMIA**

### **Introduction:**

Total thyroidectomy is significantly complicated by parathyroid dysfunction and hypocalcemia which impacts decisions regarding the time of discharge and quantum of calcium supplementation. This study aimed at evaluating the accuracy of next day PTH as a predictor for post-thyroidectomy hypocalcemia.

### **Material and Methods:**

A prospective observational study of fifty patients undergoing thyroidectomy was conducted. Postoperatively blood samples were collected for PTH, calcium, albumin and phosphorous on the morning following surgery. Serum calcium and phosphorous were monitored once daily in the postoperative period till discharge. Statistical analysis was performed using STATA I/C 10.1.

### **Results:**

15/50 (30%) patients had biochemical post-operative hypocalcemia (S. Ca <8mg/dl). In twenty patients (40%) postoperative PTH was low (<8pg/ml). There was a significant association between PTH <8pg/ml and the presence of post-operative hypocalcemia ( $p=0.029$ ). Among the patients symptomatic for hypocalcemia, 9/13 (70%) had PTH levels < 8pg/ml. The area under the Receiver Operating Characteristic (ROC) curve was 0.7 and a PTH of 4.1- 6 showed the highest sensitivity and specificity (80% and 60% respectively).

### **Conclusion:**

PTH performed the day after surgery is an accurate test to predict post-thyroidectomy hypocalcemia. PTH < 6pg/ml can be used as our institution's cut-off value. Department protocols for calcium and vitamin D supplementation following total thyroidectomy may be formulated based on the appropriately timed local postoperative PTH value to assist safe and early discharge of patients.

## **PRECISION GRIP – A TOOL FOR SCREENING PATIENTS WITH PARKINSON'S DISEAS FOCAL HAND DYSTONIA AND CERVICAL SPONDYLOTIC MYELOPATHY FROM HEALTHY CONTROLS**

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### **Background:**

Impaired hand function is a frequent finding in movement disorder patients. The need to objectively evaluate hand dysfunction in a clinical setting becomes imperative in clinical decision making on duration of recovery, management, treatment modalities, and rehabilitation.

### **Aim:**

Therefore, aim of the study is to identify parameters with optimized cutoff values to characterize precision grip task as a screening tool for patients with known clinical diagnosis of Parkinson's disease (PD), Focal hand dystonia (FHD) and cervical spondylotic myelopathy (CSM).

### **Methods:**

All participants performed precision grip task by gripping and lifting two object weights (1.3N, and 1.7N) under dry and very wet skin conditions. Force, rate and temporal parameters were compared between controls and patient groups. Study design 1: compared idiopathic PD patients (n=25, 18 males and 7 females; mean age=54.4 ± 9.5) and controls (n=50, mean age=48.8 ± 8.4). Study design 2: compared FHD cases (n=13, mean age=46.6 ± 11.7) with controls (n = 44, mean age=49.4 ± 9.6). Study design 3: compared CSM patients (n = 20, mean age=49.2 ± 10.3) with controls (n=45, mean age=48.9 ± 10.4).

### **Results:**

ROC curves were constructed and a discriminatory "cut-off" value for every parameter was determined. Loading (360 ms cut-off) and lifting phase duration (740 ms cut-off) parameters identified 21/25 as PD's. Slip force (1.18N cut-off) identified 11/13 patients with FHD. Loading phase duration (310 ms cut-off) and rate at which the grip force is applied (13.20 N/sec cut-off), identified 15/20 as patients with CSM.

### **Conclusion:**

The results clearly demonstrate that temporal latency, slip force and combination of temporal and rate parameters enhance the screening accuracy of PD, FHD and CSM

patients respectively. Our study provides evidences in favor of precision grip task as an effective assessment tool in screening patients with hand dysfunction. Optimal cutoffs and parameters characteristic for each disease condition may aid in better understanding of hand function.

# FACTORS AFFECTING SENTINEL LYMPH NODE METASTATIC RATES USING METHYLENE BLUE DYE ALONE IN PATIENTS WITH EARLY BREAST CANCER IN RESOURCE LIMITED COUNTRIES.

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## Introduction

Sentinel Lymph node biopsy (SLNB) using Methylene Blue dye alone in patients with Early Breast Cancer (EBC) has been shown to be equally potent as other scintigraphy techniques for managing axilla in clinically node negative EBC patients. Factors affecting SLN metastatic rates may help us to decide further need for axillary dissection.

## Aim

To assess factors affecting SLN metastatic rates using Methylene Blue dye only technique for doing SLNB in patients with EBC and clinically node negative disease.

## Method

Retrospective study done on patients with EBC undergoing SLNB using Methylene blue dye during Jan., 2012 to Dec., 2014. All operative and clinic- pathological details of these patients were recorded. Data analysed using SPSS version 17. Independent sample T test applied.

## Results

Total of 67 patients with EBC and node negative disease underwent SLNB. Mean age was 49.9 years (range 27- 75 years). Surgical details included mastectomy (n=41) and breast conservation (n=26). Mean tumor size was 2.4 cm (range 0.5 to 5.3cm). Mean number of sentinel nodes (blue stained/ palpable) detected was 3 (range 0 to 7). Technical success of Methylene blue dye in detecting nodes was seen in 98.5% (n=66) patients. SLNs were positive on histology in 12 patients (1 node+ve (n=5), 2 nodes +ve (n=6) and 3 nodes +ve (n=1)) and 4 had axillary lymph node dissection done in same sitting. Intra-operative frozen section analysis was not done. Body mass index (BMI) and age of patient did not affect SLN positivity rates. Patients with SLNs  $\geq 5$  stained blue, tumor size  $\geq 5$ cm and tumor location in upper outer quadrant, hormone positive, lymphovascular invasion (LVI) present had higher chance of SLNs being positive on histology as compared to patients with smaller tumor size, tumor in inner quadrants, LVI absent, hormone negative and  $< 5$  SLNs stained blue. There are no loco-regional recurrences till date. Adjuvant therapy included chemotherapy (n=65), radiation therapy (n=36) and hormone therapy (n=43).

Characteristic features	SLN metastatic (%)	P value
Age		0.44
≤ 50 years	9/40 (22.5)	
>50 years	5/27 (18.5)	
BMI		0.81
<25	7/33(21.2)	

≥25	6/27(22.2)	
Tumor location		0.05
Outer quadrants	13/48 (27.1 )	
Inner quadrants	1/15(6.7)	
Retroareolar	0/4 (0)	
Lymphovascular invasion		0.003
Present	10/25(40)	
Absent	4/42(9.5)	
Estrogen receptor		0.035
Positive	12/41(29.3)	
Negative	2/26 (7.7)	
Progesterone receptor		0.001
Positive	13/37 (35.1)	
Negative	1/30 (3.3)	
Her2 Neu		0.351
Positive	2/16 (12.5)	
Negative	12/51 (23.5)	
Tumor size		0.053
<5cm	11/62(17.7)	
≥5cm	3/5(60)	
SLN number stained blue/ palpable		0.039
<5	8/52(15.4)	
≥5	6/15(40)	

## Conclusion

SLNB using Methylene blue dye alone is feasible with high success rates in patients with early breast cancer and node negative disease. Patients with tumors  $\geq 5$ cm, more than 5 SLNs removed, LVI present and tumors in upper outer quadrant have higher likelihood of SLNs to be positive on histology.

## **POST-INTUBATION LARYNGEAL INJURIES IN A PAEDIATRIC INTENSIVE CARE UNIT OF TERTIARY HOSPITAL IN INDIA: A FIBROPTIC ENDOSCOPIC STUDY**

Authors – Dr. Bhartendu Bharti Sharma, Dr. Syed Kamran Asif, Dr. Kala\*, Dr. Ajoy Mathew Varghese, Dr. Mary Kurien, Presenter - Dr. Syed Kamran Asif, Dept – Department of ENT – Unit 2 & \*PICU, CMC, Vellore.

### **Background**

Post-intubation laryngeal injuries have a significant impact on the outcome of the ICU stay. Majority go unnoticed with no or minimal sequelae, but a few can have a major impact on the quality of life of the patient. Bedside fibre-optic endoscopy can be a valuable and cost effective tool for early identification and intervention.

### **Aim:**

To identify the predictors for post- intubation laryngeal injuries in children  
Patients and methods – A prospective study with 34 children who met the inclusion & exclusion criteria were included in the study after informed consent from the parents. A bedside flexible fibre-optic laryngoscopy was done within the first 24 hours after extubation. Laryngeal injuries were documented and graded. Individual types of laryngeal injuries were correlated to the duration of intubation, size of the tube, the experience of the intubator and patient's demographics.

### **Results:**

97% had acute laryngeal injury of which 88% were significant. Erythema was the most common form of injury (97%). Duration of intubation, with a mean of 4.5 days, shows a trend towards significance (p value-0.06) for association with subglottic narrowing. Laryngeal injuries were similar in both cuffed & uncuffed tubes. Age, size of the tube and skill level of the intubator did not correlate with the laryngeal injuries. 18% required intervention for post extubation laryngeal edema. 10% of children had post extubation stridor; 2 out of 3 needed surgical intervention (6%).

### **Conclusion:**

Post extubation laryngeal injuries are common and fibre-optic endoscopy is a cheap and cost effective tool for bedside evaluation of pediatric larynx. Early diagnosis can help in preventing long term sequelae.

## **IMPACT OF SIGNET RING CELL HISTOLOGY IN TREATMENT RESPONSE AND SURVIVAL OUTCOME OF ADENOCARCINOMA OF THE RECTUM**

**AUTHORS:** Abinaya. R.N, Rajat Raghunath, Mark Ranjan Jesudason, Colorectal Surgery, Christian Medical College, Vellore.

### **Background:**

Signet ring cell carcinoma is a rare type of adenocarcinoma characterised by mucin secreting cancer cells that contain intracytoplasmic mucin. Signet ring cell adenocarcinoma of the rectum has been shown to present in a younger population and has also been shown to have a worse prognosis in comparison with other mucinous and non-mucinous adenocarcinomas of the rectum.

### **Objective:**

The aim of this study is to assess the response to treatment, survival and prognosis in patients with signet ring cell adenocarcinoma of the rectum.

### **Methodology:**

This is a retrospective study of all patients who were diagnosed with signet ring cell adenocarcinoma of the rectum in CMC Vellore from 2013 to 2015. The stage at presentation, response to treatment and other data was collected from the hospital's electronic database.

### **Results:**

Signet ring cell adenocarcinoma was seen in 44 of the 512 patients with rectal cancer presenting to CMC in a 2 year period from 2013 to 2015. Out of these 30 (68%) were males and 36 (75%) patients were under 40 years of age. The stage of the disease at the time of presentation was locally advanced in 28 (63%) patients and metastatic in 12 (27%) patients. In patients with locally advanced disease, 5 (17%) received only neo-adjuvant chemotherapy, 13 (46%) received only long course chemo-radiation therapy and 6 (21%) received both neo-adjuvant chemotherapy and long course chemo-radiation therapy. Following neo-adjuvant treatment, 6 (25%) patients underwent surgery, 6 (25%) of patients were inoperable and 7 (29%) of patients were lost to follow up. Out of 6 patients who underwent operative intervention 2 (33%) had Hartmann's procedure and 4 (67%) had APE (Abdomino-perineal excision). In the operated group, 2 (33%) patients had recurrence within 6 months, 3 (50%) patients are on adjuvant treatment and 1 (16%) patient was lost to follow up. In patients with metastatic disease, 4 (33%) patients had pelvic peritoneal disease and 8 (66%) patients had visceral metastasis.

### **Conclusions:**

The Signet ring cell adenocarcinoma of the rectum is more commonly seen in younger patients and also shows male predominance. Most of these patients had locally advanced or metastatic disease at the time of presentation which may be indicative of its aggressive nature. In this study, we observed most of the patients failed to show response to neo-adjuvant therapy and had uniformly poor eventful outcome. This data highlights a need for further evaluation of signet ring cell adenocarcinoma of the rectum as it does not respond to standard treatment protocols.

## **REGURGITANT MASS BY MOUTH, FIBROVASCULAR POLYP OF THE ESOPHAGUS: CASE SERIES**

Beulah Roopavathana. S, Iniansamarasam, MylaYacob, VijayAbraham, Sam Varghese George, SudhakarChandran, Christian Medical College and Hospital, Vellore

### **Introduction:**

Fibrovascular polyp of the Esophagus is a rare condition with only 110 cases reported in literature thus far. The polyp gains clinical importance for its sheer size, that matters. Symptoms spectrum ranges from fatal asphyxiation to an incidental finding in asymptomatic patients.

### **Materials & Methods:**

Data collected from a prospectively stored database, during the period between 2006 and 2015, was entered on a proforma and analyzed.

### **Results:**

We had 4 patients in the study period between 2006 and 2015. All 4 patients had presented with mass protruding from the mouth and 2 patients also had experienced dysphagia to solids. Three patients had esophagogastroduodenoscopy, 1 patient had endoscopic ultrasound. None had pre-operative biopsy. Three patients had Pre-operative CECT abdomen and 1 patient had MRI abdomen. Three patients had pedicle at the UES (upper esophageal sphincter) and 1 had at pyriform sinus. All 4 patients had Cervical Esophagotomy and excision of polyp, with feeding jejunostomy done in 3. All histopathology, reported as fibrovascular polyp. Post-operative period, Barium swallow was done in all patients, 1 patient had anastomotic leak, managed conservatively and 1 patient had no leak, but had an outpouching at the level of arch of aorta, with no stricture in the esophagus.

### **Conclusion:**

Giant fibrovascular polyp, is a rare condition that can lead to a preoperative diagnostic dilemma. Therefore although rare, knowledge of this condition may help in appropriate surgical treatment. This condition could be managed safely by simple cervical Esophagotomy and excision in most cases as the pedicle is commonly attached at the post-cricoid region.

## **A CASE SERIES OF OF IMPACTED DENTURES IN THE OESOPHAGUS AND ITS COMPLICATIONS, INCLUDING SECONDARY TRACHEOESOPHAGEAL FISTULAE.**

Beulah Roopavathana. S, Iniansamarasam, MylaYacob,, Sam Varghese George, VijayAbraham, SudhakarChandran, Christian Medical College and Hospital, Vellore

### **Introduction:**

Dentures are a rare cause of oesophageal foreign body impaction. However, impacted dentures present a unique subset of problems. Their presentation and diagnosis is often delayed because most dentures are composed of radiolucent material which evades detection on plain X ray. Sharp clasps pose a serious risk of perforation if endoscopic removal is attempted. Formation of a tracheo-oesophageal fistula at the site of impaction complicates management and literature on this topic is rare.

### **Materials and methods:**

We performed a review of patients with impacted dentures managed at our unit from Jan 2004 – Dec 2015. Data was analyzed from a prospectively maintained database. Details of clinical presentation, diagnostic methods, management and outcome were entered in a proformas and analyzed.

### **Results:**

There were 10 patients with impacted dentures in the study period. All patients gave history of accidental swallowing of dentures and time of presentation from index event, ranging from 3 days to 5 years. All presented with dysphagia. The 5 patients with diagnosed TOF had presented with cough, 2 patients also had fever and breathlessness.

Plain X ray detected the denture in only one patient. The others were diagnosed using CT and endoscopy.

Impaction was at cervical oesophagus in 4 and at thoracic oesophagus in 6, with associated tracheoesophageal fistula at the site of impaction in 5 patients.

Seven on-table Endoscopic removal was attempted and failed in 6 patients. Three patients underwent neck exploration 5 patients underwent thoracotomy for removal of denture and 1 patient was discharged at request after failed endoscopic removal.

Four patients with TOF had repair done. Primary closure and reinforcement with Intercostal muscle flap, in 3 patients and left sternocleidomastoid muscle flap in 1 patient. Three patients had minor anastomotic leaks which were managed conservatively and One patient had pneumonia. There was no mortality and all patients were well at discharge. Post-operative Barium swallow was done in 8 patients was normal in 7 patients & mild circumferential narrowing at anastomotic site in 1 patient.. On follow-up 1 patient had

trachea-cutaneous fistula, had operative closure of the same and 1 patient had left vocal cord palsy.

**Conclusion:**

Delay in detection of Impacted dentures poses an unique set of problems which may preclude endoscopic removal. Surgery is the mainstay of therapy. Retained impacted dentures can lead on to impaction and formation of a TOF. Presence of a TOF is an indication for surgical repair with good outcome. Primary prevention by increasing awareness of the potential seriousness of the impacted dentures is necessary.

# **“PROSPECTIVE RANDOMISED CONTROLLED TRIAL COMPARING EARLY POST-OPERATIVE COMPLICATIONS IN PATIENTS UNDERGOING LOOP COLOSTOMY WITH AND WITHOUT A STOMA ROD”**

**Authors:** Joshua Franklyn, Rohin Mittal, Mark Ranjan J., Benjamin Perakath, **Department:** Surgery unit 2, CMC Vellore.

## **Background:**

Loop colostomy is a commonly performed operation which involves exteriorizing the colon with the intention of providing faecal diversion. The common complications associated with the operation are retraction, muco-cutaneous separation, stoma related necrosis, bleeding, congestion to name a few. The loop of colon has traditionally been anchored on the abdominal wall by a rod or bridge placed under the bowel across the trephine. This is believed to prevent stomal retraction and provide better diversion by separating the proximal and distal loops. On the other hand, the rod can cause congestion, oedema and vascular compromise. We wished to test the hypothesis that the rod is unnecessary when a stoma is created. This is the first randomised controlled trial that has questioned the use of a rod while doing a loop colostomy.

## **Outcomes assessed:**

### *Primary Outcome:*

To compare the retraction rates of stomas created by both the operative techniques.

### *Secondary Outcomes:*

1. Bleeding from the stoma
2. Mucocutaneous separation
3. Stomal or parastomal abscesses
4. Stomal necrosis
5. Stomal oedema
6. Skin necrosis

## **Methods:**

Prospective randomized controlled trial. They were randomly allotted into one of two arms, rod or no rod. Allocation concealment was by an opaque envelope which was opened by the operating surgeon after the colon was exteriorised. One hundred and one patients were randomised. There were 51 in rod and 50 in no rod arm.

## **Results:**

One hundred and one patients were randomised into the study, 51 in the 'rod arm' and 50 in the 'no rod arm'. Five patients were lost to follow up. Their baseline demographics and categorical variables were similar

Early post-operative stomal necrosis, oedema and congestion were statistically and clinically significantly increased in the arm randomised to the rod. In 25% of patients the

stoma rod had to be removed prematurely due to complications which were attributed to the rod. There was no statistical or clinical difference in the retraction rates 4/49 (Rod group) and 4/45 (No rod group) ( $p = 0.900$ ) of patients undergoing loop colostomy with or without stoma rod.

**Conclusion:**

The loop colostomy can be created safely without using a stoma rod.  
The stoma rod does not help in preventing retraction of the colostomy.

## **PREOPERATIVE ULTRASONOGRAPHIC DETERMINATION OF DEEP SURGICAL MARGIN IN SQUAMOUS CELL CARCINOMA OF BUCCAL MUCOSA – A PILOT STUDY**

**Authors:** \*Dr. Cecil Thomas, \*Dr. Pranay Gaikwad, \*Dr. Rajinikanth, \*Dr. Amit J Tirkey, \*\*Dr. Betty Simon, \*\*Dr. Aparna Irodi, \*\*\*Dr. Banumathi Ramakrishna, \*\*\*Dr. Sramana Mukhopadhyay, \*Dr. John C Muthusami

### **Departments:**

\*Department of General Surgery – unit 1, CMC, Vellore, \*\*Department of Radiodiagnosis, CMC, Vellore, \*\*\*Department of Pathology, CMC, Vellore.

### **Background:**

Locoregional recurrences, in carcinoma of the buccal mucosa, vary between 40-80%. An adequate surgery can ensure good surgical margins and ensure better locoregional control. It can also avoid the need for adjuvant therapy, in the absence of other risk factors. The deep margin, i.e skin over the cheek, has been traditionally preserved if not grossly involved on inspection or palpation. Two studies have addressed the objective evaluation of this margin with imaging. Both these studies showed good locoregional control, achieved by aggressive surgical management based on an objective evaluation of the deep surgical margin.

### **Aim:**

To study the impact of deep margin assessment by ultrasound and subsequent surgical clearance in carcinoma of buccal mucosa

### **Methods:**

All patients with carcinoma of the buccal mucosa with no clinical involvement of the skin were included (study group). A preoperative ultrasound of the involved cheek was done in addition to routine staging. If the distance of the tumor from the skin was  $\geq 13$ mm then the overlying skin was preserved and if  $<13$ mm it was excised. Histopathological evaluation for mucosal and deep margins were done. Patients were followed up after surgery to look for locoregional recurrences. A similar cohort of retrospective patients (retrospective group) treated between Jan. 2008 and Dec. 2010 in the same department was chosen for comparison.

### **Results:**

The study (n=15) and retrospective groups (n=24) were similar with respect to pathological tumor and nodal staging. All patients in the study group required skin excision. The deep margin was negative in 85.7% in the study group and 13.3% in the retrospective group. On univariate analysis, pT stage, pN stage, thickness of lesion and distance of tumor from skin were not significant associated with status of deep margins. The mucosal margins were also significantly different in both study and retrospective groups.

### **Conclusions:**

Ultrasonography is reliable in achieving clear deep margins in carcinoma buccal mucosa

## IDENTIFICATION OF ERYTHROID SPECIFIC ENHANCERS BY ANALYZING GENOME WIDE ASSOCIATION OF TRANSCRIPTIONAL CO-ACTIVATORS CBP AND P300

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### Abstract:

Enhancers are crucial for gene regulation and demonstrate tissue, cell and developmental stage specificity. Recent studies have shown that analyzing genome wide association of CBP and p300 predicts the tissue specific transcriptional enhancers in various tissues. Our aim was to study the transcriptional enhancers in haematopoietic stem cells and erythroid cells to identify the role of these genomic regions in determining transcriptional regulation of haematopoietic stem cell maintenance and erythroid differentiation. We obtained CD34+ cells from normal healthy donors after magnetic activated cell sorting from peripheral blood mononuclear cells. The purified CD34+ cells were differentiated by *ex vivo* erythropoiesis using a serum-free two-phase liquid culture system. Cells were collected at 2 different time points, before (day 5 in culture) and after differentiation (day13 in culture). ChIP assays were carried out using antibodies against CBP and p300 and two independent libraries were created using Illumina TrueSeq library kit as per the manufacturer's instruction. The libraries were sequenced in Illumina HiSeq producing 50 bp single end reads. A control sample (without antibody) was run as input as a background control. Sequenced reads were mapped to the human genome (UCSC Genome Browser hg19). To identify ChIP-Seq peaks, Model-based Alignment of ChIP-Seq (MACS) program was used with a p value of <10e-5 and enrichment factor > 5. Localization of the binding sites relative to the annotated genes and co-localization of CBP/p300 were determined using the ChIP seek analyzer. Validation of co-occupancy at selected regions was performed by quantitative-PCR analysis.

Genome wide analysis of CBP and p300 enrichment showed these co-factors are highly enriched in introns and intergenic regions than the gene promoters suggesting that these co-activators efficiently mark enhancers in the haematopoietic stem cells and erythroid cells. Co-localization of CBP/p300 with erythroid transcription factors (GATA1, KLF1, NFE2 and TAL1) was performed. The results showed that CBP/p300 are highly associated with erythroid transcription factors during differentiation indicating that transcriptional activator complexes consisting of these transcription factors and CBP/p300 in enhancer mediated transcriptional regulation in erythropoiesis. The sites of CBP/p300 occupancy were correlated with the transcriptome data and it was found that most of the top regulated genes were enriched with CBP and p300 within the intronic region in erythroid cells. We then explored whether CBP and p300 are enriched in the regions associated with DNA polymorphisms relevant to erythroid cell traits and observed that CBP/p300 occupy at *HBD* (5'UTR), *BCL11A* (intron 2) and *HBS1L-MYB* intergenic region which contains polymorphisms linked with levels of fetal haemoglobin (HbF). We also found enrichment of these co-activators in previously mapped erythroid specific enhancers such as *IKZF1*, *ANK1* and *ABO* gene loci.

Gene ontology (GO) was performed using GREAT for regions associated with CBP and p300 (binomial fold enrichment >4) and the results indicated that the genes associated with CBP were involved in erythrocyte development whereas the genes associated with p300 were found to regulate erythroid differentiation. These erythroid specific genes delineated in our study also showed conservation in mouse and were found to be associated with erythroid cell phenotypes. We also found significant enrichment of CBP and p300 in erythroid cells compared to haematopoietic stem cells for several genes that have not been previously characterized for erythroid differentiation. Taken together, our findings elucidated the roles of co-activators CBP and p300 in erythroid differentiation and further we identified these factors are enriched in previously known and new erythroid specific enhancers in association with cell specific transcription factors. Functional evaluation of the newly identified regulatory elements bound by CBP and p300 in the erythroid cells will provide insights in to erythroid cell development and differentiation.

**Keywords:** Erythroid differentiation, CBP/p300, Enhancers, Chip-sequencing  
Nirmal Kumar M

## **DETECTION OF SABIN POLIOVIRUS IN STOOL OF RECENTLY VACCINATED INDIAN CHILDREN BY CULTURE, SINGLEPLEX AND MULTIPLEX REAL-TIME PCR**

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### **Background:**

Though culture is considered to be the gold standard for isolation of Sabin poliovirus from stool, it is time consuming and laborious. Few recent studies have evaluated detection of poliovirus shedding by molecular methods like conventional and real-time PCR.

### **Aim:**

To compare culture and real-time PCR in the detection of Sabin poliovirus from stool.

### **Methods:**

80 stool samples collected from infants on 0, 4 and 7 days after vaccination with trivalent OPV (tOPV) at 6 weeks of age were used for the study. Culture for Sabin poliovirus detection in stool was performed in L20B cell line according to WHO protocol. RNA was extracted from 20% (W/V) fecal suspension using Vx reagents on a QIAextractor. Complementary DNA (cDNA) was generated from the RNA by reverse transcription using random primer oligonucleotides. Singleplex real-time PCR from the cDNA and a one step multiplex real-time PCR from the extracted RNA was performed using serotype specific primers and probes targeting the VP1 region of the Sabin poliovirus genome.

### **Results and Conclusion:**

Of the 80 stool samples, 55 (68.75%) were positive and 25 (31.25%) were negative by culture. In contrast, 61 (76.25%) and 60 (75%) samples were positive by the singleplex and one step multiplex real-time PCR assays respectively. Considering culture in L20B cell line as the gold standard for detection of Sabin poliovirus from stool, the sensitivity of singleplex and one step multiplex real-time PCR were 94.5% and 92.7% respectively, while the specificity was 64% for both the PCR assays.

## OPPOSING ROLES OF PRMT2 AND PRMT8 IN MOUSE SOMATIC CELL REPROGRAMMING

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Methylation of arginine residues on histones regulates gene function by modulating their interactions with other regulatory proteins. The methylation at arginine residues is catalyzed by the activity of a class of enzymes known as protein arginine methyl transferases (PRMTs). The regulatory PRMTs such as CARM1 (PRMT4), *PRMT5* and PRMT6 have been previously implicated in maintenance of pluripotency and reprogramming. Further, combined inhibition of PRMTs and TGF $\beta$  signaling with small molecules enabled *Oct4* induced reprogramming of MEFs. To understand the role of different classes of PRMTs in regulating mouse somatic cell reprogramming, we measured the mRNA expression levels of *Prmt* 1 to 8 in MEFs, SSEA1<sup>+</sup> reprogramming intermediates, pre-iPSCs, iPSCs and R1ESC. *Prmt2* was expressed at significantly high levels in MEFs and, following reprogramming factor expression its levels sharply declined and was barely detectable in SSEA1<sup>+</sup> reprogramming intermediates, pre-iPSCs, iPSCs and R1ESCs. In contrast *Prmt8* expression could be detected only in R1ESCs and one of the established iPSC clones but not in others. When the pre-iPSC clones were cultured in presence of KOSR, the expression of *Nanog* and *Prmt8* was induced at levels similar to that of R1ESCs. None of the small molecule inhibitors of HDACs and DNMTs and ascorbic acid could induce *Prmt8* expression. To further elucidate the roles of *Prmt* 2 and 8 in reprogramming, knockdown and overexpression constructs were prepared. The constitutive overexpression of *Prmt8* yielded two fold higher alkaline phosphatase colonies, while *Prmt2* overexpression reduced the number of alkaline phosphatase colonies by two folds compared to empty vector controls. Consistently, the constitutive knockdown of *Prmt2* generated two fold higher numbers of alkaline phosphatase positive colonies. However, the knockdown of *Prmt8* either constitutively (Days 1-15) or at defined time points (Days 1-5, 5-10 and 10-15) during reprogramming did not have significant impact on the number of alkaline phosphatase positive colony numbers. Taken together these observations suggest that the expression of PRMT8 might be required for the stabilization of pluripotent state but not for its induction and PRMT2 could be one of the major roadblocks that might limit the initial reprogramming events.

## ALTERATION OF MESENCHYMAL AND HEMATOPOIETIC STEM CELL COMPARTMENTS IN MYELOYDYSPLATIC SYNDROME: REFRACTORY CYTOPENIA WITH MULTILINEAGE DYSPLASIA

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### Background:

Myelodysplastic syndromes (MDS) are a group of clonal disorders of hematopoiesis characterized by cytopenias. Though early events in the etio-pathogenesis of MDS remain elusive, increasing evidence suggest the involvement of instructive or permissive niche for the propagation of MDS-initiating hematopoietic stem cells (HSC). **Aim:** To investigate frequency of rigorously defined hematopoietic stem cells and its associated niche. **Results:-** Here we demonstrate altered frequency of de novo mesenchymal stromal cells (MSCs) sub-compartments, implicated in HSC maintenance, in MDS-Refractory cytopenia with multilineage dysplasia (RCMD) patients. Flow cytometric analysis of bone marrow aspirate from RCMD patients, median age  $49.73 \pm 3$  years and compared with age matched ( $45.67 \pm 5$ ) controls with 'normal' marrow obtained for other diagnostic purposes. MDS RCMD patients had increased CD271<sup>+</sup> CD146<sup>-</sup> MSCs ( $0.5955 \pm 0.4791$ , N=4) compared to controls ( $0.3250 \pm 0.2150$ , N=3). Similarly an increase in CD271<sup>+</sup>CD146<sup>+</sup> MSCs ( $1.045 \pm 0.5246$ , N=5) was seen when compared to controls ( $0.4600 \pm 0.3000$ , N=3). Interestingly, unlike controls, immuno-fluorescence imaging of bone marrow trephine from MDS-RCMD revealed CD271<sup>+</sup>CD146<sup>+</sup> MSCs co-localized with vessels and in direct contact with CD34<sup>+</sup> (<5% blast) HSC/progenitor cells (HSPCs). This interaction was further exemplified by increased expression of membrane bound  $\beta$ -catenin and cadherin in vessels and HSPCs. Phenotypic enumeration of HSPCs revealed a marked decrease in frequency of highly purified HSC (Lin-CD34<sup>+</sup>CD38<sup>-</sup>CD90<sup>+</sup>CD45RA<sup>-</sup>) (MDS= $0.04390 \pm 0.02902$ , n=6); Control= $0.2469 \pm 0.03946$ , n=11,) and 3 patients had gain in HSCs and multipotent progenitors (CD34<sup>+</sup>CD38<sup>-</sup>CD90<sup>-</sup>CD45RA<sup>-</sup>) confirming the ineffective hematopoiesis in MDS-RCMD. An increase in common myeloid progenitors (CMP) in RCMD patients ( $8.995 \pm 2.405$ , N=6) compared to control ( $1.415 \pm 0.4397$ , n=10) and loss of granulocyte-macrophage progenitors (GMP) in RCMD ( $1.191 \pm 0.5813$ , n=6) was noticed when compared to controls ( $2.389 \pm 0.4803$ , n=10) (data are mean SEM). This accompanied with significant neutropenia was consistent with a block in differentiation of CMP to GMP at committed progenitor level. Karyotyping analysis in these patients showed normal to variable abnormalities.

### Conclusion:

Altogether we report for the first time quantitative and qualitative de-novo changes in hematopoietic stem and its associated niche in a cohort of MDS-RCMD patients.

## **CORRELATION BETWEEN SABIN VIRUS SHEDDING AND SUBSEQUENT SEROCONVERSION IN INDIAN CHILDREN VACCINATED WITH MONOVALENT TYPE 3 ORAL POLIO VACCINE (MOPV3)**

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**Departments & Institution:** Wellcome Trust Research Laboratory<sup>1</sup>, Department of Clinical Virology<sup>2</sup>, Christian Medical College, Vellore

### **Background:**

OPV shedding after vaccination indicates vaccine virus replication in the gut which results in an optimal immune response to OPV, as evidenced by few studies.

### **Aim:**

To evaluate the effect of mOPV3 shedding on day 7 after vaccination on subsequent seroconversion in Indian children aged 6-11 months.

### **Methods:**

A total of 300 infants aged 6-11 months who were seronegative to type 3 poliovirus (titre <8), and recruited from Vellore district as part of a vaccine response study, were included. All the infants were administered a dose of mOPV3. Serum samples were collected after 21 days of vaccination to evaluate seroconversion (titre ≥8). Stool samples were collected on day 7 (post-vaccination) to determine mOPV3 shedding. Neutralization test was performed on the serum samples according to WHO protocol to determine antibody titre against serotype 3 poliovirus. For the day 7 stool samples, singleplex real-time PCR was performed using serotype specific primers and probes targeting the VP1 region of the Sabin poliovirus genome.

### **Results and Conclusion:**

90.7% (136) infants who were shedding the mOPV3 on day 7 seroconverted after 21 days of vaccination, while 84% (126) infants who were not shedding the vaccine virus on day 7 did not seroconvert. Only 9.3% (14) infants seroconverted without shedding on day 7, and 16% (24) infants did not seroconvert despite shedding the vaccine virus on day 7.

There was a strong correlation between mOPV3 shedding on day 7 and subsequent seroconversion (after 21 days of vaccination) in Indian children. ABIRAMI.V

## **DOES CLEISTANTHIN A MODULATE PROTON CURRENTS OF HUMAN NEUTROPHILS IN THE PRESENCE OF ATP?**

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*Cleistanthus collinus* is a poisonous plant, the leaves of which are consumed for suicide in many parts of southern India. Exact mechanism of toxicity remains unclear. Previously, two toxic principles present in this plant namely, Cleistanthin A and Cleistanthin C were tested for proton channel blockade in human neutrophils. While neither compound blocked proton channels, the impression was that Cleistanthin A may actually enhance proton currents, though the increase was not statistically significant. Since ATP was not present in the pipette in the earlier experiments, we hypothesized that in the presence of ATP, Cleistanthin A may enhance proton currents significantly.

### **AIM:**

To study the effect of Cleistanthin A on voltage gated proton channels of human neutrophils, with ATP included in the patch pipette.

### **OBJECTIVE:**

To compare the percentage of proton currents remaining after the addition of the Cleistanthin A or ethanol (control), as compared to the currents recorded before the addition, while ATP was included in the patch pipette.

### **METHODS:**

- Isolation of fresh human neutrophils
- Isolation of Cleistanthin A
- Recording proton currents in isolated neutrophils by Patch Clamp technique
- Analysis of the percentage of proton currents remaining after the addition of the test and control solutions in comparison to currents recorded before addition

### **RESULTS:**

When the proton currents recorded at different voltage-clamp levels, after the addition of either Cleistanthin A or ethanol (control), were expressed as percentages of the pre-intervention currents at the same voltages, there was no statistically significant difference in the percentage current remaining after intervention in both groups.

### **CONCLUSION:**

The results indicate that even in the presence of ATP, Cleistanthin A does not show any significant effect on voltage gated proton channels of human neutrophils.

# PERFORMANCE OF TAQMAN ARRAY CARD IN DETECTION OF ROTAVIRUS INFECTION IN CHILDREN: COMPARISON WITH 96 WELL REAL-TIME RT-PCR FORMATS

**Authors:** Mohammed Azharuddin KO, Gunasekaran C, Revathi R, Ira Praharaj, Gagandeep Kang.

**Departments & Institution:** Wellcome Trust Research Laboratory, Division of Gastrointestinal Sciences, Christian Medical College, Vellore.

## Background:

Taqman Array Card(TAC) is a real-time PCR platform that can be used to detect multiple pathogens or targets in a single assay.

## Aim:

Evaluation of TAC assay for enteropathogens in detection of Rotavirus and to compare its performance with one-step NSP3 real-time PCR and two-step VP-6 real time PCR for rotavirus detection.

## Methods:

762 stool samples from children who were part of a birth cohort on etiology of diarrhea and malnutrition were included in this study. Total nucleic acid(TNA) extraction was performed for the samples using Qiagen stool DNA extraction mini kit protocol with modifications. TNA was used for amplification of multiple DNA/RNA targets using Taqman array cards designed for detection of multiple enteropathogens. Ct value of 35 was used as cut-off value for positivity in the TAC assay. All samples found to be positive for rotavirus by the TAC assay (n=49) as well as a subset of the samples found negative for rotavirus (n=30) were also tested by individual qRT PCR assay for NSP3 and VP6 targets of rotavirus.

## Results and Conclusion:

A total of 49 samples (diarrheal=35, non-diarrheal=14) out of the 762 tested were positive for the rotavirus target by TAC assay. There was good agreement between the Ct values obtained for rotavirus positive samples by TAC assay and NSP3 one-step real-time PCR ( $R^2=0.863$ ). The agreement between TAC assay and VP6 real-time PCR was less ( $R^2=0.653$ ). Compared to the individual real-time RT qPCR assay for NSP3 and VP6, the sensitivity of TAC assays for rotavirus target was 100% whereas specificity was 81% (compared to NSP3 one-step real-time assay) and 75% as compared to VP6 real-time assay. The enteropathogen TAC assay shows results comparable with NSP3 real-time qPCR assay for rotavirus and also enables us to detect multiple other enteropathogens in addition using a single assay.

# SNPS IN MIRNA AND MIRNA TARGET REGION ASSOCIATED WITH DIABETES MELLITUS

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## Background

In recent years miRNAs are implicated to play a significant role in multiple diseases and this study aims to identify the single nucleotide polymorphisms in miRNA and miRNA target region which are associated with diabetes mellitus.

## Methods

Data regarding the SNPs associated with diabetes are extracted from the DIABetes Genetics Replication And Meta-analysis (DIAGRAM) consortium which is a meta-analysis of diabetes GWAS among multiple ethnicities. Co-ordinates of miRNA and miRNA target region were accessed from miRbase and miRmap databases respectively. Using this, SNPs in miRNA and miRNA target region were sorted out. To account for multiple q value were calculated from the p values. Statistically significant SNPs in these regions were further queried in eQTL databases to study their functional significance.

## Results

Out of 33,058 SNPs located in miRNA target region, 39 were found to be significantly associated with diabetes. Some of these SNPs also had significant cis-eQTL association in queried eQTL databases. None of the SNPs in miRNA region were statistically significant,

## Conclusion

This study has identified several of the SNPs in miRNA target region associated with diabetes mellitus. This will help in understand the mechanism by which some of the SNPs are associated with diabetes and also will lead to further research in developing miRNA based therapeutics for people with diabetes mellitus.

## **ENTEROPATHOGEN PRESENCE AND GUT INFLAMMATION IN ASYMPTOMATIC INFANTS AND CHILDREN RESIDING IN DIFFERENT ENVIRONMENTAL CONDITIONS IN VELLORE TOWN**

**Authors:** Revathi R., Mohammad Azharuddin, Rini Bandyopadhyay, Ira Praharaj, Gagandeep Kang

**Departments & Institution:** Wellcome Trust Research Laboratory, Division of Gastrointestinal Sciences, Christian Medical College, Vellore.

### **Background:**

Environmental conditions are considered to play an important role in the acquisition of enteric pathogens which in turn are hypothesized to be one of the important factors for environmental enteropathy.

### **Aim:**

To compare the profile of enteropathogens among asymptomatic children residing in two different localities in Vellore town and evaluate the levels of gut inflammatory biomarkers in these children.

### **Methods:**

A total of 139 asymptomatic children (86 children from Chinnallapuram(CAP) slum area and 53 children residing in CMC campuses) were included in this study. Stool samples were collected and used for TNA Extraction by Qiagen Stool DNA mini kit with some modifications. Gut enteropathogens present were detected using TAC array card realtime PCR for enteropathogens which tests for 32 different enteropathogens. Faecal calprotectin(FC) and myeloperoxidase(MPO) levels were also quantitatively measured using commercial ELISA assays and the results were expressed in units of  $\mu\text{g/g}$  of samples for FC and  $\text{ng/ml}$  for fecal myeloperoxidase.

### **Results and Conclusions:**

Of the 139 children studied, 93% (n=80) of children from CAP slum area were found to harbour enteropathogens compared to 71.7% of children residing in CMC campuses. Mean number of enteropathogens among samples from CAP children was 3.3(2.9-3.7) whereas that for CMC campuses children was 1.4(0.99-1.7). Looking at the different types of enteropathogens, higher proportion of children from the CAP slum, compared to those from CMC campuses were found to be positive for enteric viruses (72.1% vs 32.1%) as well as bacterial enteropathogens(84.9% vs 60.4%). While none of the children from CMC campuses tested positive for enteric parasites, 30.2% (n=26) of children from CAP slum were positive for enteric parasites. The median levels of fecal calprotectin(FC) as well as MPO were significantly higher in children residing in CAP slum compared to those in CMC campuses (median FC= 492 $\mu\text{g/g}$  vs 130 $\mu\text{g/g}$ ; median fecal MPO= 8095  $\text{ng/ml}$  vs 1080  $\text{ng/ml}$ )SREEJA K

# ROLE OF NF-E2 RELATED FACTOR 2 (NRF2) ON CHEMOTHERAPY RESISTANCE IN ACUTE MYELOID LEUKEMIA (AML) AND THE EFFECT OF PHARMACOLOGICAL INHIBITION OF NRF2 IN MODULATING THIS EFFECT

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## Background

Although 70-80% of Acute Myeloid Leukemia (AML) patients achieve complete remission with induction therapy consisting of a combination of Cytarabine (Ara-C) and Daunorubicin (Dnr), overall survival is dismal with disease relapse, drug resistance and toxicities as the major causes of treatment failure. NF-E2 related factor 2 (NRF2) has been recognised as one of the key molecules associated with resistance towards chemotherapeutic agents in cancer. NRF2 as a redox dependent transcription factor drives the expression of several antioxidant genes which coordinate to scavenge ROS. Although the role of NRF2 in resistance to Ara-C and Dnr has been reported previously, its role in ATO resistance in non M3-AML and pharmacological inhibition of NRF2 has not been addressed before. This study, hence investigate the role of NRF2 expression in *in-vitro* sensitivity to chemotherapeutic drugs and its modulation using pharmacological inhibitors of NRF2.

## Materials and methods

Nrf2 RNA expression in AML cell lines and primary samples was determined using qRT-PCR. Basal NRF2 levels and effect of NRF2 inhibitor (Brusatol) in bringing down NRF2 levels/ apoptosis was demonstrated by flow cytometry. Effect of Brusatol *in vitro* cytotoxicity to Ara-C, Dnr and ATO was determined using MTT based method. To further confirm the role of NRF2, overexpression of NRF2 was done in cell lines using lentiviral expression system and was confirmed using immunoblot/qRT PCR.

## Results and conclusion

NRF2 RNA expression in primary AML samples grouped according to their median Ara-C, Dnr and ATO IC50 (median IC50 6 $\mu$ M for Ara-C, 0.4 $\mu$ M for Dnr and 2.42 $\mu$ M for ATO) were compared. Primary AML samples with Ara-C, Dnr or ATO IC50 below median had significantly low NRF2 RNA expression compared to those above median. Comparison of NRF2 expression in a subset of samples that were above median IC50 to Ara-C, ATO and Dnr with those below median also showed similar trend. Flow cytometric evaluation of NRF2 expression in Ara-C, Dnr and ATO resistant AML cell lines (THP1 and U937) (MFI=37.18 and 46.56) showed higher intracellular NRF2 levels compared to sensitive cell lines (HL60 and MOLM13) (MFI=6.25 and 28.9). The effect of Brusatol in inhibiting NRF2 protein levels and its role in inducing apoptosis were also demonstrated by flow cytometry. Treatment of AML cell lines (THP1 and U937) with Brusatol followed by treatment with ATO, Ara-C and Dnr improved their sensitivity to these drugs. Moreover NRF2 overexpressed cell lines showed increased resistance to ATO/ Dnr and Ara-C and up-

regulation of NRF2 downstream targets compared to un-transduced cells. Our results hence suggest that NRF2 plays a pivotal role in drug resistance and extends the possibility of using NRF2 inhibitors in combination with chemotherapeutic agents to combat drug resistance.

## CLINICOPATHOLOGICAL CORRELATIONS OF THE T(11;19)

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### Introduction

The MLL gene (Mixed-Lineage Leukemia or Myeloid-Lymphoid Leukemia) is involved in translocations with several partner chromosomes. These translocations have been reported in ~ 5.2% of AML and ~22% of ALL. The t(11;19) is one such translocation and involves one of three unrelated partner genes on 19p13 – ELL at 19p13.1 and ENL and EEN (SH3GL1) at 19p13.3. Translocations of 19p13.3 have been reported both in acute lymphoblastic leukemia (ALL) as well as acute myeloid leukemia (AML) while translocations of 19p13.1 have been reported only in AML. The 19p breakpoints are often indistinguishable by conventional cytogenetic analysis. These translocations appear to be associated with an adverse prognosis.

### Materials and methods

G-banded karyotypes of all patients with the t(11;19) seen in the Department of Haematology between January 2009 and December 2014 were correlated with blood and bone marrow findings.

### Results

There were 11 patients with the t(11;19). Eight had myeloid neoplasms ( five AML and one MDS,CMML and myelofibrosis each) and three had ALL. There were 1111 AML and 956 ALL seen during this period. Patients were 0.5 - 65 years old (median age 26). Three were below 15 years of age. There were seven males. The median haemoglobin was 9g/dl (4-16.3 g/dl), median WBC count,  $7.7 \times 10^9/L$  (range 1.9-319.9 $\times 10^9/L$ ) and median platelet count,  $10 \times 10^9/L$  (range 18-288  $\times 10^9/L$ ) and bone marrow blast percentage, 2- 82%.

The t(11;19) was the sole abnormality in seven patients ( 63%). Three patients had a single additional abnormality (gain of chromosome X, trisomy 8, and the deletion 5q) and one had a complex karyotype (more than two additional abnormalities).

### Conclusion:

These data document the presence of this rare abnormality among patients with acute leukemias and other myeloid neoplasms in India. The frequency of the t(11;19) is indeed very low (0.4% in AML and 0.3% in ALL) but it is important to look specifically for these abnormalities in G-banded samples as the changes can be subtle.

## **HISTORY OF SENSITIZING EVENTS A CORRELATE WITH ANTI-HLA ANTIBODIES AS DETECTED ON THE ELISA PLATFORM**

**Authors:** Sam Arul Doss R, Chacko MP, Daniel D, Department of Transfusion Medicine and Immunohematology, Christian Medical College & Hospital, Vellore.

### **Background:**

HLA alloimmunization can be caused by various sensitizing events such as transfusion, pregnancy and organ transplantation. The knowledge of these events and their respective strength of association with sensitization are useful in the context of renal transplantation as well as transfusion where anti HLA antibodies can mediate graft rejection and various transfusion reactions respectively.

### **Aim:**

To assess the value of demographic variables and also the history of transfusion, transplantation & pregnancy as predictors for the presence of anti HLA antibodies.

### **Materials & Methodologies:**

Study period 2009 to 2013, 320 patients awaiting renal transplant were screened for anti HLA antibodies on an ELISA mixed antigen platform (211 males and 109 females) using the LATM kit One Lambda Inc USA. The age, gender and history of sensitizing events were recorded at the time of sample collection and these variables were analyzed to see whether they showed significant correlation with the results.

### **Results:**

Anti HLA antibodies were noted in 77/320 patients (24%). Of which 39(51%) were males and 38(49%) were females. Sensitization showed a significant association with female gender ( $P=0.001$ ), transfusions 42/77( $P=0.004$ ) and pregnancies 29/38 ( $P=0.001$ ) but not with age. Only 1 out of 7 patients with a previous transplant had antibodies. Significant increase was observed when transfusions were five or more as compared to those with less than five transfusions ( $P=0.004$ ). 24/77 (31%) patients had anti HLA antibodies but did not have any history of sensitization.

### **Discussion & Conclusion:**

Females, pregnancy and multiple transfusions had highly significant correlation with the presence of anti HLA antibodies. Pregnancy followed by transfusions carried the strongest association. The 24 patients who did not have a history of sensitizing events but had antibodies are uncertain which might be due to, antigenic targets in ELISA are purified HLA molecules, whether the processing produces neo antigens or whether the sensitization arises from exposure to environmental antigens that bear molecular similarity to HLA antigens as in other cases of 'natural' antibodies is uncertain at present.

## **A CASE REPORT DEMONSTRATING THE UTILITY OF MULTIPLE PLATFORMS IN MONITORING OF DESENSITIZATION IN THE HLA LABORATORY**

**Authors:** Sam Arul Doss R, Chacko MP, Daniel D, Department of Transfusion Medicine and Immunohematology, Christian Medical College, Vellore.

### **Background:**

It is difficult to identify a compatible donor in a highly sensitized renal transplant recipient. In an attempt to ameliorate this situation, several desensitization protocols have been developed. However, in order to achieve acceptable transplant outcomes, antibody screening at the highest level of detection is essential in these scenarios as this case illustrates.

### **Case report:**

A 33 year old female with end-stage renal disease underwent a workup towards live kidney transplant with her husband as the prospective donor. She has had two pregnancies, and no transfusions or prior transplants.

**Complement Dependent Cytotoxicity (CDC)** crossmatches were initially negative, and later showed weak positivity. **Luminex crossmatch** showed consistent Class II positivity with Mean Fluorescence Intensity (MFIs) ranging from 2462 to 14093 and intermittent class I positivity ranging from 1443.5 to 2358.5. CDC crossmatch showed negative with a swap donor whereas the Class II still remained positive on Luminex crossmatch. **Luminex single antigen assay (LSA)** demonstrated a donor specific antibody directed at class II.

On this basis, desensitization was started involving **Rituximab** (500mg, 3 doses) and **plasmapheresis** (12 plasmapheresis and 1 double filtration plasmapheresis). As the Luminex platform demonstrated better pickup of the antibody, monitoring was done by Luminex crossmatch which was deemed more economical than the LSA. CDC was performed in parallel. After commencing Rituximab, CDC demonstrated IgG positivity of approximately 30% which was attributed to the drug and this was supported by Luminex crossmatch values which continued to fall. When the class II antibody levels reached 1888, LSA was performed for class II, which confirmed negativity.

She shortly underwent transplant. Her post transplantation clinical course was uneventful. Post transplant Luminex crossmatches have been consistently negative for both class I and II.

### **Conclusion:**

This case report demonstrates the utility of multiple platforms in the monitoring of desensitization protocols.

## HOW RELEVANT IS THE SINGLE ANTIGEN BEAD ASSAY KIT TO THE INDIAN POPULATION

**Authors:** Anutha Augustin, Chacko MP, Daniel D, Department of Transfusion Medicine & Immunohaematology, Christian Medical College, Vellore.

### Background:

Single antigen bead assay (SAB) is a sensitive platform, which uses recombinant beads of HLA allelic variants of class I & II epitopes, to identify antibodies against HLA alleles.

### Objective:

The study was performed to assess the robustness of the SAB assay in detecting HLA allelic specificities of the Indian population.

### Methodology:

A comparison was made between the allelic specificities in 92 individuals of Indian origin and the specificities represented on the SAB assay.

### Results:

The High resolution typings obtained from 92 individuals included 20 A alleles, 34 B alleles, 23 DRB1 alleles and 12 DQB1 alleles.

6/20 A alleles, 11/34 B alleles, 6/23 DRB1 alleles and 1/12 DQB1 alleles were not represented in the SAB assay.

The six unrepresented A locus alleles were-A\*02:11(13), A\*02:06(9), A\*02:16(4), A\*24:17(1), A\*24:07(1), A\*31:12(1)] present in 26 of 92 patients and eleven unrepresented B alleles [B\*40:06(18), B\*07:05 (13), B\*35:03(13), B\*13:01(2), B\*15:17(4), B\*38:02(3), B\*48:04(2), B\*15:07(1), B\*27:07(1), B\*51:06(1), B\*57:03(1)] were present in 49 of 92 patients with some patients having both their A & B alleles unrepresented.

The six unrepresented DRB1 alleles [DRB1\*12:02(6), DRB1\*04:04(4), DRB1\*13:02(4), DRB1\*15:06(4), DRB1\*10:02(1) & DRB1\*08:02(1) were present in 20 of 92 patients, DQB1\*05:02 was found to be present in 8 of 92 patients.

Most of these alleles fit into the higher probability alleles in the API region group when data was sought from the HLA epitope registry.

### Conclusion:

A significant number of alleles at class I and class II loci identified from the Indian population were unrepresented in the SAB assay. This requires further study & follow-up. However in the interim it is critical that this assay be used with caution when used to identify antibodies to HLA specificities in the Indian population.

## **NON- HPV AETIOLOGY FOR PENILE CANCER: A SHARP CONTRAST AGAINST CERVICAL CANCER.**

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### **Background:**

Human papillomavirus (HPV) is one of the most commonly sexually transmitted agents. The role of HPV in cervical cancer is now well established. However, the exact role of HPV in causation of penile cancer is not well studied. There are both HPV dependent and independent pathways in the aetiology of penile cancer. There are a number of molecular events which lead to penile cancer in the absence of HPV. This study looked at the expression of certain candidate host genes involved in penile carcinogenesis, which are HPV independent.

### **Aim:**

To identify the role of certain candidate host genes in the causation of penile cancer.

### **Methods:**

A total of 48 HPV negative paraffin embedded specimens of different stages of penile cancer (T1, T2 and T3) were chosen. Also, eight paraffin embedded specimen of healthy penile foreskin were chosen as controls. HPV DNA detection was done using the GP5+/6+ primers. Expression of candidate host genes, TP53, BCL2, BAX, CDKN1A CDKN2A, EGFR, ERBB4 and PTEN incriminated in penile cancer was studied using the Real Time PCR profiler assay. Data was analyzed using the  $\Delta\Delta C_T$  method and the web based software.

### **Results:**

The 48 HPV negative penile cancer tissue biopsies (T1, T2 and T3) were compared against normal penile tissue for relative gene expression levels. Relative gene expression of the selected genes were normalized based on the GAPDH housekeeping gene. Median values was taken for the eight genes analyzed. Among the eight genes studied, there was a significant expression of all the eight genes across the different stages of cancer ( $p=0.007$ ) with the most apparent expression with EGFR ( $p=0.0001$ ).

### **Conclusion:**

This study highlights the role of alternate factors to HPV responsible for penile cancer progression. All the eight genes were upregulated in penile cancer with EGFR having a slight higher expression among later stages of cancer. More studies are needed to understand the aetio-pathogenesis of HPV-independent penile cancer. This has immense clinical significance, since HPV negative penile cancers are known to have a poorer prognosis and therapeutic response.

## **TISSUE ENGINEERED BONE FROM LIME, SAND AND BONE MINERAL: A NEW TREATMENT FOR SEGMENTAL BONE LOSS**

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Management of long segment bone defect is challenging. The treatment is often associated with donor site morbidity and the chance of the bone union is low in unfavourable etiologies such as infection and congenital pseudarthrosis. With the current treatment the grafts take a long time to integrate and heal. The need of the hour is an alternate treatment which would aid in faster integration of the segmental transplant and result in bone union. This study attempts to treat the diaphyseal segmental bone loss using autologous bone marrow MSCs differentiated into osteogenic lineage on a custom made triphasic HASi (hydroxyapatite silicate) scaffolds.

GMP protocols were standardised prior to the start of the study. Three patients have been recruited with mean age 7 yrs with average defect size of 3.3 cm have undergone transplantation. MSCs seeded on the scaffolds were differentiated to osteoblasts prior to implantation. The first patient is under 9 months of follow up, second and third patient are under 5 months and 1 week respectively. The X-rays for the first two patients show good integration with the graft and the first patient had returned to full flexion while the second is on protective splinting. Till date none of the patients have developed complications.

The following assays were performed on the additional cell seeded scaffolds. The cell adhesion and proliferation were assessed using scanning electron microscopy and these showed cell infiltration throughout; viability of the cells was assessed by live dead assay and was about 98%. Alkaline phosphatase activity was quantified using flow cytometry and immunofluorescence. Over 65% of the cells expressed alkaline phosphatase on day 14 of differentiation and about 10% on day seven. This correlated with the gene expression data.

We conclude that tissue engineered bone may become a new medical horizon in the treatment of large segmental bone defects.

## VASODILATATION BY PHENYLEPHRINE

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### Background:

Phenylephrine is an alpha 1 adrenoceptor agonist that leads to IP3 mediated Ca release from sarcoplasmic reticulum, producing vasoconstriction. PE is also reported to produce vasorelaxation under some circumstances – through beta 2 or alpha 1D mediated mechanisms (1, 2). We report that PE mediates vasorelaxation in the presence of L-arginine. This phenomenon is dependent on NO synthesis and requires activation of alpha receptors.

### Objective of the study:

To prove the mechanism of PE-induced vasorelaxation.

### Materials and methods:

Small artery isolated from goat limb was made into a spiral strip and was superfused with physiological solutions at 37 deg Celsius. Tension was recorded using force transducer connected to Powerlab.

### Results:

Addition of phenylephrine (10 $\mu$ M) after L-arginine(400 $\mu$ M) reduced vascular tension by 68.1 $\pm$  24%. There was reversal of tension after washout of phenylephrine with physiological salt solution. In the presence of L-NNA(1 mM), a reversible eNOS inhibitor, phenylephrine failed to produce relaxation following L-arginine.

In the presence of phentolamine, an alpha blocker, phenylephrine couldn't produce vasorelaxation following L- arginine.

### Conclusion:

Phenylephrine acts via alpha 1 subtype to induce relaxation in the presence of L- arginine is nitric oxide dependent. Clinical significance is that in septic shock where there is high NO production, vasoconstrictors like phenylephrine will reverse the action and can actually worsen the condition by producing vasodilatation.

### References:

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JPET March 1, 2001 vol. 296

## Pefloxacin as a surrogate marker for fluoroquinolone susceptibility for *Salmonella* Typhi: Problems and Prospects

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**Background:** Typhoid fever caused by *Salmonella enterica*, Serotype Typhi, remains a significant problem in developing countries. It is important to screen *Salmonella* isolates for low-level fluoroquinolone (FQ) resistance (i.e. ciprofloxacin MIC >0.06 mg/L) as these isolates respond poorly to FQ treatment in systemic infections. CLSI and EUCAST recently recommended the use of 5 µg pefloxacin disc to screen for all currently defined FQ resistance mechanisms in *S. Typhi*, because ciprofloxacin 5 µg is unreliable for the detection of low-level FQ resistance. The objective of this study was to characterize the FQ resistant mechanisms and to correlate with ciprofloxacin MIC and pefloxacin disc diffusion.

**Methodology:** We evaluated the antimicrobial susceptibility pattern of 27 *S. Typhi* isolates from January to December 2014 using ciprofloxacin disc diffusion and MIC (E-test), and pefloxacin disc diffusion test. These isolates were characterized for their FQ resistance mechanisms, quinolone resistant determining region (QRDR) (*gyrA*, *gyrB* and *parC*) and plasmid mediated quinolone resistance (*qnrA*, B and S and *aac(6')Ib-cr*).

**Results:** The isolates showed varying levels of resistance to ciprofloxacin. According to CLSI, 7% ( $n = 2/27$ ), 41% ( $n = 11/27$ ) and 52% ( $n = 14/27$ ) of the isolates were susceptible, intermediate and resistant by MIC. However, as per EUCAST guidelines, the CLSI intermediate isolates were defined as resistant. Currently, instead of ciprofloxacin disc diffusion, CLSI and EUCAST recommend the use of pefloxacin 5 µg disc to detect FQ resistance mechanisms (QRDR (*gyrA*, *gyrB* and *parC*), *qnrA*, B and S, *aac(6')Ib-cr*) in *S. Typhi*. In this study, 25 out of 27 isolates were found to be resistant (CLSI and EUCAST) by pefloxacin disc diffusion, which includes isolates that were intermediate by ciprofloxacin MIC (CLSI). All 25 were found to have point mutations in either *gyrA* and/or *parC* genes, of which one isolate carried plasmid mediated *qnrB* gene. Thus the susceptibility of *S. Typhi* to ciprofloxacin can be inferred from the pefloxacin disc diffusion test which correlates with the interpretation by EUCAST ciprofloxacin guidelines and can be used as a surrogate marker for detecting both chromosomal and plasmid FQ resistance in *S. Typhi*.

**Conclusion:** This variation in interpretation criteria for the same antimicrobial agents by different guidelines needs to be addressed. Interestingly, re-emergence of strains susceptible to chloramphenicol, ampicillin and co-trimoxazole is being observed.

## **Association of insertion sequences with oxacillinases among invasive isolates of carbapenem resistant *Acinetobacter baumannii*.**

Saranya Vijayakumar, Balaji Veeraraghavan, Shalini Anandan, G. Radha, K. Sivaraman

### **Introduction:**

*Acinetobacter baumannii* has now been recognized as one of the major nosocomial pathogen. It can cause various infections ranging from minor skin and soft tissue infections to severe invasive diseases like bacteremia, meningitis and ventilator-associated pneumonia (VAP). *A.baumannii* has the ability to acquire resistance determinants like oxacillinases and metallo  $\beta$ -lactamases. Insertion sequences have very important role to play with respect to the expression of oxacillinases in *A.baumannii*. In this study, we investigated the presence of insertion sequences associated with oxacillinases.

### **Materials and Methods:**

A total of 34 (Blood and Endo Tracheal Aspirates) carbapenem resistant invasive isolates of *A.baumannii* (CRAB) were collected during the period of January 2015 to April 2015. Antimicrobial susceptibility testing to 15 antimicrobial agents was performed by disc diffusion method according to Clinical and Laboratory Standards Institute (CLSI) guidelines. Meropenem MIC was performed for all the isolates by broth micro dilution method. DNA was extracted using the boiling lysis method. Conventional PCR was performed using primers targeting the OXA genes of *A.baumannii*. OXA PCR positive isolates were further subjected to PCR mapping experiments using combinations of IS*Aba1* forward primer and the OXA reverse primer.

### **Results:**

All the 34 isolates were confirmed as *A.baumannii* by *bla*<sub>OXA-51-like</sub> PCR. Of 34 CRAB isolates tested, all were found to be positive for *bla*<sub>OXA-23-like</sub> (100%) by PCR. None of the isolates were positive for *bla*<sub>OXA-24-like</sub> by PCR. IS*Aba1* element was detected in all the 34 OXA positive isolates. Of these, 33 (97.05%) isolates were positive in PCR mapping experiments using IS*Aba1*F/OXA23R primers.

### **Conclusion:**

In this study, IS*Aba1* was found upstream of all OXA-23 positive CRAB isolates suggesting that IS*Aba1* provides a strong promoter for the expression of this gene.

**Title:** Comparison of antimicrobial resistance profile, SCC *mec* types and *spa* types of MRSA causing hospital and community acquired infections.

**Authors:** Yamuna Devi B, Maheswari K, Balaji Veeraraghavan

**Department and institution:** Department of Clinical Microbiology, Christian Medical College, Vellore

**Background:** Methicillin resistant *S. aureus* (MRSA) is a major public health threat. For typing of *S. aureus* a new sequence-based and easily internationally comparable typing method, *spa* typing, was recently described. For epidemiological investigation of MRSA, a combination of staphylococcal chromosomal cassette (SCC) *mec* and *spa* typing method helps to understand the molecular evolution of MRSA with high discriminatory power. In this study, antibiotic resistance pattern, SCC *mec* typing and *spa* typing were analyzed to investigate the evolution of MRSA.

**Aim:** To determine the antibiotic resistance and clonal lineage distribution of MRSA causing invasive infection

**Methods:** A total of 52 clinical MRSA isolates which included HA-MRSA ( $n=12$ ) isolates and CA-MRSA ( $n=40$ ) isolates. Antimicrobial susceptibility testing to antimicrobial agents was carried out by using disk diffusion method according to CLSI guidelines. Vancomycin minimum inhibitory concentrations (MICs) were determined by broth microdilution method. A multiplex PCR was used for SCC *mec* typing of MRSA isolates. The *spa* typing was performed on the basis of the sequence analysis of the polymorphic X region of the protein A gene (*spa*) amplified from the isolates. The *spa* types were inferred by Ridom Staph Type software.

**Result:** All tested isolates were susceptible to netilmicin, vancomycin and linezolid. Resistance to tetracycline (19%), erythromycin (69%), clindamycin (38%), trimethoprim (58%), ciprofloxacin (88%) and gentamicin (54%) was observed. Inducible clindamycin resistance was seen with 35% of tested MRSA isolates. SCC *mec* types I, III, IV and V and its subtypes were identified. SCC *mec* types V (33%) and III (17%) were the most prevalent among tested MRSA. Interestingly one isolate was identified with the combined genetic

element of SCC *mec* I and IVd. *spa* typing yielded 24 types of which t657 (23%), t425 (13%) and t852 (7%) were the most common among tested MRSA isolates.

**Conclusion:** Different SCC *mec* and *spa* types were widely distributed among HA and CA MRSA isolates. This study showed the emergence of MRSA strain with different *spa* types including t657/ SCC *mec* I/V, t425/SCC *mec* III with multidrug resistance profile and t852/SCC *mec* V was seen. This reiterates the need for continuous monitoring of MRSA clones which reveals the importance of antibiotic resistance and to prevent its dissemination.

## **Ciprofloxacin MIC breakpoints for Typhoidal *Salmonella*: CLSI or EUCAST which is reliable?**

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### **Introduction:**

Enteric fever (typhoid and paratyphoid fever) is a potentially fatal multi-systemic illness with incidence of 22 million cases and 216,500 deaths annually in Asia. Extensive use of ciprofloxacin over a period has led to the generation of selective pressure and emergence of resistance by mechanisms involving chromosomal mutations and plasmid carried genes. This study was undertaken to correlate ciprofloxacin MIC range with different resistance mechanisms and analyse the trend for additional information on effectiveness of ciprofloxacin to treat Typhoid fever.

### **Methods:**

Out of 113 Typhoidal *Salmonella* isolates obtained from blood stream infections (January to December, 2014), 95 were *S. Typhi* and 18 were *S. Paratyphi A* from patients at Christian Medical College, Vellore, India. Out of these, 33 isolates (27 *S. Typhi* and 6 *S. ParatyphiA*) were selected to include in this study. These isolates were subjected to molecular characterization. The isolates with high level ciprofloxacin resistance were also screened for efflux pump over-expression.

### **Results and discussion:**

The 2014 breakpoints for ciprofloxacin defined in CLSI ( $\leq 0.06$  S, 0.15-0.5 I,  $\geq 1$  R) and EUCAST ( $\leq 0.06$  S,  $> 0.06$  R) were different. During 2014, 65.4% and 23.5% typhoidal *Salmonella* were found as intermediate and resistant to ciprofloxacin (CLSI). However, with EUCAST 2014 breakpoints the resistance rate was higher (93.9%). Except one, all the non-susceptible isolates ( $n = 30$ ) were found to have point mutations (single/multiple) in either *gyrA* and/or *parC* genes. To the best of our knowledge, *parC* mutation, Glu(84)-Gly was observed for the first time in *S. Typhi* in India marked with an MIC of 0.38  $\mu\text{g/ml}$  (low level resistance). Out of 33 isolates, one harbored *qnrB* gene, responsible for plasmid mediated resistance. There was no significant change in efflux pump activity for ciprofloxacin, except one which showed a five-fold decrease.

### **Conclusion:**

Presence of mutations in isolates with intermediate MIC implies a major cause of concern because, these can be treated with high dose of ciprofloxacin which may not respond satisfactorily. In contrast, the EUCAST criteria defines these isolates as resistant, which will

prevent the use of ciprofloxacin treatment for these patients. From the present study, it was clear that the molecular mechanism of resistance to ciprofloxacin correlates satisfactorily with the EUCAST criteria than CLSI criteria.

## TARGETED EXOME ANALYSIS: AN EFFICIENT DIAGNOSTIC TOOL FOR HEREDITARY SPASTIC PARAPLEGIA

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**BACKGROUND:** Hereditary Spastic Paraplegia (HSP) constitutes a clinically and genetically heterogeneous group of neurological disorders with over 56 loci and 41 causative genes known and counting. HSP has different forms of mendelian inheritance and often has a significant clinical overlap among the subtypes as well as with other neurodegenerative disorders. Hence gene-by-gene analysis is laborious and targeted exome analysis for HSP genes becomes a cost effective and less time consuming procedure for achieving the diagnosis.

**AIM:** To delineate the genetic etiology and genotype phenotype correlation using targeted exome analysis in HSP.

**Methods:** Four individuals from different families attending the medical genetics opd with a clinical diagnosis of spastic paraplegia were considered. A familial cause for spastic paraplegia was considered based on pedigree analysis or after ruling every other acquired etiologies. DNA was extracted from peripheral blood after appropriate consenting process. Targeted exome sequencing was done using TruSight sequencing panel from illumina on Miseq platform in a commercial laboratory. The aligned raw data were analyzed using illumina variant studio analysis software at our laboratory. Variants suspected to be disease causing were validated in the proband, other affected and unaffected members using Sanger sequencing.

### **RESULTS:**

Proband 1 who was suspected to have a complicated recessive HSP had a novel homozygous disease-causing variant in the FA2H gene

Both Probands 2 and 3 who were suspected to have an uncomplicated autosomal dominant HSP had a heterozygous disease-causing variant in the SPAST gene.

Proband 4 who suspected to have a complicated HSP had a novel homozygous disease-causing variant in the SPG 11 gene.

**CONCLUSION:** Targeted exome analysis proves to be a useful diagnostic tool in such highly heterogeneous disorders as hereditary spastic paraplegia.

## **AN ANALYSIS OF HEPATITIS C VIRUS (HCV) RESPONSE TO SOFOSBUVIR: PRELIMINARY DATA FROM INDIA.**

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### **Background:**

Hepatitis C Virus (HCV) is a major health problem and approximately 350,000 people die every year due to hepatitis C related liver diseases. The previous standard of care for HCV was pegylated IFN and ribavirin with a poor response rate of 40-55%. With the advent of direct acting antivirals (DAA), there has been improved sustained virological response, tolerability and higher cure rates. Sofosbuvir, one such DAA has recently become available in India. This study aims to look at the response of sofosbuvir (an NS5B nucleotide analog) in Indian patients.

### **Aim:**

To study the virological responses of sofosbuvir alone or in combination ribavirin with or without pegylated IFN in a tertiary care hospital in India.

### **Methods:**

Plasma from 39 patients treated with sofosbuvir alone, sofosbuvir and ribavirin, sofosbuvir and ribavirin plus pegylated IFN respectively were tested for HCV RNA. Of the 39 samples, 28% had prior treatment failure with pegylated IFN and ribavirin. Plasma was subjected to RNA extraction and later amplified using real time PCR. HCV genotypes were ascertained using the NS5B sequencing protocol. They were tested for RNA negativity one month after starting treatment (RVR), 3 months after starting treatment (EVR) and end of treatment i.e., 6 months (ETR).

### **Results:**

We measured the RVR, EVR, and ETR respectively in these patients. Of those that were genotyped, 76% were genotype 3, 15% were genotype 1 and 9% were genotype 4 respectively. All the patients achieved RVR with sofosbuvir alone or in combination ribavirin with or without pegylated IFN, irrespective of genotype. Sixty two percent were available for EVR measurement, of which 79% responded. Out of five patients who did not demonstrate EVR, two had prior treatment failure with pegylated interferon and ribavirin.

### **Conclusion:**

This is the first study from India showing 100% of RVR of which 79% also demonstrated EVR to sofosbuvir alone or in combination ribavirin with or without pegylated IFN irrespective of the genotype.

## **CRYPTOCOCCAL MENINGITIS AND STROKE: A CASE SERIES**

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### **Background:**

Cryptococcal meningitis continues to be one of the common causes of chronic CNS infection in India. It is an important opportunistic infection in patients with a compromised cellular immune response, and is mostly seen in patients with HIV. Literature regarding CNS infarct in patients with Cryptococcal meningitis is mostly from a single study with only 11 patients of Cryptococcal meningitis. Literature regarding CNS infarction, stroke among patients with Cryptococcal meningitis is scanty.

### **Aim and objectives:**

To assess the demographic characteristics, risk factors, clinical profile, vascular territory involved, and role of central nervous system vascular involvement in morbidity and mortality among Inpatients with Cryptococcus meningitis in a tertiary care centre in South India.

### **Methods:**

In this retrospective study, we included all consecutive patients with culture proven Cryptococcal meningitis managed under the various General Medicine Units. All patients confirmed to have Cryptococcal meningitis and a CNS imaging, between the time periods 2004 to 2015 were analysed. We also compared HIV positive adult patients with Cryptococcal meningitis and CNS infarcts/stroke with HIV negative patients with Cryptococcal meningitis and CNS infarcts.

### **Results:**

Out of 151 patients with a culture proven diagnosis of Cryptococcal meningitis most had a CT C- as the principle form of CNS imaging. Only 26 imaging's [17%] were MRI brain. While 14 had an evidence of stroke, only 8 of these had evidence of acute infarction. All the 14 patients were included in the analysis. The mean age of patients presenting with meningitis and stroke was 42 [20-59]. Male to female ratio being 4:1. Of all patients with meningitis and stroke 6 [40%] were without HIV. Most common clinical presentation in this subgroup of patients was chronic fever, head ache, depressed sensorium and presence of meningeal signs which was present in all patients. Mean MRS, GCS of patients with meningitis and

stroke was 3, 12. Morbidity and mortality was higher in this subgroup of patients irrespective of seropositivity status

**Conclusion:**

Cryptococcal meningitis is becoming an increasingly common cause of chronic meningitis in our country. Vascular involvement leading to CNS infarct is common in the above patients. These infarcts are common irrespective of patient's seropositive status. CNS infarctions are associated with significant morbidity in patients with Cryptococcal meningitis.

**THE IMPACT OF ASD AND OTHER NEURODEVELOPMENTAL DISORDERS ON THE FAMILY: COMPARISONS AND PREDICTORS**

Beena Koshy, Rachel Beulah, Lincy Glory, S Suganthi and Reeba Roshan

**Background:**

Autism spectrum disorders (ASD) and other neurodevelopmental disorders (NDD) impact families adversely. Published studies state that families of children with ASD report a higher impact than those with other NDD. There is a paucity of data evaluating these concepts in the Low Middle Income Countries (LMIC).

**Objectives:**

3. To evaluate whether families of children with ASD report a higher impact than those with other NDD
4. To understand the predictors for the impact on families of children with either disorder

**Methods:**

All families who were welcomed to an inpatient residential facility attached to the Developmental Paediatrics Unit in a tertiary care centre in India for detailed assessment and interventions from January 2015 to June 2015 were included in the analysis. The child was diagnosed by a multidisciplinary team of physicians, psychologists and therapists. The ASD diagnosis was confirmed by DSM-V and Childhood Autism Rating Scale (CARS). The Revised Impact on Family questionnaire was administered to all families to assess the impact.

**Results:**

130 children were included in this study. Both families of children with ASD and other NDD reported high impact on the family. There was no significant difference between the reported impact of ASD and NDD (38.17 and 38.13 respectively;  $p=.981$ ). Being a girl child (45.8 vs 36.84 respectively;  $p=.004$ ) and having associated developmental delay (39.82 vs 28 respectively;  $p=.022$ ) had higher impact on families of children, which remained significant in a linear regression.

**Conclusions:**

Both ASD and NDD have high impact on families. Additional support need to be provided for families of children with ASD and associated developmental delay. The impact of gender on ASD and other NDD needs to be explored further incorporating the local cultural milieu.

# **CLINICAL PROFILE, TREATMENT AND OUTCOME OF CULTURE CONFIRMED BRUCELLOSIS FROM SOUTH INDIA.**

**Key words:** Brucellosis, culture, disease spectrum, treatment, South India

## **Background:**

Brucellosis is the most common zoonosis worldwide. There were only few case series reported from India despite having significant rural population and exposure to livestock. The exact burden of the disease in India is unknown due to paucity of reports and the disease misdiagnosed as other conditions like tuberculosis.

## **Objectives:**

This retrospective study was conducted to determine the disease spectrum, complications, antibiotic susceptibility patterns, treatment and outcome of culture confirmed brucellosis from South India.

## **Methodology:**

This retrospective study was conducted among patients who presented to Christian Medical College, Vellore from January 2009 to July 2015. A total of 22 patients who had culture confirmed brucellosis were included in this study. Diagnosis of brucellosis was confirmed by culturing the sera or body fluids by standard BACTEC method. Electronic medical records of those patients with culture confirmed brucellosis were reviewed. Microsoft Excel was used for data entry and SPSS 16 was used for statistical analysis.

## **Results:**

A total of 22 patients with culture confirmed brucellosis were included in this study. Out of 22 patients, 21 patients (95.5%) were male. The median age at presentation was 40 years ranging from 25 to 85 years. Thirteen out of 22 patients (59%) were from rural area. Majority of the patients were from Tamil Nadu (12 patients, 54.5%) followed by Andhra Pradesh (5 patients, 22.7%). Eleven out of 22 patients (50%) had history of exposure to livestock and 5 patients (23%) had history of consumption of unpasteurized milk/milk products. Co-morbidities at presentation were type 2 diabetes mellitus (6 patients, 27%), malignancies (2,9%), HIV infection and chronic liver disease ( 1 patient each,4.5%).

Most common type of presentation based on duration was acute (12 patients,55%) followed by sub acute (6 patients, 27%). Various presentations of brucellosis were systemic brucellosis (18 patients, 82%), osteo articular involvement (2 patients, 9%), Genital (1 patient, 4.5%) and endocarditis (1 patient, 4.5%). Osteo articular involvement and endocarditis were seen in sub acute type of presentation. Common clinical features at presentation were fever, asymmetrical large joint arthralgia, low back pain, loss of weight and appetite, hepatomegaly and splenomegaly. Treatment regimen in 10 out of 18 patients included an amino glycoside and doxycycline with a mean duration of 6 weeks. Mean duration of follow up was 18 months. None of the patients who had completed appropriate treatment had relapse during follow up.

## **Conclusion:**

4. Brucellosis although rare in India, can present with protean manifestations with high morbidity. Hence high clinical suspicion is required for diagnosis especially in patients with significant exposure history.
5. Automated culture techniques like BACTEC method should be employed to facilitate early and sensitive diagnosis.

6. Treatment with Doxycycline and an amino glycoside is a good treatment option with excellent outcome.

## **CLINICORADIOLOGICAL FEATURES AND OUTCOME OF MOYA MOYA DISEASE (MMD) AND SYNDROME IN A TERTIARY LEVEL TEACHING HOSPITAL IN SOUTH INDIA**

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Moya Moya disease is an idiopathic vasculopathy affecting terminal internal carotid arteries.

### **Type:**

Retrospective chart review

### **Methodology:**

Chart of patients diagnosed to have Moya Moya disease (MMD) and syndrome (2003 to 2013) were analysed for demographic characteristics, clinical presentation, radiological features, management and outcome.

### **Results and discussion:**

115 patients (62 males and 53 females) were studied. Age at onset of stroke was 15.4 years (Range 6 months - 60 years). Children formed majority (70%). 85% of patients hail from eastern India. Anterior circulation was involved in all, posterior circulation in 69 patients (60%) with 32 patients having posterior circulation infarcts. Most common presentation was hemiparesis (44%), followed by seizure (43%), headache(6%), language disturbances(2%), cognitive decline(0.08%), chorea(0.08%), visual symptoms(0.08%) and asymptomatic(0.08%). Family history was positive in 7 belonging to 3 families. 13 had syndromic diagnosis (Neurofibromatosis (4), tuberous sclerosis(1), downs syndrome(1), PHACES syndrome(1), EBV infection(1), Sickle cell anemia(2), thalassemia(1) and megaloblastic anemia(1) and a syndromic moya moya with cataract). All children presented with ischaemic events and 4 adults presented with hemorrhage. 26 patients (22.6%) underwent indirect surgical revascularisation with total of 36 procedures (16 patients with unilateral and 10 patients with bilateral procedures). Mean follow up was 2.19 years (Range 3 months to 10 years). Residual deficits, gain in mRS and frequency of events were comparable in surgical and non surgical group.

### **Conclusion:**

Higher prevalence of MMD is found in North Eastern states of India and is an important cause for stroke in young. There is a lesser incidence of hemorrhage and posterior circulation involvement in children compared to adults. This is the first series in India to report familial cases.

Future directions:

Genetic studies in familial cases are under way

National registry and outcome analysis

## **SENSITIVITY AND SPECIFICITY OF CRP IN NEONATES AT RISK OF SEPSIS IN A SECONDARY HOSPITAL-A COHORT STUDY**

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### **Objective:**

To determine the utility of CRP in the diagnosis of sepsis in neonates with maternal risk factors of sepsis.

### **Design:**

Prospective observational cohort study.

### **Setting:**

Secondary level hospital in Vellore, South India.

### **Participants:**

Neonates with maternal risk factors of sepsis (Maternal fever; maternal UTI; any ungloved per vaginal examination, or >3 gloved per vaginal examination after rupture of membranes; chorioamnionitis; spontaneous preterm delivery; prolonged rupture of membranes and pre labor rupture of membranes).

### **Methods:**

Neonates with maternal risk factors of sepsis were recruited. Demographic data, birth data and timings of blood culture, antibiotics and CRP were recorded. Clinical signs of sepsis were determined using the Singh Sepsis Score (grunting, abdominal distension, increased pre-feed aspirates, tachycardia, hyperthermia, chest retractions and lethargy). Results of blood culture, CRP and clinical signs of sepsis were compared.

### **Results:**

CRP had a sensitivity 28.6%, specificity 81.9%, negative predictive value 80.9% and positive predictive value 30% when compared to clinical diagnosis of sepsis. Only 9 blood cultures grew possible pathogens. CRP by latex agglutination correlated with CRP values by nephelometry with a correlation coefficient of 0.684.

### **Conclusions:**

A negative CRP excluded sepsis with reasonable confidence in blood culture negative neonates with maternal risk factors of sepsis.

## **EFFECT OF DYSEMBRYOGENESIS IN CHILDREN WITH AUTISM**

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### **Background:**

Autism Spectrum Disorder is a behaviourally defined disorder characterised by deficits in social communication (both verbal and non verbal) and presence of repetitive, restricted patterns of behaviour and interest. It is a heterogeneous condition with varying etiologies, most of them being genetic or environmental. Children with autism are known to have increased prevalence of dysmorphic features, suggesting altered embryogenesis. There is a lack of studies evaluating the effect of dysembryogenesis in children with autism.

### **Objective:**

Evaluate the effect of dysembryogenesis on the development of children with autism.

### **Methodology:**

The Miles Autism Dysmorphology measure was used to classify 30 children with autism into complex autism (if they had dysmorphic markers) or essential autism (no dysmorphic markers). The development and the clinical severity of both groups were compared using standardized measures..

Prevalence of dysmorphic markers was also estimated among 140 normal children.

### **Results:**

Dysmorphic markers were more prevalent among autistic children compared to normal controls ( $p=0.0002$ ). Among the autistic children, 30% had complex autism and these children had earlier onset of stereotypic symptoms ( $p=0.0138$ ), earlier age of regression of language and social milestones ( $p=0.027$ ) and more developmental delay ( $p=0.0257$ ).

### **CONCLUSIONS:**

Dysembryogenesis in the prenatal period may contribute to the heterogeneity seen in children with autism

**Keywords:** Autism; dysmorphism; complex autism; essential autism

## **PREDICTORS OF MORTALITY IN VERY LOW BIRTH INFANTS IN A TERTIARY HEALTH CENTRE**

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### **Background:**

Very Low birth weight (VLBW infants, <1500g birth weight) are vulnerable to many neonatal complications because of the immaturity of the organs. This prospective observational study which was done to determine the relationship between the neonatal complications and the mortality in the Neonatal intensive care unit (NICU). 703 of these infants were followed up till death or discharge from the NICU.

### **Aim:**

To determine the predictors of mortality in VLBW infants who were admitted into the NICU

### **Results:**

The mortality rate of the cohort was 7.73% (5.85%-9.61% 95% CI). There was no difference between in the mortality rate between girls (8.9%) and boys (8.1%), [OR 0.9067 (0.53 to 1.5495% CI) p =0.718]. 30.7% of the infants were small for gestational age, however there was no difference in the mortality of the SGA infants as compared to that of appropriate for gestational age infants.

On the univariate analysis the following factors were significantly associated with mortality – Birthweight less than 1000 g ELBW infants, gestational age less than 28 weeks, perinatal asphyxia, septicemia, Grades 3 & 4 Intraventricular hemorrhage, Patent ductus arteriosus, Respiratory distress syndrome, Severe necrotizing enterocolitis, and Acute kidney injury. No antenatal or perinatal factors were significantly associated with mortality. Severe intraventricular hemorrhage and respiratory distress syndrome (RDS) were significantly associated with male sex.

In the multivariate logistic regression model the following factors predicted mortality - **birth weight of less than 1000g** [OR 3.39 (1.51-8.03, 95% CI, p <0.001], **gestational age of less than 28 weeks** [OR 10.73 (3.2-36.0 95%CI) p<0.001] **septicemia** [OR 6.4 (3.39-12.11, 95% CI, p <0.001], **severe Necrotizing enterocolitis(NEC)** [OR 15.81 (3.88-64.5, 95% CI, p =0.003], **perinatal asphyxia** [OR 12.77 (4.99-32.6, 95% CI, p <0.001] and **acute kidney injury** [OR 12.48 (4.0-38.96 95% CI), p < 0.001] were the predictors of mortality. The final predictive model yielded an area under the ROC curve of 0.853 (0.798-0.909 95% CI; p<0.001) indicating good discrimination.

**Conclusions:** The survival rate of VLBW infants is comparable to that of the Western standards. Unfortunately septicemia remains a major cause of mortality in this country.

Riddhi Dasgupta

CLINICAL FEATURES, BIOCHEMICAL PROFILE, RADIOLOGICAL CHARACTERISTICS,  
TREATMENT MODALITIES AND CORRELATION OF CLINICO-RADIOLOGICAL FEATURES  
AS MARKERS OF DISEASE SEVERITY IN INDIAN TYPE 2 DIABETES MELLITUS SUBJECTS  
WITH CHRONIC CHARCOT'S FOOT : EXPERIENCE FROM A SINGLE TERTIARY CARE  
CENTRE.

**Riddhi Dasgupta**, Mahesh DM, Damien Cheema, Anna Cheema, Chaithanya Murthy, Surjit Singh, Bharthi , Sunitha , Anand<sup>1</sup>, Swapna Patil<sup>2</sup>, Henry Prakash<sup>2</sup>, Jyoti Panwar<sup>3</sup>, Koyeli M<sup>3</sup> , Sunil Agarwal<sup>4</sup>, Dukhabandhu Naik , Nihal Thomas

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**Background:**

Charcot foot is a serious and potentially limb-threatening lower-extremity complication of diabetes. First described in 1883, this enigmatic condition continues to pose challenges for clinicians.

**Objectives:**

3. To study the clinical, biochemical and radiological characteristics of T2DM patients with chronic Charcot's foot including Meary's angle and Calcaneal pitch as markers of disease severity.
4. To assess the different therapeutic modalities employed in them.

**Material and methods:**

A retrospective study was carried out in 300 consecutive patients with Type 2 Diabetes Mellitus attending the Integrated Diabetes Foot Clinic ,Department of Endocrinology, CMC Vellore from January 2012-December 2014. Out of these patients , 112 feet of 90 patients were identified as chronic Charcot neuroarthropathy based on clinical and radiological criteria and categorized according to Sanders and Mrdjencovic classification system. Meary's angle and Calcaneal pitch were calculated in them. IRB approved the study while data analysis was performed with the IPSS 17.0.

**Results and analysis:**

Forty-four patients (49%) presented with right-sided Charcot arthropathy, twenty four (27%) patients with left and twenty-two (24%) patients had both right and left sided Charcot feet on first presentation. The mean duration of diabetes was 14.3 years ( $\pm 7.5$  years) .Seventeen patients (19%) had a duration of 1 month or less, fifty-three patients (59%) had a duration of between 1-12 months and twenty (22%) had a duration of more than 12 months. Radiographically multiple regions of the foot were involved in 62 cases (55%) while the forefoot (101 feet, 90%) was the most commonly involved region . Calcaneal pitch  $< 17^\circ$  is significantly associated with midfoot ulcer , Meary's angle  $> 15^\circ$  with midfoot charot while both Mearys angle  $> 15^\circ$  and calcaneal pitch  $< 17^\circ$  are significant for joint instability ( $p=0.001$ ). Total Offloading was the gold standard of treatment for Charcot to reduce ulcer healing time.

**Conclusions:**

Patients with significant neuropathy should have baseline X-ray with calcaneal pitch and Meary's angle assessed. Customised footwear (moulded insole) for all patients with Meary's angle  $>15^{\circ}$  +/- calcaneal pitch  $<17^{\circ}$  in order to prevent forefoot and midfoot ulcers.

## **STUDY OF DERMATOSCOPIC FINDINGS IN RELATION TO ACTIVITY IN VITILIGO**

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**Background:** Stability in vitiligo is a matter of debate and most of the time, assessment is based on patient's history which may be unreliable. A stable vitiligo patch without any signs of activity is a must before attempting any surgical procedure in Vitiligo. Dermatoscopy in vitiligo is a relatively under used technique and a study of its use in defining stable vitiligo is yet to be reported in literature.

**Aim:** To analyse the various dermatoscopic findings in Vitiligo to define patterns in stable as against unstable lesions.

**Methodology:** A prospective study was conducted in the Department of Dermatology on patients with a clinical diagnosis of Vitiligo and who are willing to participate in the study from September 2014 to September 2015. Clinical examination was done using Wood's lamp and dermatoscopic analysis using a handheld Dermlite DL3 dermatoscope. Vitiligo disease activity (VIDA) scoring was performed for the subjective assessment of disease activity.

### **Results:**

Chi-square test was used to test association between categorical variables and sensitivity and specificity was calculated with 95% CIs. Six dermatoscopic findings were assessed namely border of the lesions, pigment network within the lesion, perilesional hyperpigmentation, perifollicular pigmentation, presence of satellite lesions and micro-koebner phenomenon.

### **Conclusion:**

Stable lesions were defined as lesions with sharp borders, absence or reticular pigmentation within the patch, presence of perilesional and perifollicular pigmentation, absence of satellite lesions and micro-koebner's phenomenon.

## CLINICAL FEATURES AND OUTCOMES OF PATIENTS WITH VIRAL ENCEPHALITIS - 10 YEAR DATA FROM THE DEPARTMENT OF GENERAL MEDICINE

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### **Abstract**

We did a retrospective chart review of patients admitted and discharged with a diagnosis of viral encephalitis over a period of 10 years from 2004 to 2013. IRB and Ethics board clearance was obtained. We searched the discharge diagnoses using the terms ‘encephalitis’ and ‘meningoencephalitis.’ We looked at patterns in clinical presentation, laboratory features, radiological features, treatment and outcome. Cases due to non viral etiologies like tuberculosis, scrub typhus, fungi, autoimmune disorders and malignancies were excluded. We also excluded Rabies. There were a total of 175 patients of which 58.3% were males and 62.9% belonged to the age group < 40 years. Fever was present in 92.5% and seizures in 76.5%. Headache was present only in 48% and vomiting in 38%. The duration of illness was < 2 weeks in 92.3%. Aetiological diagnosis was available only for 16 out of 139 patients tested with CSF PCR. An adverse outcome (death or discharged against medical advice) was seen in 26.85% of patients. Univariate analysis revealed association of mortality with presence of seizures, altered sensorium, and fever; absence of headache; and thrombocytopenia. Viral encephalitis continues to have high mortality and the aetiology in majority of them remains undiagnosed.

# **FEMORAL ARTERIAL BLOWOUT POST GROIN RECURRENCE IN VULVAR CARCINOMA – NOVEL ENDOVASCULAR MANAGEMENT**

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## **Background :**

Femoral artery blowout is an extremely rare complication described in advanced vulvar malignancy with groin recurrence. Though clear-cut management algorithm for the management of primary vulvar carcinoma exists based on evidence, there is no standard of care available for groin recurrence complicated with femoral artery rupture due to the rarity of the condition.

## **Case:**

We report a rare case of life-threatening haemorrhage due to right femoral artery blowout in a 60 year old postmenopausal lady with recurrent vulvar carcinoma after palliative radiotherapy. Digital subtraction angiography followed by covered stent deployment across the arterial defect was done successfully to achieve haemostasis while salvaging the lower limb perfusion thereby saving the life of the patient with less perioperative morbidity when compared to a major palliative surgery.

## **Conclusion :**

Minimally invasive endovascular approach is a highly desirable, safe and effective palliative management option with reasonably good quality of life post-procedure when compared to complex and morbid surgeries in the setting of femoral arterial blowout following groin recurrence in advanced vulvar cancer.

## **OUTCOME OF EARLY STAGE CERVICAL CARCINOMA TREATED WITH RADICAL HYSTERECTOMY**

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### **Objectives:**

The objective of this study was to evaluate the survival outcome, prognostic factors and complications of Radical hysterectomy for the treatment of early stage (I-IIA) cervical carcinoma at our institution.

### **Methods:**

The medical records of cervical cancer patients who underwent Radical hysterectomy and pelvic lymphadenectomy at Christian Medical College Hospital over 10 years between January 2001 and December 2010 were reviewed. There were 61 patients in the study period. Survival rate was analyzed using Kaplan-Meier life table analysis. Chi-square test was used for statistical analysis for significance wherever appropriate. Survival outcome and pattern of recurrence in subgroups were analyzed by using Log rank test.

**Results:** The 5 year survival rate was 95% with a follow up of 88% . 8 (14.8%)of the 54 patients available for follow up had recurrence of disease within 5 years which were mostly local(88%) . Our study group had 7(12%) stage IA , 44(72.2%)stage IB1, 5(8 %) stage IB2 ; and 5(8 %)stage IIA. The most common histology was squamous cell carcinoma (79%) followed by adenocarcinoma (18%). Deep stromal invasion was seen in 39% and LVSI in 25%. Pelvic nodes positivity was seen in 9(14%), parametrial involvement in 4( 7%) and vaginal margin involvement in 12(20%) Intra-operative complications were seen in 11(18%). In the post-operative period, 18(30% )of patients had urinary tract infections, 14(23%) developed voiding dysfunction, 6( 10%) had wound dehiscence and 1(1.6%)had ureteric fistula. Late complications included 2(3.7% )bladder dysfunction, 2(3.7%) bowel complications and 1(1.8%) lymphedema. 22(41%) received adjuvant Radiation Therapy due to presence of intermediate and high risk factors..

### **Conclusion:**

Early stage cervical cancer patients treated with radical hysterectomy with pelvic lymphadenectomy have favorable survival outcome and minimal morbidity with proper case selection and good operative technique.

## CRYPTOCOCCAL MENINGITIS AND STROKE: A CASE SERIES

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### **Background:**

Cryptococcal meningitis continues to be one of the common causes of chronic CNS infection in India. It is an important opportunistic infection in patients with a compromised cellular immune response, and is mostly seen in patients with HIV. Literature regarding CNS infarct in patients with Cryptococcal meningitis is mostly from a single study with only 11 patients of Cryptococcal meningitis. Literature regarding CNS infarction, stroke among patients with Cryptococcal meningitis is scanty.

### **Aim and objectives:**

To assess the demographic characteristics, risk factors, clinical profile, vascular territory involved, and role of central nervous system vascular involvement in morbidity and mortality among Inpatients with Cryptococcus meningitis in a tertiary care centre in South India.

### **Methods:**

In this retrospective study, we included all consecutive patients with culture proven Cryptococcal meningitis managed under the various General Medicine Units. All patients confirmed to have Cryptococcal meningitis and a CNS imaging, between the time periods 2004 to 2015 were analysed. We also compared HIV positive adult patients with Cryptococcal meningitis and CNS infarcts/stroke with HIV negative patients with Cryptococcal meningitis and CNS infarcts.

### **Results:**

Out of 151 patients with a culture proven diagnosis of Cryptococcal meningitis most had a CT C- as the principle form of CNS imaging. Only 26 imaging's [17%] were MRI brain. While 14 had an evidence of stroke, only 8 of these had evidence of acute infarction. All the 14 patients were included in the analysis. The mean age of patients presenting with meningitis and stroke was 42 [20-59]. Male to female ratio being 4:1. Of all patients with meningitis and stroke 6 [40%] were without HIV. Most common clinical presentation in this subgroup of patients was chronic fever, head ache, depressed sensorium and presence of meningeal signs which was present in all patients. Mean MRS, GCS of patients with meningitis and stroke was 3, 12. Morbidity and mortality was higher in this subgroup of patients irrespective of seropositivity status

### **Conclusion:**

Cryptococcal meningitis is becoming an increasingly common cause of chronic meningitis in our country. Vascular involvement leading to CNS infarct is common in the above patients. These infarcts are common irrespective of patient's seropositive status. CNS infarctions are associated with significant morbidity in patients with Cryptococcal meningitis.

# **THE IMPACT OF ASD AND OTHER NEURODEVELOPMENTAL DISORDERS ON THE FAMILY: COMPARISONS AND PREDICTORS**

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## **Background:**

Autism spectrum disorders (ASD) and other neurodevelopmental disorders (NDD) impact families adversely. Published studies state that families of children with ASD report a higher impact than those with other NDD. There is a paucity of data evaluating these concepts in the Low Middle Income Countries (LMIC).

## **Objectives:**

5. To evaluate whether families of children with ASD report a higher impact than those with other NDD
6. To understand the predictors for the impact on families of children with either disorder

## **Methods:**

All families who were welcomed to an inpatient residential facility attached to the Developmental Paediatrics Unit in a tertiary care centre in India for detailed assessment and interventions from January 2015 to June 2015 were included in the analysis. The child was diagnosed by a multidisciplinary team of physicians, psychologists and therapists. The ASD diagnosis was confirmed by DSM-V and Childhood Autism Rating Scale (CARS). The Revised Impact on Family questionnaire was administered to all families to assess the impact.

## **Results:**

130 children were included in this study. Both families of children with ASD and other NDD reported high impact on the family. There was no significant difference between the reported impact of ASD and NDD (38.17 and 38.13 respectively;  $p=.981$ ). Being a girl child (45.8 vs 36.84 respectively;  $p=.004$ ) and having associated developmental delay (39.82 vs 28 respectively;  $p=.022$ ) had higher impact on families of children, which remained significant in a linear regression.

## **Conclusions:**

Both ASD and NDD have high impact on families. Additional support need to be provided for families of children with ASD and associated developmental delay. The impact of gender on ASD and other NDD needs to be explored further incorporating the local cultural milieu.

## **CLINICAL PROFILE, TREATMENT AND OUTCOME OF CULTURE CONFIRMED BRUCELLOSIS FROM SOUTH INDIA.**

**Key words:** Brucellosis, culture, disease spectrum, treatment, South India

### **Background:**

Brucellosis is the most common zoonosis worldwide. There were only few case series reported from India despite having significant rural population and exposure to livestock. The exact burden of the disease in India is unknown due to paucity of reports and the disease misdiagnosed as other conditions like tuberculosis.

### **Objectives:**

This retrospective study was conducted to determine the disease spectrum, complications, antibiotic susceptibility patterns, treatment and outcome of culture confirmed brucellosis from South India.

### **Methodology:**

This retrospective study was conducted among patients who presented to Christian Medical College, Vellore from January 2009 to July 2015. A total of 22 patients who had culture confirmed brucellosis were included in this study. Diagnosis of brucellosis was confirmed by culturing the sera or body fluids by standard BACTEC method. Electronic medical records of those patients with culture confirmed brucellosis were reviewed. Microsoft Excel was used for data entry and SPSS 16 was used for statistical analysis.

### **Results:**

A total of 22 patients with culture confirmed brucellosis were included in this study. Out of 22 patients, 21 patients (95.5%) were male. The median age at presentation was 40 years ranging from 25 to 85 years. Thirteen out of 22 patients (59%) were from rural area. Majority of the patients were from Tamil Nadu (12 patients, 54.5%) followed by Andhra Pradesh (5 patients, 22.7%). Eleven out of 22 patients (50%) had history of exposure to livestock and 5 patients (23%) had history of consumption of unpasteurized milk/milk products. Co-morbidities at presentation were type 2 diabetes mellitus (6 patients, 27%), malignancies (2,9%), HIV infection and chronic liver disease ( 1 patient each,4.5%).

Most common type of presentation based on duration was acute (12 patients,55%) followed by sub acute (6 patients, 27%). Various presentations of brucellosis were systemic brucellosis (18 patients, 82%), osteo articular involvement (2 patients, 9%), Genital (1 patient, 4.5%) and endocarditis (1 patient, 4.5%). Osteo articular involvement and endocarditis were seen in sub acute type of presentation. Common clinical features at presentation were fever, asymmetrical large joint arthralgia, low back pain, loss of weight and appetite, hepatomegaly and splenomegaly. Treatment regimen in 10 out of 18 patients included an amino glycoside and doxycycline with a mean duration of 6 weeks. Mean duration of follow up was 18 months. None of the patients who had completed appropriate treatment had relapse during follow up.

### **Conclusion:**

7. Brucellosis although rare in India, can present with protean manifestations with high morbidity. Hence high clinical suspicion is required for diagnosis especially in patients with significant exposure history.
8. Automated culture techniques like BACTEC method should be employed to facilitate early and sensitive diagnosis.

9. Treatment with Doxycycline and an amino glycoside is a good treatment option with excellent outcome.

## **CLINICORADIOLOGICAL FEATURES AND OUTCOME OF MOYA MOYA DISEASE (MMD) AND SYNDROME IN A TERTIARY LEVEL TEACHING HOSPITAL IN SOUTH INDIA**

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Moya Moya disease is an idiopathic vasculopathy affecting terminal internal carotid arteries.

### **Type:**

Retrospective chart review

### **Methodology:**

Chart of patients diagnosed to have Moya Moya disease (MMD) and syndrome (2003 to 2013) were analysed for demographic characteristics, clinical presentation, radiological features, management and outcome.

### **Results and discussion:**

115 patients (62 males and 53 females) were studied. Age at onset of stroke was 15.4 years (Range 6 months - 60 years). Children formed majority (70%). 85% of patients hail from eastern India. Anterior circulation was involved in all, posterior circulation in 69 patients (60%) with 32 patients having posterior circulation infarcts. Most common presentation was hemiparesis (44%), followed by seizure (43%), headache(6%), language disturbances(2%), cognitive decline(0.08%), chorea(0.08%), visual symptoms(0.08%) and asymptomatic(0.08%). Family history was positive in 7 belonging to 3 families. 13 had syndromic diagnosis (Neurofibromatosis (4), tuberous sclerosis(1), downs syndrome(1), PHACES syndrome(1), EBV infection(1), Sickle cell anemia(2), thalessemia(1) and megaloblastic anemia(1) and a syndromic moya moya with cataract). All children presented with ischaemic events and 4 adults presented with hemorrhage. 26 patients (22.6%) underwent indirect surgical revascularisation with total of 36 procedures (16 patients with unilateral and 10 patients with bilateral procedures). Mean follow up was 2.19 years (Range 3 months to 10 years). Residual deficits, gain in mRS and frequency of events were comparable in surgical and non surgical group.

### **Conclusion:**

Higher prevalence of MMD is found in North Eastern states of India and is an important cause for stroke in young. There is a lesser incidence of hemorrhage and posterior circulation involvement in children compared to adults. This is the first series in India to report familial cases.

Future directions:

Genetic studies in familial cases are under way

National registry and outcome analysis

## **SENSITIVITY AND SPECIFICITY OF CRP IN NEONATES AT RISK OF SEPSIS IN A SECONDARY HOSPITAL-A COHORT STUDY**

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### **Objective:**

To determine the utility of CRP in the diagnosis of sepsis in neonates with maternal risk factors of sepsis.

### **Design:**

Prospective observational cohort study.

### **Setting:**

Secondary level hospital in Vellore, South India.

### **Participants:**

Neonates with maternal risk factors of sepsis (Maternal fever; maternal UTI; any ungloved per vaginal examination, or >3 gloved per vaginal examination after rupture of membranes; chorioamnionitis; spontaneous preterm delivery; prolonged rupture of membranes and pre labor rupture of membranes).

### **Methods:**

Neonates with maternal risk factors of sepsis were recruited. Demographic data, birth data and timings of blood culture, antibiotics and CRP were recorded. Clinical signs of sepsis were determined using the Singh Sepsis Score (grunting, abdominal distension, increased pre-feed aspirates, tachycardia, hyperthermia, chest retractions and lethargy). Results of blood culture, CRP and clinical signs of sepsis were compared.

### **Results:**

CRP had a sensitivity 28.6%, specificity 81.9%, negative predictive value 80.9% and positive predictive value 30% when compared to clinical diagnosis of sepsis. Only 9 blood cultures grew possible pathogens. CRP by latex agglutination correlated with CRP values by nephelometry with a correlation coefficient of 0.684.

### **Conclusions:**

A negative CRP excluded sepsis with reasonable confidence in blood culture negative neonates with maternal risk factors of sepsis.

## **EFFECT OF DYSEMBRYOGENESIS IN CHILDREN WITH AUTISM**

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### **Background:**

Autism Spectrum Disorder is a behaviourally defined disorder characterised by deficits in social communication (both verbal and non verbal) and presence of repetitive, restricted patterns of behaviour and interest. It is a heterogeneous condition with varying etiologies, most of them being genetic or environmental. Children with autism are known to have increased prevalence of dysmorphic features, suggesting altered embryogenesis. There is a lack of studies evaluating the effect of dysembryogenesis in children with autism.

### **Objective:**

Evaluate the effect of dysembryogenesis on the development of children with autism.

### **Methodology:**

The Miles Autism Dysmorphology measure was used to classify 30 children with autism into complex autism (if they had dysmorphic markers) or essential autism (no dysmorphic markers). The development and the clinical severity of both groups were compared using standardized measures..

Prevalence of dysmorphic markers was also estimated among 140 normal children.

### **Results:**

Dysmorphic markers were more prevalent among autistic children compared to normal controls ( $p=0.0002$ ). Among the autistic children, 30% had complex autism and these children had earlier onset of stereotypic symptoms ( $p=0.0138$ ), earlier age of regression of language and social milestones ( $p=0.027$ ) and more developmental delay ( $p=0.0257$ ).

## **CONCLUSIONS:**

Dysembryogenesis in the prenatal period may contribute to the heterogeneity seen in children with autism

**Keywords:** Autism; dysmorphism; complex autism; essential autism

## **PREDICTORS OF MORTALITY IN VERY LOW BIRTH INFANTS IN A TERTIARY HEALTH CENTRE**

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### **Background:**

Very Low birth weight (VLBW infants, <1500g birth weight) are vulnerable to many neonatal complications because of the immaturity of the organs. This prospective observational study which was done to determine the relationship between the neonatal complications and the mortality in the Neonatal intensive care unit (NICU). 703 of these infants were followed up till death or discharge from the NICU.

### **Aim:**

To determine the predictors of mortality in VLBW infants who were admitted into the NICU

### **Results:**

The mortality rate of the cohort was 7.73% (5.85%-9.61% 95% CI). There was no difference between in the mortality rate between girls (8.9%) and boys (8.1%), [OR 0.9067 (0.53 to 1.5495% CI) p = 0.718]. 30.7% of the infants were small for gestational age, however there was no difference in the mortality of the SGA infants as compared to that of appropriate for gestational age infants.

On the univariate analysis the following factors were significantly associated with mortality – Birthweight less than 1000 g ELBW infants, gestational age less than 28 weeks, perinatal asphyxia, septicemia, Grades 3 & 4 Intraventricular hemorrhage, Patent ductus arteriosus, Respiratory distress syndrome, Severe necrotizing enterocolitis, and Acute kidney injury. No antenatal or perinatal factors were significantly associated with mortality. Severe intraventricular hemorrhage and respiratory distress syndrome (RDS) were significantly associated with male sex.

In the multivariate logistic regression model the following factors predicted mortality - **birth weight of less than 1000g** [OR 3.39 (1.51-8.03, 95% CI, p < 0.001], **gestational age of less than 28 weeks** [OR 10.73 (3.2-36.0 95% CI) p < 0.001] **septicemia** [OR 6.4 (3.39-12.11, 95% CI, p < 0.001], **severe Necrotizing enterocolitis (NEC)** [OR 15.81 (3.88-64.5, 95% CI, p = 0.003], **perinatal asphyxia** [OR

12.77 (4.99-32.6, 95% CI,  $p < 0.001$ ) and **acute kidney injury** [OR 12.48 (4.0-38.96 95% CI),  $p < 0.001$ ] were the predictors of mortality. The final predictive model yielded an area under the ROC curve of 0.853 (0.798-0.909 95% CI;  $p < 0.001$ ) indicating good discrimination.

**Conclusions:** The survival rate of VLBW infants is comparable to that of the Western standards. Unfortunately septicemia remains a major cause of mortality in this country.

CLINICAL FEATURES, BIOCHEMICAL PROFILE, RADIOLOGICAL CHARACTERISTICS,  
TREATMENT MODALITIES AND CORRELATION OF CLINICO-RADIOLOGICAL FEATURES  
AS MARKERS OF DISEASE SEVERITY IN INDIAN TYPE 2 DIABETES MELLITUS SUBJECTS  
WITH CHRONIC CHARCOT'S FOOT : EXPERIENCE FROM A SINGLE TERTIARY CARE  
CENTRE.

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**Background:**

Charcot foot is a serious and potentially limb-threatening lower-extremity complication of diabetes. First described in 1883, this enigmatic condition continues to pose challenges for clinicians.

**Objectives:**

5. To study the clinical, biochemical and radiological characteristics of T2DM patients with chronic Charcot's foot including Meary's angle and Calcaneal pitch as markers of disease severity.
6. To assess the different therapeutic modalities employed in them.

**Material and methods:**

A retrospective study was carried out in 300 consecutive patients with Type 2 Diabetes Mellitus attending the Integrated Diabetes Foot Clinic, Department of Endocrinology, CMC Vellore from January 2012-December 2014. Out of these patients, 112 feet of 90 patients were identified as chronic Charcot neuroarthropathy based on clinical and radiological criteria and categorized according to Sanders and Mrdjencovic classification system. Meary's angle and Calcaneal pitch were calculated in them. IRB approved the study while data analysis was performed with the IPSS 17.0.

**Results and analysis:**

Forty-four patients (49%) presented with right-sided Charcot arthropathy, twenty four (27%) patients with left and twenty-two (24%) patients had both right and left sided Charcot feet on first presentation. The mean duration of diabetes was 14.3 years ( $\pm 7.5$  years). Seventeen patients (19%) had a duration of 1 month or less, fifty-three patients (59%) had a duration of between 1-12 months and twenty (22%) had a duration of more than 12 months. Radiographically multiple regions of the foot were involved in 62 cases

(55%) while the forefoot (101 feet, 90%) was the most commonly involved region. Calcaneal pitch  $<17^\circ$  is significantly associated with midfoot ulcer, Meary's angle  $>15^\circ$  with midfoot Charcot while both Meary's angle  $>15^\circ$  and calcaneal pitch  $<17^\circ$  are significant for joint instability ( $p=0.001$ ). Total Offloading was the gold standard of treatment for Charcot to reduce ulcer healing time.

### **Conclusions:**

Patients with significant neuropathy should have baseline X-ray with calcaneal pitch and Meary's angle assessed. Customised footwear (moulded insole) for all patients with Meary's angle  $>15^\circ$  +/- calcaneal pitch  $<17^\circ$  in order to prevent forefoot and midfoot ulcers.

## **STUDY OF DERMATOSCOPIC FINDINGS IN RELATION TO ACTIVITY IN VITILIGO**

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**Background:** Stability in vitiligo is a matter of debate and most of the time, assessment is based on patient's history which may be unreliable. A stable vitiligo patch without any signs of activity is a must before attempting any surgical procedure in Vitiligo. Dermatoscopy in vitiligo is a relatively under used technique and a study of its use in defining stable vitiligo is yet to be reported in literature.

**Aim:** To analyse the various dermatoscopic findings in Vitiligo to define patterns in stable as against unstable lesions.

**Methodology:** A prospective study was conducted in the Department of Dermatology on patients with a clinical diagnosis of Vitiligo and who are willing to participate in the study from September 2014 to September 2015. Clinical examination was done using Wood's lamp and dermatoscopic analysis using a handheld Dermlite DL3 dermatoscope. Vitiligo disease activity (VIDA) scoring was performed for the subjective assessment of disease activity.

### **Results:**

Chi-square test was used to test association between categorical variables and sensitivity and specificity was calculated with 95% CIs. Six dermatoscopic findings were assessed namely border of the lesions, pigment network within the lesion, perilesional hyperpigmentation, perifollicular pigmentation, presence of satellite lesions and micro-koebner phenomenon.

### **Conclusion:**

Stable lesions were defined as lesions with sharp borders, absence or reticular pigmentation within the patch, presence of perilesional and perifollicular pigmentation, absence of satellite lesions and micro-koebner's phenomenon.

## CLINICAL FEATURES AND OUTCOMES OF PATIENTS WITH VIRAL ENCEPHALITIS - 10 YEAR DATA FROM THE DEPARTMENT OF GENERAL MEDICINE

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### Abstract

We did a retrospective chart review of patients admitted and discharged with a diagnosis of viral encephalitis over a period of 10 years from 2004 to 2013. IRB and Ethics board clearance was obtained. We searched the discharge diagnoses using the terms 'encephalitis' and 'meningoencephalitis.' We looked at patterns in clinical presentation, laboratory features, radiological features, treatment and outcome. Cases due to non viral etiologies like tuberculosis, scrub typhus, fungi, autoimmune disorders and malignancies were excluded. We also excluded Rabies. There were a total of 175 patients of which 58.3% were males and 62.9% belonged to the age group < 40 years. Fever was present in 92.5% and seizures in 76.5%. Headache was present only in 48% and vomiting in 38%. The duration of illness was < 2 weeks in 92.3%. Aetiological diagnosis was available only for 16 out of 139 patients tested with CSF PCR. An adverse outcome (death or discharged against medical advice) was seen in 26.85% of patients. Univariate analysis revealed association of mortality with presence of seizures, altered sensorium, and fever; absence of headache; and thrombocytopenia. Viral encephalitis continues to have high mortality and the aetiology in majority of them remains undiagnosed.

# **FEMORAL ARTERIAL BLOWOUT POST GROIN RECURRENCE IN VULVAR CARCINOMA – NOVEL ENDOVASCULAR MANAGEMENT**

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## **Background :**

Femoral artery blowout is an extremely rare complication described in advanced vulvar malignancy with groin recurrence. Though clear-cut management algorithm for the management of primary vulvar carcinoma exists based on evidence, there is no standard of care available for groin recurrence complicated with femoral artery rupture due to the rarity of the condition.

## **Case:**

We report a rare case of life-threatening haemorrhage due to right femoral artery blowout in a 60 year old postmenopausal lady with recurrent vulvar carcinoma after palliative radiotherapy. Digital subtraction angiography followed by covered stent deployment across the arterial defect was done successfully to achieve haemostasis while salvaging the lower limb perfusion thereby saving the life of the patient with less perioperative morbidity when compared to a major palliative surgery.

## **Conclusion :**

Minimally invasive endovascular approach is a highly desirable, safe and effective palliative management option with reasonably good quality of life post-procedure when compared to complex and morbid surgeries in the setting of femoral arterial blowout following groin recurrence in advanced vulvar cancer.

## **OUTCOME OF EARLY STAGE CERVICAL CARCINOMA TREATED WITH RADICAL HYSTERECTOMY**

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### **Objectives:**

The objective of this study was to evaluate the survival outcome, prognostic factors and complications of Radical hysterectomy for the treatment of early stage (I-IIA) cervical carcinoma at our institution.

### **Methods:**

The medical records of cervical cancer patients who underwent Radical hysterectomy and pelvic lymphadenectomy at Christian Medical College Hospital over 10 years between January 2001 and December 2010 were reviewed. There were 61 patients in the study period. Survival rate was analyzed using Kaplan-Meier life table analysis. Chi-square test was used for statistical analysis for significance wherever appropriate. Survival outcome and pattern of recurrence in subgroups were analyzed by using Log rank test.

**Results:** The 5 year survival rate was 95% with a follow up of 88% . 8 (14.8%)of the 54 patients available for follow up had recurrence of disease within 5 years which were mostly local(88%) . Our study group had 7(12%) stage IA , 44(72.2%)stage IB1, 5(8 %) stage IB2 ; and 5(8 % )stage IIA. The most common histology was squamous cell carcinoma (79%) followed by adenocarcinoma (18%). Deep stromal invasion was seen in 39% and LVSI in 25%. Pelvic nodes positivity was seen in 9(14%), parametrial involvement in 4( 7%) and vaginal margin involvement in 12(20%) Intra-operative complications were seen in 11(18%). In the post-operative period, 18(30% )of patients had urinary tract infections, 14(23%) developed voiding dysfunction, 6( 10%) had wound dehiscence and 1(1.6%)had ureteric fistula. Late complications included 2(3.7% )bladder dysfunction, 2(3.7%) bowel complications and 1(1.8%) lymphedema. 22(41%) received adjuvant Radiation Therapy due to presence of intermediate and high risk factors..

### **Conclusion:**

Early stage cervical cancer patients treated with radical hysterectomy with pelvic lymphadenectomy have favorable survival outcome and minimal morbidity with proper case selection and good operative technique.

## **D-dimer levels in patients with Thromboangitis Obliterans**

### **Introduction**

Thromboangitis obliterans (TAO) is a vascular disease presenting with obliterative endarteritis. This is secondary to a mixture of thrombosis and inflammation. The exact causation and etio-pathogenesis of this disease remains unknown with tobacco use being the only definite etiological factor. Drug therapy is guided by clinical experience but no Indian data from large treatment series or etiological studies is available.

### **Methods**

We studied if D-dimer (a marker of thrombosis) levels are elevated in patients with thromboangitis obliterans (TAO) as compared to normal age matched controls. We used a case control design with the calculated sample size of 62 cases and 330 controls performed on consecutive patients with TAO diagnosed between April 2014 to May 2015.

### **Results:**

The median and inter-quartile range for D-dimer values were 61 (41-88) and 247(126-477) for the cases (n=62) and control (n=330) groups, respectively. The difference in the distribution was statistically significant between the two groups ( $P < 0.001$ ).

### **Conclusions:**

D-dimer levels are elevated in patients with Thromboangitis obliterans. This points to an underlying thrombotic process in this disease. Future studies can assess if these patients benefit from anticoagulants.

## Abstract

### Profile of Common Mental Illnesses and Identifying the Caregivers' Knowledge Gaps in Perception of Mental Illness in Rural Tamil Nadu

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**BACKGROUND** Worldwide about 10% of the population suffers from mental illness and World Health Organization estimates that by 2020 about 15% of global burden of disease will be due to mental illness. About 20% of the adult Indian population is affected with one or the other psychiatric disorders. Most of them are from rural areas and present initially to primary and secondary care centres. RUHSA's Mental Health Care Initiative has started since 2009 providing training to Community workers and self-help groups to identify individuals with mental illnesses in the community with treatment support from Psychiatry Unit III and RUHSA's Occupational Therapist.

**AIM** To identify common mental conditions prevalent in the community and assess the knowledge gaps of caregivers regarding causes, signs & symptoms and perception towards mental illness with an intention to provide a health intervention program.

**METHODS** Cross-sectional study design was chosen and the study was conducted by a group of 3<sup>rd</sup> year MBBS students between 18<sup>th</sup> and 25<sup>th</sup> March, 2015. Chart review was done to know about psychiatric illnesses. 100 caregivers of mentally ill patients from K V Kuppam block were chosen by convenient sampling and semi-structured questionnaire was administered.

**RESULTS and CONCLUSION** Common mental illnesses seen in the community were Depression, Psychosis, Somatoform disorder, seizure disorder, anxiety and schizophrenia in that order. Most of the caregivers (73%) were between 30-60 years of age; about half of them had low educational status (46%). Most of them had good knowledge about signs and symptoms and considered counseling and medication as two most important modalities of treatment. Majority of the caregivers believed that they received good family and social support while governmental support was lacking. An awareness program about causes, signs and symptoms and other treatment options was conducted among the caregivers.

# ESTIMATION OF ACTUAL STRENGTHS OF DIFFERENT BRANDS OF COMMONLY AVAILABLE PARACETAMOL TABLETS BY SPECTROPHOTOMETRY AND COMPARING THEM WITH THE CORRESPONDING LABEL INFORMATION

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**BACKGROUND:** Paracetamol is one of the most popularly used over-the-counter analgesic and anti-pyretic marketed by various companies. There are reported cases of wrong information in the labels pertaining to the strengths of paracetamol tablets leading to wrong dosage and abnormal therapeutic responses. There is a need for greater stringency in the manufacture of the correct strength of the drug.

**AIM:** This study was done to evaluate the actual strengths of different brands of commonly available paracetamol tablets by spectrophotometry and comparing them with the corresponding label information of these medications and calculate the degree of variation.

**METHODS:** 8 different brands of paracetamol tablets in multiple batches of different brands were randomly sampled from various local pharmacies. Standard and validated method for paracetamol assay using spectrophotometer was used. Both inter-batch and inter-brand variations in the strength of the paracetamol tablets were studied. Non-parametric Kruskal-Wallis test was used using 'R' program (3.1.0) for statistical analysis and  $P < 0.05$  was considered significant.

**RESULTS:** All the brands showed acceptable variation in mean strengths which ranged from  $91.3 \pm 0.00\%$  to  $101.7 \pm 12.59\%$  without significant variability. There was no significant inter-batch variability either.

**CONCLUSION:** It can be concluded from the above study that all the different brands of paracetamol tablets have acceptable strengths (as per British and United States Pharmacopeia) as compared to their respective label information.

Title:

Risk factors for diabetic peripheral neuropathy: a community based cross sectional study

Names and Affiliations (Roles):

Renu Mathew\*, Jai Mercy James, Tara Ann John, Ashley Joseph, Jahnawi Ravindra Marathe, James Theophil Benya, Syamambili C , Thomas Vinod Thomas , Sam David, Kurian Eapen, Praisey Nikita Paulina, # Beeson Thomas, # Anu Mary Oommen#

\*MBBS batch of 2012, #Department of Community Health, CMC Vellore

## **Abstract**

### **Background:**

Diabetic neuropathy which can lead to foot ulcers is a condition which needs to be identified early and measures taken to reduce complications.

### **Aims:**

The objectives of the study were to assess the prevalence of peripheral neuropathy among diabetics aged 30 to 70 years, residing in a rural block and to study the association of peripheral neuropathy with risk factors for the same.

### **Methods:**

A cross sectional study was conducted among all those with diabetes in seven villages of Kaniyambadi block aged 30 to 70 years, who had been identified as part of a previous survey. Peripheral neuropathy was assessed using 10g Semmes Weinstein monofilaments, tested on five sites per foot and risk factors using a questionnaire. Records were used to assess glycemic control and hyperlipidemia.

### **Results**

Out of 158 diabetics aged 30 to 70 years examined in the study area, peripheral neuropathy was found in 44% (95% CI: 36%-52%). Age greater than 55 years (OR: 2.78, 95% CI: 1.06-7.31) and education below five years (OR: 8.37, 95% CI: 2.79-25.08) were significantly associated with peripheral neuropathy, after adjusting for sex, duration of diabetes, socioeconomic status of the family, glycemic control, insulin use, hypertension, smoking, alcohol, lipids and body mass index.

### **Conclusions**

Our prevalence was similar to another study among diabetics in a secondary hospital in Vellore (47), but needs to be interpreted with caution due to high sensitivity but relatively low specificity of our screening test for peripheral neuropathy. However screening tests are primarily done to find those at increased risk. From the point of view of public health, higher prevalence means that more people will benefit from the advice offered. The high prevalence of peripheral

neuropathy among rural diabetics points to the need for additional inputs to prevent complications related to diabetic neuropathy in rural populations.

Table 3 Comparison of coronary heart disease in 1991-94 and 2010-12 (30 to 60 years)

	Year of study	Age adjusted rates of CHD*	
		Rural	Urban
Males	1991-94	2.75 (2.05-3.45)	4.63 (3.51-5.75)
	2010-12	2.58 (1.72-3.44)	5.79 (4.27-7.31)
Females	1991-94	2.39 (1.80-2.98)	5.48 (4.32-6.63)
	2010-12	6.33 (5.19-7.47)	12.69 (10.62-14.78)

\* adjusted to 2001 Census of India 30 to 60 years

## **6 years' Snakebite profile in rural area of Jharkhand:**

### **A community-Campus Partnership towards health, research and learning from secondary hospital posting.**

*Abhinav Agarwal\**, *Shubhankar BU\**, *Sahil M Masih\**, *Viswajit Krothapalli\**, *Alex Chekkalayil*, *Shubhanker Mitra\*\**, *Jeevan Kuruvilla\*\*\**, *Brian Mark Lee\**.

**\*2<sup>nd</sup> year MBBS student, Christian Medical College, Vellore, India**

**\*\* Assistant Professor, Department of Medicine – Unit IV, Christian Medical College, Vellore, India**

**\*\*\* Consultant Physician and Medical Superintendent, Nav Jivan Hospital, Satbarwa, Jharkhand**

#### **Background**

Snake bites cause more than an estimated 46000 deaths annually in India. 97% of bites occur in rural areas. Data on snake bites from Jharkhand's rural areas is sparse(1–4). This study describes 6 year profile of snake bite patients in a secondary hospital in Palamu district, Jharkhand and highlights the role of a secondary care hospital in managing these cases.

#### **Methods**

##### **Study setting, population and duration:**

Seven medical students from Christian Medical College (CMC), Vellore, were posted for 10 days at Nav Jivan Hospital (NJH) as a part of their secondary hospital program (SHP) in May, 2013. NJH is a 100 bedded secondary care hospital located at Satbarwa village in the district of Palamau of Jharkhand.

**IRB and Ethics committee approval:** Institutional Review Board (IRB) and ethics committee of the Emmanuel Hospital Association.

##### **Data collection and analysis:**

The data on demographic factors, clinical features, treatment, bite-to-arrival duration, cost and outcome for all patients diagnosed with "Snake bite" from 1<sup>st</sup> January, 2007 to 31<sup>st</sup> December, 2012 was collected from the inpatient records and analysed

#### **Results**

356 patients were enrolled for this study. There has been a 3.5 fold increase in the number of cases over 6 years (Figure 1). Age and Gender-wise distribution is shown in table 1. The peak incidence (40.8%) of snake bite cases occurs in the months of July and August (at the onset of

the monsoon rainfall) rather than over the entire rainy season. (Figure 2). Majority(93.6%) of bites occurred on the Feet, legs and hands . (Figure 3). Krait is the commonest (33.9%)among the identified species while 36.2% snake species remained unidentified (Figure 4). More than 50% patients presented within 5 hours of bite (Figure 5). 42.5% had coagulopathy (Figure 6). 49.5% were administered up to five vials of ASV only (Figure 7). 5.4% and 5.6% of the patients died and were referred to higher centres respectively.

The death rate was significantly higher among those who presented beyond 5 hours (64.7% Vs.35.3%) (p-value 0.015, **OR 2.7**).There was no significant difference in mortality among those administered less than or more than 5 vials of ASV (3.7% Vs.6.4%; p-value 0.08) or between males and females (8.3% vs. 4.5%; p-value 0.16).

10.8% patients developed anaphylactic reaction to ASV. Pheniramine and Hydrocortisone prophylaxis significantly decreased the ASV anaphylaxis (ARR=15.6; NNT=7.4).

Expenditure on ASV (Median = Rs. 4444) almost equalled that on other medicines (Rs 4423).

### **Conclusions:**

89% of snake bite cases can be managed at a secondary hospital.

Mortality is significantly higher among those presented beyond 5 hours of being bitten.

No significant difference in mortality is seen with use of low dose of ASV or due to gender differences.

Pheniramine and Hydrocortisone prophylaxis significantly decreases the anaphylaxis to ASV

Expenditure on ASV constitutes a large proportion of total bill.

### **References:**

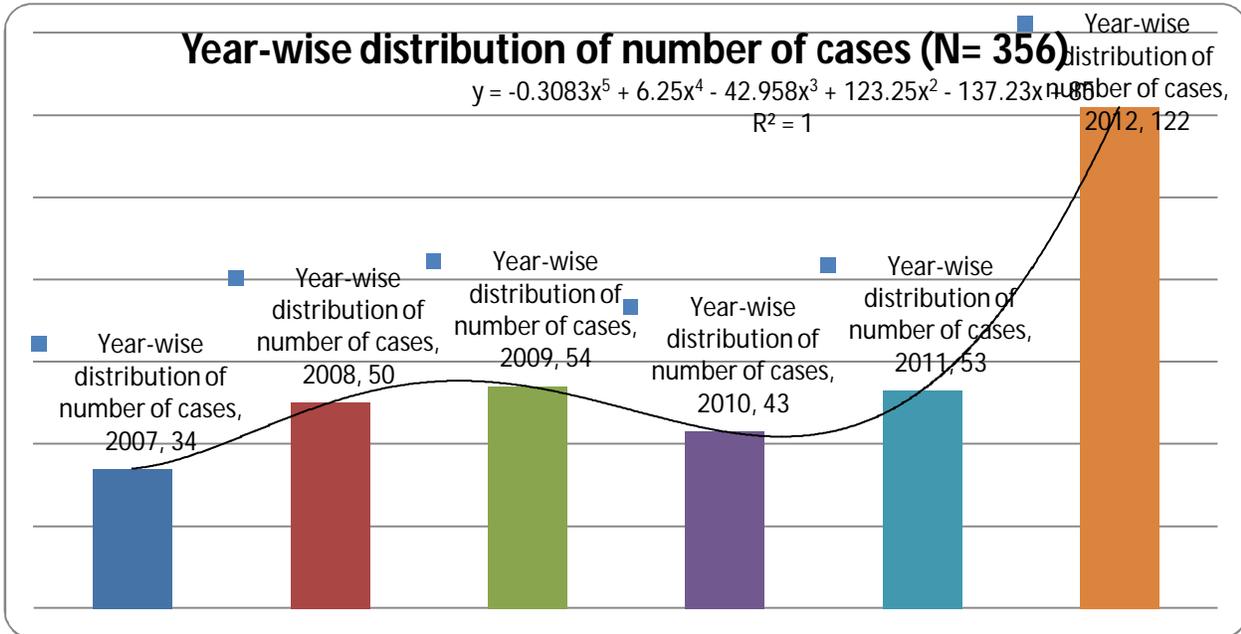
1. Mohapatra B, Warrell DA, Suraweera W, Bhatia P, Dhingra N, Jotkar RM, et al. Snakebite Mortality in India: A Nationally Representative Mortality Survey. *Plos Negl Trop Dis*. 2011 Apr 12;5(4):e1018.
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4. B R H, L H, A J L, P K C, K B V. A study on the clinico-epidemiological profile and the outcome of snake bite victims in a tertiary care centre in southern India. *J. Clin. Diagn. Res. Jcdr*. 2013 Jan;7(1):122–6.

## Tables and figures

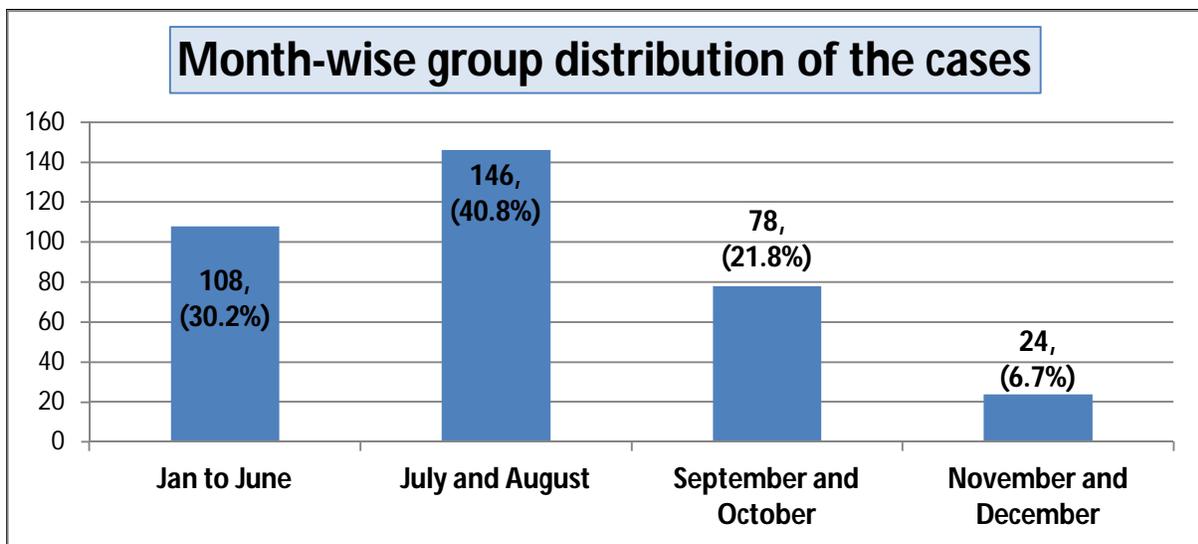
***Table 1. Age and Gender Distribution of snake bites***

		Gender		Total
		Male	Female	
AGE	<=9	13	10	23
		56.5%	43.5%	100.0%
	10-19	40	42	82
		48.8%	51.2%	100.0%
	20-29	39	32	71
		54.9%	45.1%	100.0%
	30-39	34	43	77
		44.2%	55.8%	100.0%
	40-49	26	35	61
	42.6%	57.4%	100.0%	
50-59	20	10	30	
	66.7%	33.3%	100.0%	
60-69	4	4	8	
	50.0%	50.0%	100.0%	
>=70	3	3	6	
	50.0%	50.0%	100.0%	
Total		179	179	358
		50.0%	50.0%	100.0%

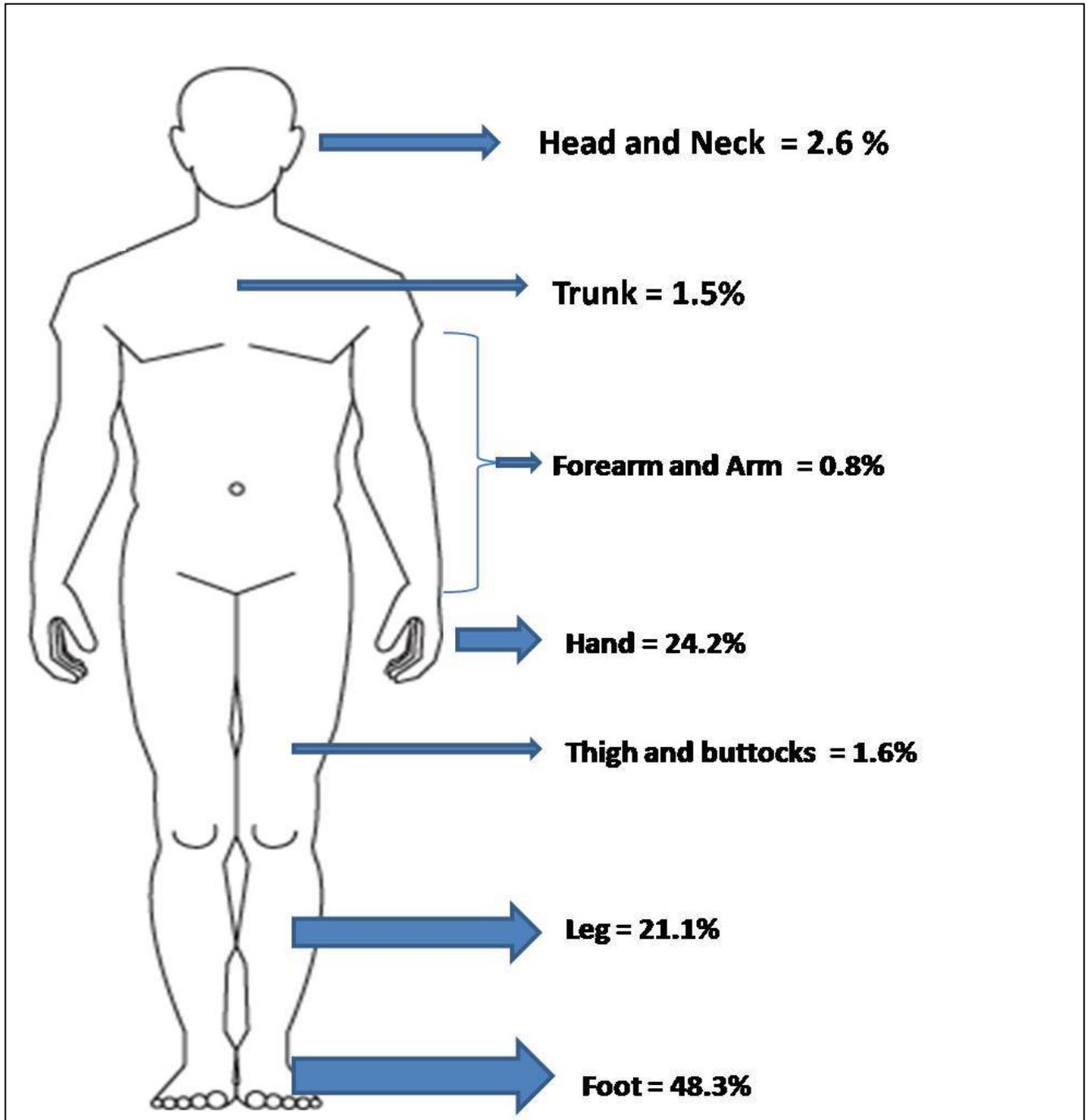
**Figure 1: Year-wise distribution of cases:**



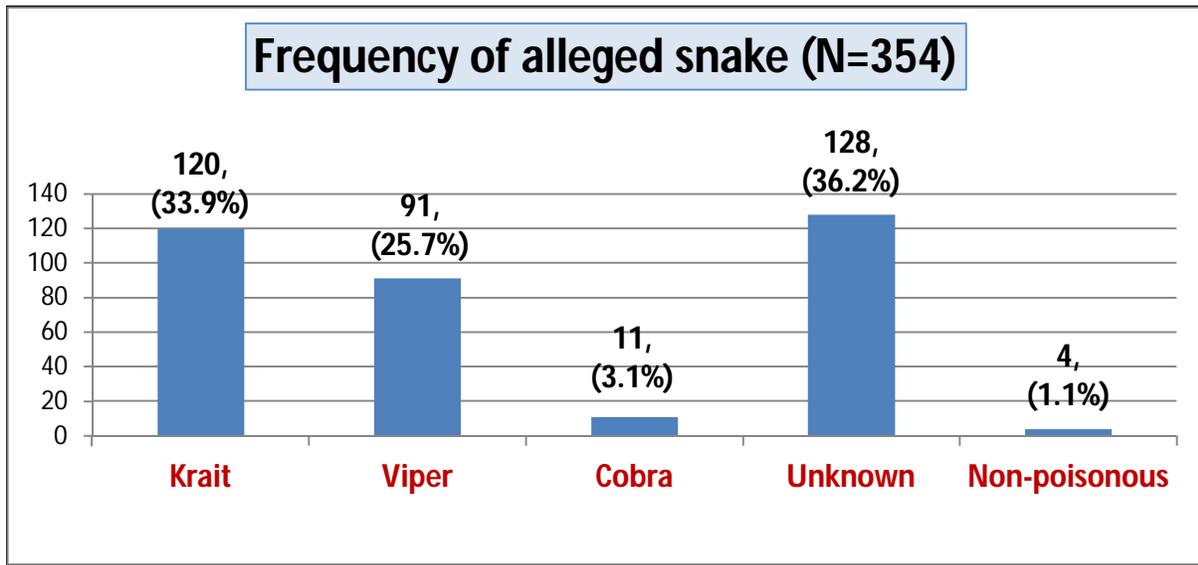
**Figure 2: Month wise group distribution of cases**



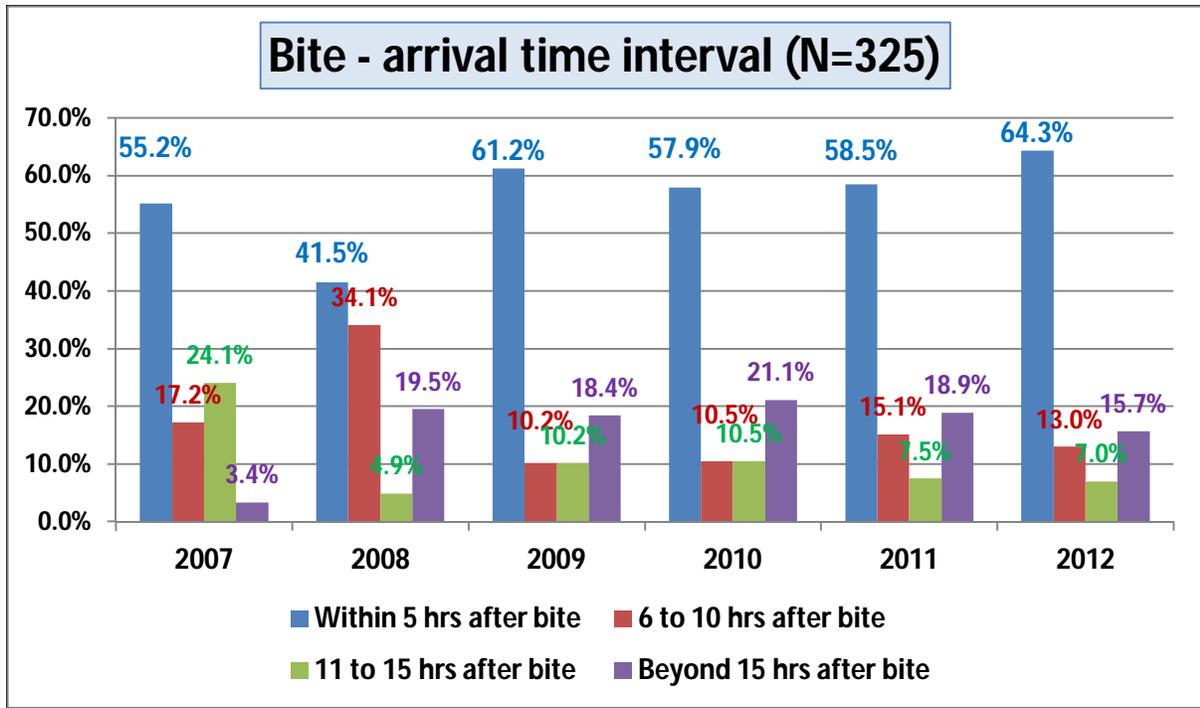
***Figure 3: Site of snake bite (N=265):***



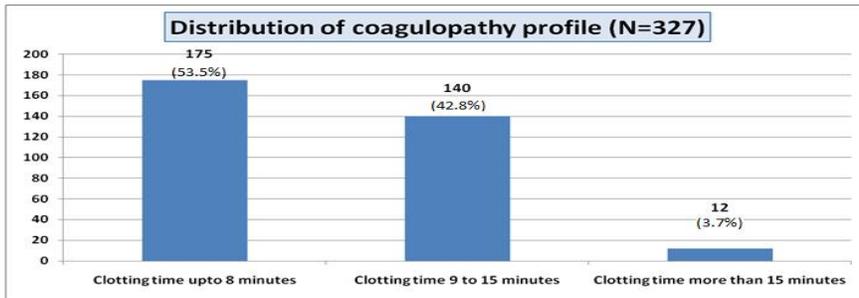
***Figure 4 : Alleged snake species***



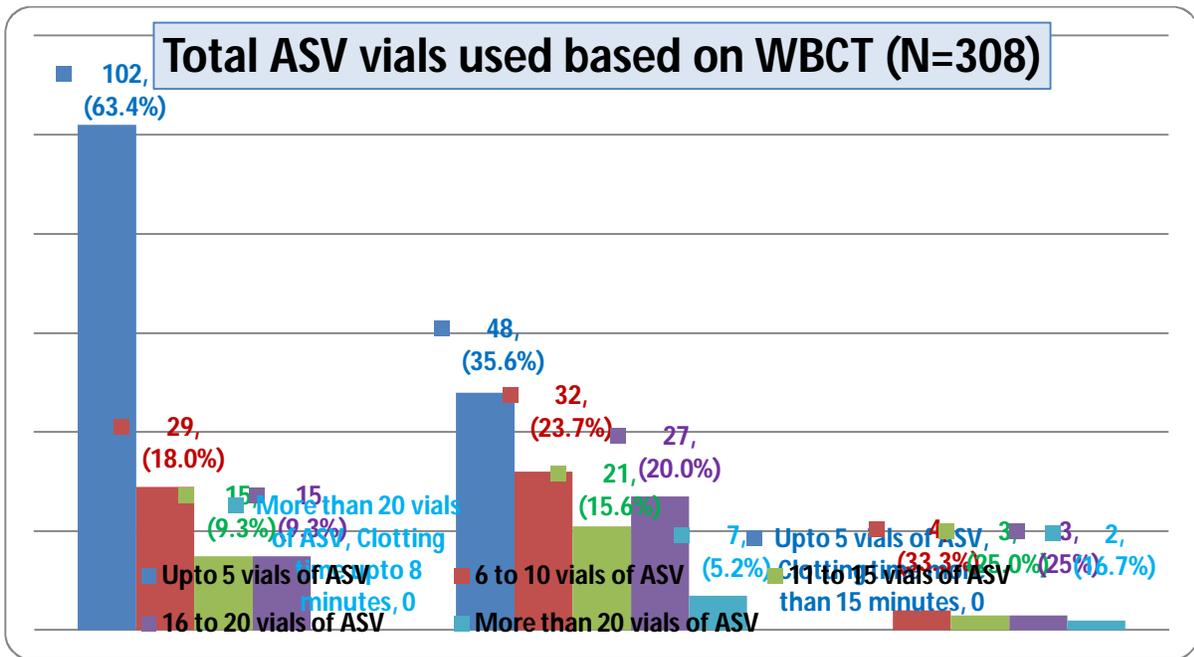
***Figure5 :.Bite-arrival time interval***



***Figure 6: Coagulopathy among snake bite patients***



**Figure 7 :Number of ASV vials used**



## Assessment of knowledge and stigma regarding Tuberculosis among the general population in Kaniyambadi

Uzagare Joshua<sup>a</sup>, Manpreet Horo<sup>a</sup>, Siddarth Babu<sup>a</sup>, Cripa Biju<sup>a</sup>, Anjaly Timothy<sup>a</sup>, Joanna Augustine<sup>a</sup>, Heloise Yohanana<sup>a</sup>, Jessica V. <sup>a</sup>, Sakshi Parasrampuriana<sup>a</sup>, Sai Kiran<sup>a</sup>, Lingala John<sup>a</sup>, Sharel David<sup>a</sup>, Dr.Reshma Raju<sup>b</sup>, Dr. Manjunath<sup>b</sup>, Dr. Jasmine Prasad<sup>b</sup> (a- Students, CMC Vellore. b- Dept. Of Community Medicine, CMC Vellore.)

**Background:** Tuberculosis (TB) is the single largest infectious cause of death in the world, accounting for about 500,000 deaths per year in India alone. It's not just Tuberculosis, but also the social stigma with which people suffer. Social isolation and being shunned in the society should also be dealt with along with the disease to have a whole some approach.

**Objective:** To study general perceived belief and stigma associated with tuberculosis among individuals from the general community in the age group 18-70 years in Kaniyambadi block (CHAD Service area) in March 2015.

**Methodology:** The study was cross sectional study design done among adults in the age group of 18 to 70 years who were permanent residents of Kaniyambadi block. Tools used were questionnaire and focus group discussion. Sample size calculated was 270. 10 villages were chosen from Kaniyambadi block (CHAD service area) by Simple random Sampling and from each village 27 people were chosen.

**Results:** Only 40% of the general population had good knowledge about tuberculosis. It was found that people who had a close contact history with TB patient had more knowledge compared to the ones without contact history [OR=0.337; 95% CI: 0.162-0.703; p=0.004].

Stigma was present in 66.3% of the general population surveyed. People who have education up to primary school have greater stigma compared to the people who have education higher than primary school [OR=2.644(95% CI=1.367-5.114; p=0.004)].

**Conclusion:** The level of knowledge regarding tuberculosis among the general community is low in Kaniyambadi block. Stigma surrounding the disease among the general population is still high in this region.

## Category

Basic sciences

## Title

Variations in urine pH based on diet type, collection time and gender of subjects: A pilot study

## Authors

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## Department and institution

Department of Physiology, CMC Vellore

## Background

Urine pH is measured routinely along with other parameters such as specific gravity, colour and composition. However, wide discrepancies exist among various sources regarding accurate values of urine pH. Normal urine pH is reported as high as 8.0 [according to Medline Plus ([www.nlm.nih.gov](http://www.nlm.nih.gov))<sup>1</sup>]. Such discrepancies arise due to a wide range of factors (both internal and external) and errors in methods of measurement. It is stated that urine pH is more acidic in non vegetarians as compared to vegetarians and also more acidic after a period of fasting (8 hours or greater of 0 calorie intake) than post prandially. However, sufficient data to support these statements is virtually nonexistent. We sought to obtain normative data for urine pH because it can be a valuable test in screening for Renal tubular acidosis (RTA). Such screening is important as RTA is associated with growth retardation in children, which is preventable.

## Aim

1. To find if urine pH varies with gender, type of diet and time of sample collection
2. To obtain an upper limit for urine pH above which further investigations may be necessitated to rule out RTA.

## Methods

A cross sectional pilot study was performed on 1<sup>st</sup> year medical students (Batch of 2014) of CMC Vellore. As this was a pilot study, verbal consent was obtained from participants. Two urine samples were collected per person, one early morning and the other approximately 3 hours after lunch (post prandial sample). The pH values were measured using a hand held digital pH

meter (EuTech pHTestr 20) within one minute after collecting the urine sample. The data collected was analysed using SPSS v 16.0

## Results

Value pH sample	Males (n=27)		Females (n=55)		Vegetarians (n=43 )		Non vegetarians (n= 39)	
	Mean	Std Dev	Mean	Std dev	Mean	Std Dev	Mean	Std Dev
Early morning	5.41	0.26	5.78	0.42	5.69	0.43	5.61	0.38
Post prandial	5.53	0.35	5.80	0.64	5.77	0.63	5.63	0.51

When early morning urine pH was compared with post-prandial pH in the same subjects, we found that there is no statistically significant difference (Paired T test; P value = 0.687). Also there is no statistically significant difference between urine pH values of vegetarians and non vegetarians (Unpaired T test; P value = 0.491). However, a statistically significant difference was found between the urine pH values of males and females (Mann Whitney Test; P value < 0.01). Upper limit of urine pH value for males was found to be 5.92 and for females it was 6.60 (calculated as mean pH + 2 SD). We suggest that any pH value above this be followed up with serum electrolyte estimation to rule out RTA.

## Conclusion

Urine pH values do not depend upon the type of diet a person takes and also does not depend upon the time of sample collection. However, urine pH of women is slightly higher than that of men.

## Key words

Urine pH, early morning, post prandial, diet, pH meter

## Word count

527 (including contents of the table and text under the headings “Category”, “Title”, “Authors” and “Department and institution”).

## References

<sup>1</sup>Medline Plus ([www.nlm.nih.gov](http://www.nlm.nih.gov))

Cecil’s Textbook of Medicine

## Acknowledgements

We thank the following people for their sincere contributions:

Mr Natarajan, Technician, Department of Physiology, CMC Vellore

Mr Prakash, Department of Biostatistics, CMC Vellore

MBBS batch of 2014, CMC Vellore

## **BIRTH WEIGHT & CHILD DEVELOPMENT**

**AUTHORS:** Adarsh Joseph Philip, Bimal Bhattra, Daphne Sharon, Deepa Mary Cherian, Elbin Peter, Hallel Reba, Gurindapalli Rohi, Joel Rajkumar, Rachel Ponilla, Sam Scudder

**Mentor:** Dr Kuryan George, Dr Dulari Gupta, Dr Carol Devamani

**AFFILIATION:** Community Health Department, CMC

**Aim**–To Study the Neurological Development of Low birth weight babies

### **Objectives -**

- Assess neurological development of low birth weight and normal birth weight babies
- To compare survival rates of children with low birth weight and normal birth weight
- To assess nutritional status of low birth weight and normal birth weight babies

### **Methodology –**

A retrospective cohort study was conducted amongst children 2-6 years in Kaniyambadi block. Children with birth weight less than 2kg were compared with children with birth weight over 2.5 kg. A questionnaire including developmental assessment using the Modified Trivandrum Scale was administered. Nutritional anthropometry was assessed using weighing scale and stadiometer.

Data was entered into Epi Data and analysed using SPSS. Univariable and multivariable analysis using logistic regression was done. The cumulative risk of death at one and five years was calculated.

### **Results –**

Out of a total of 204 children, 105 (51%) were male. There were 111 (54.4%) low birth weight children. The probability of survival in normal birth weight children was 100% at two years and 98.92% at 5 years. The probability of survival in low birth weight children was 69.36% at one year and 68.46 % at five years. The Relative risk for developmental delay was found to be low birth weight (RR2.39, CI 0.45-12.7); nursery admission (RR 2.56, CI 0.483-13.63); low MUAC (RR3.34, CI 0.65-17.17); low maternal BMI (RR 1.41, CI 0.173-11.48) and first born child (RR 1.59, CI 0.30-8.47).

## **Is Malodour in Cancer Better Managed By Oral Or Topical Metronidazole?**

*Ramu Kandasamy, Reena George, Shanthi Prasoon, Thangarathi Celine, Jenifer Jeba, Shakila Murali*

*Palliative Care Unit, Christian Medical College, Vellore, 632004, India*

### **Background**

With the high proportion of head and neck, cervical and locally advanced breast cancers, malodour is a significant problem among palliative care patients in India. In the early years of our service in Vellore we managed malodour primarily by using topical metronidazole for dressings and mouth washes but the results were often unsatisfactory. In recent years we have used low dose oral metronidazole as maintenance.

### **Method**

We undertook a retrospective review of patients treated for malodour comparing the interventions and outcomes within two time periods.

### **Results**

Preliminary data indicate that there were fewer episodes of problematic “smell” with regular oral as compared to topical metronidazole. Compliance and tolerability were satisfactory within the limitation of a retrospective design. The results of the retrospective analysis will be presented at the conference.

### **Conclusion**

Malodour can have a negative impact on the quality of life and dignity of patients with terminal illness. It adds to the costs and burden of nursing care in home and in hospital settings. Severe malodour can lead to isolation and a negative spiral of reduced access to physical care and psychosocial support.

We plan to undertake a prospective study to evaluate if continuous low dose oral metronidazole can be a simple and cost effective intervention for reducing malodour.

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Correspondence: Dr Reena George, Professor and Head, Palliative Care Unit, Christian Medical College, Vellore [reena.vellore@gmail.com](mailto:reena.vellore@gmail.com)

Is malodour in cancer patients better managed by oral or topical metronidazole?

A ten year retrospective survey. *Can we SNIFFF the smell away?*

**Title:** Physicians and pharmacists' perceptions of electronic prescribing system in a south Indian tertiary care teaching hospital

**Abstract:**

**Aim:** To examine physicians and pharmacists' perceptions about the benefits and recommendations of newly implemented Electronic Prescribing System (EPS) in a tertiary care teaching hospital.

**Methods:** A cross-sectional, anonymous questionnaire survey was administered to all practicing physicians and pharmacists involved in handling EPS. Two open ended questions on advantages and disadvantages of EPS were also included. Two-tailed t tests were used to find the differences in satisfaction level between physicians and pharmacists. Responses to open ended questions were listed and categorised based on the frequency of occurrence.

**Results:** The users were generally satisfied with EPS (mean = 4.75 on a 7 point scale). The pharmacists were more satisfied than the physicians and so the medical physicians than surgeons. The overall satisfaction was highly correlated with perception factors time saving, productivity, safety, ease of use and reliability.

**Conclusion:** The study results showed that, overall the users were satisfied with EPS. Physicians and pharmacists constitute two differing groups of users which emphasizes the inputs from both the groups in development of EPS. The responses to open ended questions suggest that the EPS should be developed in such a way that it is user friendly, faster, clear instructions for patients and free from target pharmacy confusion.

**Key words:** Electronic prescribing system, satisfaction, physicians, pharmacists, survey

## ABSTRACT

**Title:** Early intervention of an appropriate off-loader brace so as to prevent severity and further amputation in diabetic foot ulcer patients: A literature view

Authors: 1, Suriya Prakash Prosthetics & Orthotics Services, Department of Physical medicine and rehabilitation,

2, DR. D.M. Mahesh DM (Endo), Department of Endocrinology. Christian Medical College, Vellore – 632004

**Background:** Diabetes is becoming an unavoidable epidemic of 21st century due to environmental and life style changes. A report by WHO showed that 32 million people had diabetes in year 2000 and will rise up to 69.9 million by 2025 up to 25% of people with diabetes will develop foot ulcer and during their life time 1 in 5 will require an amputation. Generally in person with diabetes foot ulcers resulted from repetitive moderate stress encountered by insensate foot during ambulation due to poor response to stimuli they end up developing breach of skin. As there are no current means available to completely the effects on neuropathy the present methodology focuses on redistribution of pressure. There are many options of off-loader braces available but early diagnosis and prescription is the prime most concern. Hence the purpose of the is to strongly emphasize on early prescription of an appropriate off-loader brace so as to prevent severity and further amputation in diabetic foot ulcer patients.

**Aim:** The prime goal of the study is early intervention of an appropriate off-loader brace so as to prevent severity and further amputation in diabetic foot ulcers patients.

**Methods:** A research was made for reports on efficacy of early off-loading intervention in preventing or healing foot ulcer in diabetic patients published prior to 2010. Assessment of the methodological qualities of studies and data was analyzed. Interventions were assigned in to three sub-categories. Total casting, footwear, and other off-loading orthosis.

**Result:** 200 articles were identified in the baseline search. Some evidence accepts total contact cast represents gold standard for the treatment of foot ulcer. Some articles put evidence of crow orthosis, PTB, are provide pressure relief and off-loading the foot.

**Conclusion:** The literature review provides support for the use of various off-loading orthosis for healing and preventing planter foot ulcers and thereby reducing risk of amputation furthermore high qualities studies are urgently needed to confirm the promising effects.

## **Dosimetric Comparison of bladder and rectum dose using orthogonal based and CT based planning**

**Sherly Christy+, Maheshwaran\*, I Rabi Raja Singh+**

**\*Devaki Cancer Institute, + Dept of Radiotherapy, Christian Medical College**

### **Introduction**

The aim of this study is to compare CT –based dosimetry with ICRU bladder and rectum reference points in patients of carcinoma of uterine cervix treated with intracavitary brachytherapy. The advantage of 3D image based brachyplanning is accurate quantification of doses received by various volumes of surrounding traditional method of treatment planning have yielded high control rates of the tumor and accepted complications of the normal tissues

### **Purpose**

The purpose is to compare CT based dosimetry with international Commission on Radiation Units and Measurements (ICRU-38) bladder and rectum reference points in patients of carcinoma of uterine cervix treated with Intracavitary application. prescribed treatment.

### **Methods and Materials**

Patients with FIGO stage 2B of carcinoma of uterine cervix treated with radical radiation therapy and high dose rate ICA were studied. Eight patients were studied .HDR micro electron brachytherapy unit is utilized for this study. It uses Ir-192 radioactive source of maximum activity of 12ci and the dose rate of HDR unit is higher than 12Gy/hr. the source move in step of 2.5 mm with maximum dwell position of 48 respectively. The closed circuit television system is attached to this unit for observing patient undergoing.

### **Results and Discussion:**

ICRU bladder and rectum points doses from the radiograph plans were compared with d2, dose received by 2cc of the organ receiving maximum dose from CT plan .The volume of organ receiving dose more than the ICRU reference point was evaluated. The mean volume of bladder and rectum was 55.92(±14.5) and 78.03(±31.64)cc respectively. The mean reference volume in radiograph and CT plan was 97.16(±3.18) and 98.76(± 5.62)cc respectively. Mean bladder and rectum was found to be that 0.52(±0.59)and 1.15(±1.8) times received more than the prescription dose. This Dosimetric study suggests that comparison of orthogonal X-ray-based and CT-based HDR ICA planning is feasible..Further incorporation of newer imaging modalities,refinments in applicators and planning systems and wider acceptability of conformal BT may revolutionized.

## **Ultra-violet and gamma irradiation to enhance lower bloom strength gelatin for gel dosimeters**

Ebenezer Suman Babu S, Benedicta Pearline .R, Timothy Peace Balasingh S, Rabi Raja Singh I and Paul Ravindran B  
Department of Radiotherapy, Christian Medical College, Vellore

### **Background**

Gelatin is the key component of the gel dosimeter that provides the matrix for holding the spatial dose information. The non-availability of higher bloom strength gelatin (300 bloom) in India has created a need for improving the lower bloom strength gelatin that is commercially available.

### **Aim**

The purpose of this study was to enhance the gel strength of the commercially available gelatin (240 bloom) using Ultra-violet (UV) and gamma radiation and analyze the response of Fricke gel dosimeter prepared with the enhanced gelatin.

### **Methods**

Bloom strength of 240 (SD-fine) was taken as the subject of this study. Gelatin in the form of powder was taken in air-tight clear transparent packets, spread evenly and exposed to ultra-violet radiation of shorter wavelength for 4 hours (UV4) and 8 hours (UV8) respectively. Similarly packets of gelatin were irradiated with gamma rays on a telecobalt machine for 0.3 kGy and 0.4 kGy respectively. Four different sets of Fricke gel dosimeters were prepared using the UV and gamma irradiated gelatin. The samples as gel solutions were kept in the refrigerator overnight and maintained at 40 C for gelation. The gel samples were irradiated on a telecobalt irradiation unit (Theratron-780C) for clinical range of doses ranging from 0-3 Gy. The samples were evaluated after 1 hour using a UV-1800 spectrophotometer (Shimadzu, Japan) a wavelength of 585 nm.

### **Results and Conclusion**

The optical transmittance of the gel prepared with the UV4 gelatin showed improvement of nearly 3% when analysed using the spectrophotometer. On evaluation, the R2 value from the graph showed 99.5% reliability level for the gel dosimeter where as the gamma irradiated gel dosimeters showed degradation of optical transmittance. The obtained results indicate that the UV radiation seems to be promising in enhancing the optical transmittance of the gel dosimeters prepared with 240 bloom gelatin.

## **Impact of Cerium nanoparticle in enhancing the sensitivity of Fricke gel dosimeter for quality assurance in radiotherapy**

Ebenezer Suman Babu .S, Poornima C.G, Benedicta Pearline .R, Timothy Peace Balasingh .S, Rabi Raja Singh .I and Paul Ravindran .B

Department of Radiotherapy, Christian Medical College, Vellore

### **Background**

Gel dosimetry is gaining popularity in the field of Medical Physics that applies it as a dose measuring tool for quality assurance in radiotherapy treatment plans. Gel dosimeters provide three dimensional information of the radiation dose absorbed, when irradiated. Since advances in technology have escalated the complexity in treatment delivery, the radiation delivered by the treatment unit requires verification before it can be administered to patients. However the sensitivity of the gel dosimeters to radiation dose is also important in this scenario.

### **Aim**

The purpose of this study was to enhance the sensitivity of the present Fricke gel dosimeter with the help of nanoparticles in order to effectively utilize the gel dosimeter for verification of steep dose gradients in the complex treatment plans.

### **Methods**

Nanotechnology has invaded every field from electronics to medicine in recent days. Since nanoparticles are promising entity in enhancing the response of gel dosimeters to radiation, the feasibility of incorporating cerium nanoparticle (25 nm particle size) into the gel dosimeter has been studied. Different concentrations of nanoparticles were prepared and added to the present recipe of Fricke gel dosimeter. The final solution of the gel dosimeter consisted of 50 mM H<sub>2</sub>SO<sub>4</sub>, 0.05 mM Xylenol Orange and 0.3 mM Ferrous Ammonium Sulphate and the nanoparticle solution (0.05, 0.1, 0.2, 0.8 mM). The gel solution was then transferred to cuvettes of 4 ml capacity and path length 1cm. The samples as gel solutions were kept in the refrigerator overnight and maintained at 40 C for gelation.

### **Results and Conclusion**

Increase in response to dose was observed in the nanoparticle added gel dosimeter and an optimal concentration of nanoparticle may be used to obtain the best sensitive gel dosimeter. The new gel dosimeter with cerium nanoparticle can be used as an effective tool for quality assurance in radiotherapy.

## **Dosimetric Evaluation of Optimal Planning Technique for Stereotactic Radiosurgery**

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*(Medical physics, Department of Radiation Oncology, Christian Medical College, Vellore)*

### **Objective:**

The objective of this dosimetric study was to determine the optimal planning technique by evaluating the stereotactic radiosurgery plans generated for three different treatment delivery methods viz., conformal field, static arc and dynamic arc techniques using two multi-leaf collimator systems.

### **Methods and materials:**

Fifteen radiosurgery patients, with irregular tumor sizes, were selected for this study. The iPlan RT planning software was used for the treatment plan computation. For each patient, one set of treatment plans were generated using the micro-multileaf collimator and the 120-leaf Millennium multileaf collimator, on a medical linear accelerator.

Multiple conformal static beams optimize each field to the target shape by adopting particular collimator shapes for each gantry and table direction. In dynamic conformal arc therapy, the dose to the target volume is maximized by automatic placement of leaves around the target volume for all beam angles as well as automatic protection of the critical organs depending on the given priority. For an optimized workflow, the entire arc has been fragmented in ten-degree arc steps and the table angles were selected depending on the target location with respect to the critical organs around.

### **Results and discussion:**

For conformal field technique and dynamic arc technique, the conformity index ranged from 1.2 to 1.8, and the 80% prescription isodose covered 91% to 98.5% of the tumor volume. However, in static arc technique the prescription isodose coverage ranged between 75% to 95%. In conformal field shaping and dynamic arc shaping technique, the dose to the OARs and the peripheral dose as well were found to be minimal. Hence dynamic arc technique could be considered for radiosurgery plans. For smaller and irregular tumor volumes, the arc technique was not found to be suitable, because for some gantry angles the MLCs closed the isocenter of the field, reducing the coverage and increasing the maximum dose.

## ABSTRACT

“The Effectiveness of Complex Decongestive Therapy in reducing limb oedema in patient with filarial lymphedema - A case study”

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### Background:

Lymphedema is a chronic debilitating disorder with far social and psychological impact due to huge oedematous limbs. Exercise therapy and massage have been proved to be very beneficial in reducing limb volume and reduce limb oedema. Complex Decongestive Therapy (CDT) is well accepted treatment method that comprises of massage, exercise and bandaging techniques. This study attempts to evaluate the effect of CDT in reducing lower limb circumferential girth in filarial lymphedema.

Design: Single Case study with Review of literature

### Methods:

Mr. X, is a 25 year old young man with history of chronic Lymphedema in bilateral lower extremities for seven years. He was referred by the plastic surgery unit for evaluation and management with Complex Decongestive Therapy. The baseline measures taken were Demographics and limb girth measurements using inch tape, 6 Minute Walk Test for walking capacity. The primary objective was to reduce limb size by massage and compression bandaging. Complex Decongestive Therapy consists of Diaphragmatic breathing exercises, activation of axillary, venous angle (Cervical nodes), femoral lymph nodes, and fluid drainage from femoral system to axillary system by effleurage massage technique. Proximal to distal pattern of fluid drainage was followed.

Complex Decongestive Therapy was followed by compression bandaging technique using low stretch bandages. 4 – layer bandage technique was used to apply pressure.

Compression bandaging was followed by limb exercises – Ankle pumps, Quadriceps setting exercises, Calf stretching exercises. All exercises were performed with and without compression bandages.

An elaborate education on skin care and exercise routine was also done. Pre and post measurements were taken for limb girth and 6 Minute Walk Test.

Duration of intervention was 1 session a day of 120 minutes – 6 days a week for 4 weeks.

### Results:

The serial limb girth measurements were analyzed using paired T test. The analysis of data showed statistically significant reduction in limb girth on the right lower limb  $p=0.008$  ( $<0.05$ ) Mean 8.513 CI (3.019 to 14.006). The difference between pre and post scores in 6 Minute Walk Test was 200. metres.

### Conclusion:

Complex Decongestive Therapy was effective in this subject in reducing limb girth and improving walking capacity.

**Keywords:** Lymphedema, Complex Decongestive Therapy, compression bandaging, massage, limb girth

## **NUTRITIONAL STUDY OF TYPE 1 DIABETES MELLITUS PATIENTS**

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**Abstract:** Type 1 Diabetes mellitus is a disorder affecting children and young adults following autoimmune destruction of insulin-producing pancreatic  $\beta$ -cells. Type 1 DM probably accounts for 5 to 10% of all diagnosed diabetes.

**Objective:** The main objectives of this study were

1. To assess the nutritional adequacy of the diet of Type 1 DM patients
2. To study the impact of group and individual nutrition education on their glycaemic control.

**Methodology:** All willing patients (16yrs-45yrs,n=114) visiting the Young Diabetes Clinic of the Department of Endocrinology, Diabetes and Metabolism were included in the study. Their demographic and nutritional history was collected. Dietary counselling was given to them as a group and on an individual basis using appropriate tools. The data was statistically analysed.

**Results:** One hundred and fourteen subjects were studied; the mean age was  $25.5 \pm 6.4$  years, with 64 males and 50 females. Dietary pattern of the subjects indicated that 25% of them took a 3 meals and 4 snacks pattern diet. Their macronutrient distribution indicated that 69%, 11% and 20% of the total daily calories was contributed by carbohydrates, proteins and fats. The intake of fibre was inadequate in 86% of the patients and only 14% took adequate fibre. Adequate exercise (of at least half-hour) was done by 79% of the patients and remaining patients exercised irregularly. Glycaemic control was assessed by their HbA1C values at the beginning of the study and at their next follow-up [after 3 to 4 months]. The mean HbA1C of the group decreased from 8.5% to 8% over an average period of 4 months.

**Conclusion:** Type 1 DM patients are a vulnerable group who require consistent nutritional care. This study revealed that the patients benefited from the intense individual and group nutrition counselling and education sessions offered by the diabetes care team as indicated by their better glycaemic control.

**Keywords:** Type I Diabetes Mellitus, nutrition, glycaemic control, nutrition education

## ABSTRACT

“Role of cutaneous sensation in the matching of muscle force – An Experimental Study”

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### Background:

Muscle contraction in human beings is greatly facilitated by the sensory system comprising of proprioceptors – Muscle spindle, Golgi tendon organs and Kinesthetic receptors. The role of proprioceptors in the generation of muscle force have been extensively studied incorporating designs like muscle fatiguing, vibration to muscle etc. In this experimental study, we have attempted to understand the role of cutaneous sensation of hand in matching forces between both arms. The research question is “What effect does altering cutaneous sensory input to hand have, in matching force generated in both arms?” We had taken Biceps as the reference muscle in the study. Isometric force was the type of contraction employed.

### Methods:

12 young healthy multi cultural graduate students from the teaching medical university were selected for this study. A written consent was obtained for this non-invasive experimental study. Biodex Isokinetic dynamometer™ and custom made pulley system with facility to generate isolated isometric Biceps force was used. The maximum voluntary contraction-MVC (unit-torque) was calculated using the Biodex unit. The torque was converted to sub-maximal 30%, 50%, 70%, 90% weights. The subject was seated on the Biodex unit with custom made pulley system on right side and Biodex arm in the left side. The handles of the both Biodex and pulley were randomly changed between normal, gritty and soft handles. The sub-maximal loads were also in random fashion to prevent anticipation.

The instruction to the subject was to pull the right side handle of the pulley (with random sub-maximal weight) and match the force quickly on the left hand by pulling the biodex handle. This contraction is held for 6 seconds. There is 10 second rest between each of

three trials. A rest period of 30 seconds is given between changes in sub-maximal weights. Similar experiment was done with different combination of three handles totalling to 5 sets of experiment. The Normal handle data between both sides was the baseline data for the subject.

Design: Single group experimental study design

Results:

Mismatch of forces was significant at higher sub-maximal weights (90% MVC) at p value 0.041 between normal vs soft handles.

Conclusion:

This experiment demonstrated that the force matching has significant error when using softer handles than gritty texture but only at higher sub-maximal weights. Lower sub-maximal weights matching did not show any significant error contrary to the expectation of the investigators.

# **“THE SUCESSFUL USE OF ECMO IN A CHILD WITH REFRACTORY CARDIOGENIC SHOCK-FIRST IN CMC : A CASE REPORT”**

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## **BACKGROUND:**

Extracorporeal Membrane Oxygenation (ECMO) is a form of partial cardiopulmonary bypass used for long-term support of respiratory and/or cardiac function.

ECMO currently is of two types: venoarterial (VA), and veno venous (VV).

Herewith we report a case of VA ECMO in severe refractory cardiogenic shock.

## **CASE DESCRIPTION:**

A 13 year old girl child presented to the paediatric casualty with a short history of gastroenteritis and progressive worsening of sensorium associated with the onset of seizures. On arrival she was severely hypotensive and bradycardic for which a temporary pacemaker was inserted and was shifted to cardiac intensive care unit, where she had multiple arrhythmias and cardiac arrest which required repeated cardioversion shocks.

She was intubated and resuscitated.

Intraaortic balloon pump( IABP) was inserted in view of progressing cardiogenic shock.

Despite high inotropic supports and IABP, she was haemodynamically unstable.

VA ECMO as a bridge to recovery was considered in the view of reversible nature of the illness.

## **METHODS :**

ECMO was initiated using macquet ecmo machine , ultra lung protective strategies were employed .

Anticoagulation was initiated.Once ECMO was initiated , every hourly Mean arterial pressure , Central venous pressure , Pre & Post membrane pressure was monitored and documented.

Every hourly ACT and two hourly once blood gases were taken and documented.

## **CONCLUSION :**

Thus VA-ECMO can be life saving in patients with refractory cardiogenic shock who have an underlying potentially reversible condition, VA-ECMO can also be used as a part of ECPR during cardiac arrest as a bridge to recovery.

The paucity of data in the literature makes it difficult to determine which patients will benefit from VA-ECMO and when ECMO support will be futile,but there are general guidelines. Thus, ECMO is a team effort and the team includes perfusionists,nurses,critical care specialists and cardiothoracic surgeon.

**THE REMAINING DETAILS PERTAINING TO THE CASE WILL BE PRESENTED ALONG WITH THE POSTER**

## The Foot Plantar Pressure Graph and Measurement System – An Overview

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### Abstract:

**INTRODUCTION:** Foot plantar pressure is the pressure field that acts between the foot and the Support surface during everyday locomotor activities. Information derived from such Pressure measures is important in gait and posture research for diagnosing lower limb Problems, footwear design, sport biomechanics, injury prevention and other applications. The most widely researched clinical application of pedobarography is diabetic foot ulceration, a condition which can lead to amputation in extreme cases

**BACKGROUND:** The diabetic with a neuropathic ulcer should be treated with appropriate debridement and antibiotics if infection (OFTEN MICROBIAL) is present, the primary means of preventing amputation is to protect the insensitive foot from unnoticed trauma and excessive plantar pressures that occur during walking. There is evidence to indicate that appropriate footwear and footwear modifications can help to prevent lower extremity amputation in patients with diabetes.

### AIM & OBJECTIVE

It is necessary that the exchanges of information and thorough knowledge on pedobarography and its measurement system along with qualified professional and organizational employees.

### SIGNIFICANCE:

This paper portrays that Understanding the fundamental principles on above topics and help the professionals to obtain an accurate foot pressure graph, selection of measurement system (Platform Systems & In-Shoe Systems)

**CONCLUSION:** In knowledge on the foot graphical measurement system in both static and dynamic in a real time manner will help to decrease the risk factor on clinical podiatry, it makes a specific prescription for the each and individual patient.

# **Feasibility study on in-water calibration of Ir<sup>192</sup> High Dose Rate Brachytherapy source using micro-MOSFET**

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## **Background**

The strength of a brachytherapy source is generally verified using well type ionization chamber. Though it is almost a closed volume, the dose measurements are still considered to be in-air.

## **Aim**

The purpose of this study is to determine the feasibility of using micro-MOSFET (Metal Oxide Semiconductor Field Effect Transistor) for in-water verification of source strength for Ir<sup>192</sup> brachytherapy source.

## **Methods**

The deviation between the manufacturer's specified value and the measured source strength was calculated using a well type ionization chamber and fed into the treatment planning system. The micro-MOSFETs were calibrated for different doses by calculating the dwell time from the treatment planning system that incorporated the source strength taken as reference value. In-air measurements using micro-MOSFETs were carried out with and without build-up cap by placing them inside a thin plastic tube of an in-house phantom. For in-water measurements, the micro-MOSFET connected to the in-house phantom was placed inside a tank filled with water and irradiated for a preset time.

## **Results**

The measurements with build-up cap for micro-MOSFET showed that there is an attenuation component in the brass build-up leading to lower response when compared with the results of micro-MOSFET measurements performed without build-up cap. In- air measurements of micro-MOSFET without build-up cap at the maximum response position was taken as the reference for comparison of values obtained without build-up cap and measurements in water, since the dose values measured without build-up cap showed good agreement with that obtained using calibrated well type ion chamber. In-water measurements showed a deviation of 9.8% from the reference value.

## **Conclusion**

We conclude that the direct in-water calibration method could be an effective and accurate method for determining the source strength of Ir<sup>192</sup> high dose rate brachytherapy.

## **DETERMINATION OF DOSIMETRIC LEAF GAP USING DIFFERENT DETECTORS AND ITS IMPACT IN DOSE CALCULATION AND DELIVERY**

**Divya Lakshmi J, Mr. Timothy Peace Balasingh, Mr. Mohamathu Rafic, Mr. Ebenezer Suman Babu, Mr. Jose Solomon Raj, Mr. Amalan, Ms. Lijy Joy**

**Department Of Radiotherapy, Christian Medical College**

### **BACKGROUND:**

The radiation transmission through the rounded leaf end referred as dosimetric leaf gap (DLG) parameter has to be incorporated into the TPS for accurate dose calculation.

### **AIM:**

To determine the DLG value using different detectors namely ionization chamber, optically stimulated luminescence dosimeter (OSLD) and electronic portal imaging device (EPID) and also to develop a MATLAB software code to obtain a 2D DLG map in order to account for accurate DLG values of the entire field.

### **METHODS AND MATERIALS:**

The Clinac 2100C/D linear accelerator was used to perform DLG measurements in which DLG<sub>ion</sub> and DLG<sub>OSLD</sub> were measured for sweeping fields of different gap widths for central six MLC leaf pairs using 0.125 cc semiflex ionization chamber and nanodot OSL positioned perpendicular to the direction of the sweeping beam in three positions namely central axis, 1 cm inferior and superior from the central axis. An aS1000 EPID was used to determine DLG<sub>EPID</sub> values. MATLAB software was used to obtain a 2D DLG map from which the DLG value at any point in the field can be determined.

### **RESULTS AND CONCLUSION:**

The DLG<sub>ion</sub> values measured in three detector positions were found to be 1 mm, 1 mm, and 1.25 mm. The DLG<sub>OSLD</sub> values were found to be 1.142 mm, 1.142 mm, 1.28 mm and the DLG<sub>EPID</sub> values were calculated as 0.875 mm, 0.875 mm.

Though ionization chamber is the standard dosimeter for DLG measurements, in order to eliminate the volume averaging effect, the highly sensitive OSL dosimeter which exhibits highly reproducible dose measurements even at low dose range can be used for DLG measurements.

The determination of DLG values of individual MLC leaf of entire bank and modelling the TPS with the same can be achieved by using EPID which is a high resolution 2D detector.

## **DOSIMETRIC CHARACTERIZATION OF MICRODIAMOND DETECTOR FOR SMALL FIELD DOSIMETRY**

**Melinda Monica. A, Dr. I. Rabi Raja Singh, Timothy Peace S, Sathish Kumar A**

**Department Of Radiotherapy**

**Christian Medical College,**

### **BACKGROUND**

Recent advancements in radiation therapy have increased the use of small photon fields and fields with high dose gradients. Dosimetry of such fields has many problems which are not present in large fields one among that is choice of detector.

### **AIM**

To study the dosimetric characteristics of commercially available PTW microdiamond detector for small fields.

### **METHODS AND MATERIALS**

PTW microdiamond detector with sensitive volume 0.004 mm<sup>3</sup> was use in this study. Dosimetric parameters such as dose linearity, dose rate dependence, energy dependence, angular dependence were studied. For dose linearity measurements, response of the detector for different Monitor Units was noted. For dose rate dependence, the detector was irradiated with different dose rates ranging from 100 to 600 MU/minute in steps of 100. Energy independence was studied for three photon energies. For angular dependence check the detector was irradiated from different angles. The output factors and beam characteristics such as beam profile and percentage depth dose (PDD) were also measured for 6 MV beams for field sizes 1 x 1 cm<sup>2</sup> to 10 x 10 cm<sup>2</sup> were measured compared with that of 0.125 cc Semiflex ion chamber and PTW SRS diode detector.

### **RESULTS AND CONCLUSION**

The detector was found to have linear response. Dose rate dependence, energy dependence and angular dependence are found to be within 1%. This shows detector can be accurately used for measurement of small fields as it has negligible energy and dose rate dependence. The beam profiles and PDD were measured and compared with that of SRS diode detector and 0.125 cc ion chamber. The results are better with diamond detector and Diode detector for small fields. The micro size sensitive volume minimizes the volume averaging effect and measure dose in high dose gradient region hence it is a better option for accurate small beam dosimetry.

## **Investigation on Low Dose Sensitivity of Glyoxal and Phenanthroline-based Fricke Gel Dosimeter**

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Department of Radiotherapy, Christian Medical College, Vellore

### **Background**

Fricke gel dosimeter is based on the principle of oxidation of ferrous ion on exposure to ionizing radiation. The concentration of Ferric ions gives the measure of absorbed dose in the gel.

### **Aim**

The aim of this study is to determine the low dose sensitivity behaviour of the Glyoxal and Phenanthroline-based Fricke gel dosimeter with the incorporated additives.

### **Methods**

Fricke gel dosimeter used in this study consisted of gelatin (300 Bloom), 0.1 mM Ferrous Ammonium Sulphate (SD Fine-Chem. Limited), 0.1 mM Xylenol Orange disodium salt (Sigma-Aldrich), 25 mM Sulphuric acid (Qualigens), 1mM Sodium Chloride (SD Fine-Chem. Limited), 0.3 mM 1,10 Phenanthroline (Sigma-Aldrich), 10mM Glyoxal (Sigma-Aldrich). Initially, stock solutions of Sulphuric acid, Ferrous Ammonium Sulphate, Xylenol Orange, Sodium Chloride and Phenanthroline were prepared. Gelatin solution was prepared followed by the addition of required amount of the ingredients from the stock solutions. The gel solution was then transferred into cuvettes of 4 ml volume and 1cm path-length and stored in the refrigerator overnight at 4 °C. The following morning, the gel samples were irradiated on a with different doses ranging from 0-10 Gy. The irradiated cuvettes were evaluated using a spectrophotometer (UV-1800, Shimadzu, Japan) at a wavelength of 585nm, one hour post-irradiation.

### **Results and Conclusion**

The Glyoxal and Phenanthroline additives-based Fricke gel dosimeter was found to exhibit linear dose sensitivity with R<sup>2</sup> value 0.988, comparable to the values found in the literature. Experimental results show that this gel dosimeter was found to be sensitive only after 0.5 Gy and did not show any dose response for doses below.

### **Conclusion**

Based on the results we conclude that this gel dosimeter, though claimed to be stable for days, has deficiency in low dose range as well as chemical stability and needs to be improved to get better results.

## **DEVELOPMENT AND DOSIMETRIC VALIDATION OF SOFTWARE BASED A-Si EPID DOSIMETRY**

**John Paul Puravath, Timothy Peace S, Amalan S, Jose Solomon Raj, Satish Kumar A,  
Department of Radiotherapy CMC Vellore**

### **Background**

*In vivo* dosimetry has become an inevitable part of external radiation therapy due to the complex advancements in radiation treatment. Conventional *in vivo* dosimeters have many disadvantages such as additional setup time, labour-intensive readout procedures, high cost and need for frequent calibration. The electronic portal imaging device which is an accessory of the modern linear accelerator has been calibrated for the *in vivo* exit dose measurement.

### **Aim**

The purpose of this work is to develop EPID-based *in vivo* dosimetry software for routine patient dosimetry and to perform phantom-based studies to validate the software by comparison with established *in vivo* dosimeters such as MOSFET and OSL dosimeters.

### **Methods and Materials**

Electronic portal imaging device (aS1000) of Clinac 2100 C/D linear accelerator has been calibrated in our department for exit dose measurement, using ionisation chamber in direct calibration method. A software code was developed using MATLAB R2013a (8.1.0.604) to calculate the exit dose from the portal images based on the calibration performed.

The developed software was used for the exit dose calculation of radiation beams irradiated on CIRS model 002LFC thorax phantom. The point dose verification of the EPID-based exit dose software was carried out using micro MOSFET, nano Dot OSLD dosimeters.

### **Results and Conclusion**

A software was developed for the exit dose measurement with graphical user interface based on the correlation functions obtained from the calibration data. From the obtained results of verification of EPID dosimetry using MOSFET, nano OSLD it is evident that the variation between the reference TPS value and the obtained EPID readings are in agreement with minimum observed deviation of 0.57 and maximum deviation was 2.82. It is hereby concluded that this software based a-Si EPID dosimetry can be an effective tool for the routine *in vivo* dosimetry.

Software User interface

## **Investigation on feasibility in calibrating blood irradiator using optically stimulated luminescence dosimeter with in-house water and wax Phantom**

**L. Jose Solomon Raj, Rabi Raja Singh, Timothy Peace Balasingh, Ebenezer Suman Babu, Mohamathu Rafic.**

### **Purpose**

The purpose of this study is to explore the achievability of calibrating blood irradiator using optically stimulated luminescent dosimeter (OSLD) and comparison of effective dose rate with thermoluminescent dosimeter (TLD).

### **Materials and Methods**

The OSLDs used were nanoDot dosimeter (Landauer, Inc., Glenwood, IL). OSLD consists of a disc which is made up of  $Al_2O_3: C$  with dimension of about 5 mm in diameter and 0.9 mm in thickness. In this study TLD chips were also used which is of  $LiF: Mg, Ti$  and commercially known as TLD-100. The OSLDs and TLDs were calibrated by irradiating them with doses ranging from 5 to 300 cGy on a Theratron 780-C Telecobalt unit. The calibration of blood irradiator was performed using cylindrical in-house water and wax phantom which has a dimension of 12 cm diameter and height of 16 cm which can hold OSLDs in 15 different orientations. This phantom with the OSLDs was placed inside the blood irradiator and was irradiated for 19 seconds. The identical procedure was carried out using an in-house wax phantom for validating the effective dose-rate.

### **Results and discussions**

OSLDs which were kept at the top radial part of phantom, middle radial part of the phantom, radial part at the base of the phantom showed a maximum percentage deviation of -27 %, -17 % and -24 % when compared with the effective dose rate at the center. The variation of effective dose rate at the center of the phantom between the displayed value and the measured value was + 6.8 % for the OSLD kept at the center of the phantom and + 2.2 % for TLD. The maximum percentage deviation of effective dose rate measured for the OSLDs with in-house wax phantom placed at the center to the top radial part of phantom, middle radial part of the phantom, radial part at the base of the phantom was - 10 %, + 7 % and + 8 % respectively.

### **Conclusion**

OSLD also served as an imperative dosimeter for calibrating the blood irradiator. The in-house wax phantom is a homogeneous medium of uniform density which eradicates in-homogeneity errors when compared with in-house water phantom which has heterogeneous composition of perspex - water in its design and the higher sensitivity of OSLD for scatter dose.

## ABSTRACT

### “Effectiveness of Sustained Stretching Using a Customized Inclinable Couch to Improve Plantar Flexor Flexibility in Subjects with Brain Injury – A Randomized Control Trial”

**Jesly James**, Sunil Raj (BPT), Dr.Raji Thomas(PMR dept), Senthil velkumar (MPT), PMR department, Christian Medical College, Vellore.

**Objective:** To find out the effectiveness of sustained stretching using an inclinable stretching couch in improving planar flexor flexibility in subjects with brain injury.

**Study design:** A randomized control trial with equivalence study design.

**Setting:** Physiotherapy department, Christian Medical College, Vellore.

**Method:** Sixteen plantar flexor tightness legs were recruited and randomized into experimental (stretching with inclinable couch) and control group (stretching with tilt table) using computer generated block randomization method. 30 minutes of sustained stretching applied five days a week for three weeks along with the conventional therapy. Passive dorsiflexion range measured in flexed and extended knee before and after the intervention.

**Results:** There was no statistically significant difference found between the mean increment of both the groups in flexed and extended knee dorsiflexion range measurement (p value 0.58 and 0.91 respectively) suggests that both the treatment methods are comparable.

**Conclusion:** Inclinable stretching couch is as good as tilt table method in improving plantar flexor flexibility in people with brain injury. This method can be considered as a viable option for the limited resource settings to administer sustained stretching.

**Key words:** Sustained stretching, Inclinable couch, Tilt table, Plantar flexor tightness, Dorsiflexion range.

## **ABSTRACT (Sharon Gikku George)**

### **Title:**

Correlation of number of exercises taught and its compliance in subjects with Type II diabetes - A Randomized Control Trial.

### **Objectives:**

To find out the number of exercise that can be taught for optimal performance in patients with Type 2 diabetes.

### **Setting:**

Diabetic clinic, OPD building,  
Endocrinology department,  
CMC, Vellore.

### **Methodology:**

Subjects with Type 2 Diabetes registered for the diabetic clinic, meeting the eligibility criteria, and coming for the first time for physiotherapy were included after a written consent.

Subsequently subjects were randomized to one of the three groups (n=20) by the Principal Investigator.

During the first session, group 1, 2 and 3 were taught 5, 7 and 9 exercises respectively by the physical therapist. Each exercise was repeated 5 times with a 5 second hold. A pictorial exercise sheet handout was also given to each subject. The subjects were asked to repeat each exercise 10 times every day for a period of 7 days and to record the number of repetitions performed each day in a self-reported exercise log at home.

The second session was after one week, where the subjects were asked to perform the exercises they

were taught. The Principal Investigator scored the performance with Henry-Eckert Performance

Assessment Tool and also received the self-report exercise log. This data was analyzed to find the number of exercise that can be taught for optimal performance and adherence in physical therapy.

### **Results:**

There is a significant difference in the performance between three groups (p-value =0.000).

Compliance from the self-report log is significantly different among three groups (p-value =0.000). The correlation between total performance and compliance is statistically significant (p-value =0.000).

### **Conclusion:**

There is evidence that the performance and compliance is better in the group with 5 exercises than the groups with 7 and 9 exercises.

**Keyword(s):** Type II diabetes, Exercise, Compliance, Performance.

# ITLE:Parental Perception of Psychosocial Behavior in Children Who Underwent Selective Urological Surgeries

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## ABSTRACT

### BACKGROUND

Surgeries resulting in prolonged and repeated hospitalizations, presence of urinary diversions such as stoma alter's the child's psychosocial status. Caring for a child with surgical issues is multidimensional and it is important for a nurse to explore into the psychosocial behavior of children thereby help the child and family cope.

### OBJECTIVES

This Study aimed at identifying the Parental Perception of Psychosocial Behavior in children who underwent selective urological surgeries and its association with demographic and clinical variables ,association of Psychosocial behavior in different domains and comparison between age groups.

### METHODS

A cross sectional descriptive design was used. Parents of 105 children between 2-16 years of age following a selective urological surgery who were attending the OPD or admitted in the ward were selected based on convenience sampling. Data was collected using Indian Academy Paediatrics growth chart and Child behaviour checklist. Children who were critically ill or with mental disabilities were excluded from the study.

## RESULTS

The findings revealed that the potential for behavioural problems as perceived by the parents was 20.7% in the 2-5 year ages and 9.61% in 6-16 year age group. Children had more behavioural problems in the aggressive domain 24.6% in 2-5 years and in the 6-16 year age group the highest behavioural problems 13.6% was noticed in the social domain. No significant difference in between the age groups was found although there was a difference of 11.09% There was no significant association between the demographic, clinical variables and psychosocial behavior.

## CONCLUSION

Children after urological surgeries need to be followed for psychosocial behavioural changes. It is important for nurses to address these concerns and educate the parents on coping strategies to help the child and family cope.

## KEY WORDS

Psychosocial behavior, Selective Urological surgeries, Parents, Children

**“A randomized control trial to evaluate the effectiveness of oral care using tooth brush and yaunker suction compared to regular oral care in reducing the incidence of Ventilator Associated Pneumonia (VAP) among mechanically ventilated patients in Medical Intensive Care Units of Christian Medical College, Vellore”.**

*Ranjitha Chacko, Amala Rajan, Prabha Lionel, Thilagavathy, N, Jeyarani premkumar*

***ABSTRACT***

*Background:* Ventilator Associated Pneumonia (VAP) is one of the major nosocomial infections in the intensive care units contributing to increased mortality and morbidity. Recent studies have shown that oral decontamination through mechanical and pharmacological agents significantly reduces the incidence of VAP; but oral care practices in intensive care units are not consistent or standardized.

*Objective :* This study was done in the medical high dependency unit and medical intensive care unit of Christian Medical College , Vellore to assess the incidence of VAP among mechanically ventilated patients receiving two different oral decontamination interventions; ie regular oral care versus oral care using tooth brush and to find out the association between VAP and selected demographic and clinical variables.

*Methodology :* A prospective, randomized and double blinded study was under taken from January 14, 2013 to December, 27 2014. Patients included were 15 years and above and those who were on oral intubaion, recruited within 4-6 hours of intubation. Patients who met the eligibility criteria were randomized into two groups by simple random sampling technique. Oral care interventions were implemented by the staff nurse assigned to the patient, according to the oral care instructions given after obtaining informed consent. Patients were followed up from the time of admission till discharge/death/transfer from ICU. Development of VAP was assessed based report sent from the HICC.

*Results:* The primary outcome measured was the incidence of VAP. A total of 206 eligible subjects were recruited for the study, 102 patients in the control group and 104 patients in the experimental group. Data analysis showed that there was no significant association with the technique of mouth care to the development of ventilator associated pneumonia. Analysis showed that the greatest risk factor for developing VAP was the increase in number of ventilator days. (Odds ratio 1.3, 95% CI 1.02 to 1.66). Though there was a statistical association between gender ( $p=0.02$ ) and presence of antibiotics with VAP ( $p= 0.03$ ), its clinical significance is questionable. Inference could not be drawn about association of the clinical diagnosis to the development of VAP. There was no association between the technique of mouth care to total number of ventilator days, length of stay in ICU or mortality.

*Conclusion:* Tooth brushing with yaunker suctioning technique was not proved to be superior to regular mouth care in reducing development of ventilator associated pneumonia

# **EFFECTIVENESS OF AN INSTRUCTIONAL MODULE ON KNOWLEDGE, ANXIETY, PHYSIOLOGICAL AND BEHAVIOURAL RESPONSES OF PATIENTS UNDERGOING GASTROSCOPY**

## **ABSTRACT**

### **Introduction:**

Information is one of the important resources for coping and it can alter the subject's feeling of the threat and thus enhances compliance. Inadequate information regarding gastroscopy may cause severe anxiety, fear, and poor compliance and reduce the patient's tolerance.

### **Objectives:**

The study was designed to assess the effectiveness of an instructional module on knowledge, anxiety, physiological and behavioural responses of patients undergoing gastroscopy.

### **Methodology:**

An experimental design was used in this study. The study was conducted in Christian Medical College, Vellore. A total of 72 subjects were selected by block randomization technique who fulfilled the inclusion criteria and consent was obtained. On the day of appointment, State Trait Anxiety Inventory (Y1) was used to assess the anxiety and questionnaire prepared by the

investigator to assess the knowledge regarding gastroscopy, its preparation and complications. For experimental group, the video was played and control group received routine information. On the day of gastroscopy procedure, same questionnaire was used to assess their anxiety and knowledge. Physiological responses were assessed using checklist prepared by the investigator before and during procedure. Behavioural responses were assessed during procedure using checklist. Pain was assessed post-procedurally using Visual Analogue Scale.

### **Results:**

Most of the subjects (68.1%) were male, 83.3% were married. There was a statistically significant increase in mean scores of knowledge from 4.55 to 12.38 in experimental group ( $p < .001$ ). There was a statistically significant decrease in mean scores of anxiety from 42.83 to 35.75 in experimental group ( $p < 0.001$ ). The study revealed that there was a moderately negative correlation between knowledge and anxiety in experimental group ( $r = -.564$ ;  $p < .001$ ). A significant association found between age group between 41- 60 years and anxiety of the subjects ( $p < .001$ ).

### **Conclusion:**

The study revealed that providing structured teaching using video will help the patient to increase knowledge and reduce anxiety. So, as Nurses need to play a major role in providing teaching regarding the procedure will help them to cope better during procedure.

**Key words:** Knowledge, Anxiety, Behavioural responses, Physiological responses, Gastroscopy, Instructional Module.

## ABSTRACT

**Introduction:** *Cardiac pacing is an emerging life saving procedure that is being widely used in the recent times. It is therefore vital for the health care professionals to be aware of the patients' knowledge and experience after the cardiac device implantation and also the impact these implanted devices have on their life.*

**Objective:** *The study was aimed to assess the Knowledge and Attitude of patients regarding Permanent Pacemakers and their Quality of Life after the Permanent Pacemaker Implantation.*

**Method:** *A descriptive cross-sectional study design was used in this study. A total of 70 subjects were chosen by the total enumerative sampling technique among those patients attending the Cardiology Out-patient Department, Pacemaker Clinic and selected Cardiology wards of CMC, Vellore. The data instruments used for the study were a Knowledge questionnaire, an Attitude scale and RAND SF-36 tool to assess the QOL which were self administered questionnaires.*

**Results:** *The study findings reported the mean age of the subjects being  $61.71 \pm 12.42$ , and 60% accounted for men. The median duration of implantation was  $2.9 \pm 5.21$  years. Majority of the participants 54.3% had moderately adequate knowledge, 55.7% of the participants had moderately favourable attitude and 46% of them experienced moderate QOL. A significant positive correlation was found between Knowledge of participants and their QOL ( $r= 0.340$ ;  $p=0.004$ ), also a significant positive correlation between Attitude of participants and their QOL ( $r= 0.559$ ;  $p=0.001$ ). A significant association between attitude and age was found ( $p = 0.001$ ).*

**Conclusion:** *Conscious effort must be taken to help patients cope better and experience good QOL through systematic teaching after the pacemaker implantation. This will help the patients to function maximally and live life to their best capacities in the family and society.*

**Key words:** Knowledge, Attitude, Quality of Life, Permanent Pacemaker, Permanent Pacemaker Implantation.

## **The Impact of a Peer-Support group model on glycaemia Control of patients with Type 1 Diabetes in a tertiary care centre.**

MercyInbakumari<sup>1</sup>, Vijayalakshmi<sup>1</sup>, RuthDaniel<sup>1</sup>, Bharathi<sup>1</sup>, Sunitha<sup>1</sup>, Jansi<sup>1</sup>, Shirley<sup>1</sup>, Divya<sup>1</sup>, Ezhilarasi<sup>1</sup>, PadmaPriya<sup>1</sup>, Asha H.S<sup>1</sup>, Mahesh.D.M<sup>1</sup>, Mohan J<sup>1</sup>, Chaithanya<sup>1</sup>, Ross B. Kristal<sup>2</sup>, Mini Joseph<sup>1</sup>, Nihal Thomas<sup>1</sup>.

<sup>1</sup>Department of Endocrinology, Diabetes and Metabolism, Christian Medical College.

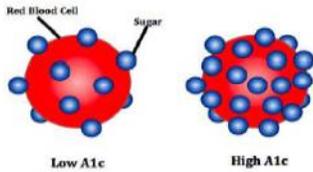
<sup>2</sup>Albert Einstein College of Medicine, Bronx, NY

**Introduction:** Living with diabetes is not easy; numerous factors including multiple daily injections, economic burden, illiteracy and social stigma make coping with type-1 diabetes mellitus (T1DM) difficult. We discuss the implementation of diabetes nurse educator(DNE)-led support groups with peer exchange for patients with T1DM at a tertiary care academic medical centre in India.

**Methods:** Fifty subjects with T1DM above the age of 14 years were recruited from June 2011. They were divided into 5 groups based on their main concerns- students, those looking for a job, those concerned about getting married, married awaiting conception or married with children. A curriculum for 5 sessions was created with power-point presentations on- 1.What is T1DM? 2. Nutrition, 3.Physical activity and foot care, 4.Glucose monitoring and 5 psychosocial issues. The DNE encouraged the group members to share their ideas to provide educational, social, and emotional support for one another. At the end of 36 months, the psychosocial impact of these group discussions was assessed using a questionnaire. The change in HbA1c after 36 months of support groups was assessed. (IRB no. 9072(RETRO) (24/09/2014)

**Results:** The mean age of the subjects was 25years, with a male to female ratio of 28:22. The mean duration of T1DM was 11±6.5years. The support groups removed the feeling of loneliness, by 36months 76% of the subjects were comfortable talking to others about diabetes, 86% had informed a friend and 75% believed that diabetes would not be a hindrance to their performance in academics or at work. The mean HbA1cThe Impact of a Peer-Support group model on glycaemic control of Type 1 Diabetes in India at initiation of this study was 10 ±2.9%, which significantly reduced to 8.2±1.7% at 36 months.

**Conclusion:** Diabetes educator led peer group support model shows promise not only in improving the psychosocial well-being, but also glycaemic control of individuals with T1DM. Patient empowerment is the key to success in diabetes management and peer support helps to overcome the barriers .

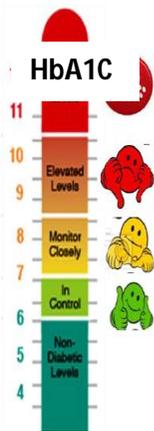


## Audit of awareness about HbA1C among diabetes outpatients in a tertiary care centre

Jansi\*,Ezhilarasi\*,Mercy, Ruth, Vijayalakshmi, Divya, Sunitha, Padma, Bharathi, Nihal Thomas.

Department of Endocrinology, CMC, Vellore.

**Introduction:** Structured education is an integral part of diabetes management. All patients treated in the department of Endocrinology are provided structured education for empowerment. HbA1C is a marker of long term glycaemia control, is strongly associated with the chronic complications of diabetes, and hence is the most important blood investigation in the management of diabetes. We aimed to assess the awareness about A1C in patients who were referred for diabetes education at our tertiary care centre.



**Methods:** This was a cross sectional study of 86 consecutive patients referred to diabetes educators for diabetes self-management education [DSME], over a period of 3 months from 1st May 2015 to August 31<sup>st</sup> 2015. The patients were administered a set of four questions by the diabetes educator in a language understandable to the patients (Hindi, Bengali, Tamil, Telugu). The questions - 1. Do you know what is A1C? 2. What is the normal range of A1C? , 3. What will be the impact of high A1C on you ? , 4. How frequently should you monitor A1C? These questions were administered before they were provided formal diabetes education. Subsequently a pictorial power point presentation about the significance of HbA1C was shown to all the patients. One day after the education the same questions were asked again to all patients to check for recall rates. Data on A1C, medications and presence of complications were recorded and analysed.

**Results:** The mean age of the subjects was 51.9 years (range 27-75 years). The median duration of diabetes was 10 years (range 1 to 35 years).The mean A1C of the subjects was 9.29% (range 6-14.9%) of whom 17% had an A1C  $\leq$  7%. Interestingly only 12/86 (13.9%) were aware about A1C, and 8/12 knew about the normal range and the significance of high A1C. Only 3 subjects knew the frequency of monitoring of A1C. One day after education all patients recalled the answers correctly. Of the 86 subjects 7 were aware that they had eye disease due to diabetes, 16 knew about their kidney involvement, 25 had symptoms suggestive of neuropathy and 12 had heart disease, none had stroke or PVD. Forty eight subjects were on Insulin, whereas 38 patients were only on oral glucose lowering agents (OGLA). The mean A1C of those on Insulin was 9.9%. The mean A1C was 9.1% of those on only OGLA.

**Conclusion:** The awareness about A1C in patients with diabetes attending a tertiary care centre was very poor. Simple pictorial presentations and written materials are useful in improving awareness. However follow up studies are needed to look at the impact of increased awareness on reduction of HbA1c in the long run. We also need to take steps to improve the awareness of public on the significance of A1C in diabetes management.

## **Prevalence and risk factors of lipohypertrophy in insulin-injecting patients with diabetes.**

**Ruth.D\*, Mahesh\* Vijayalakshmi\*, Padma.K, Sunitha.A, Divya.G, Ezhilarasi, Jansi.V, Mercy.I, Bharathi.K, Nihal Thomas\***

### **Abstract**

### **INTRODUCTION**

Lipohypertrophy denotes to a benign tumor like swelling of fatty tissue at the site of insulin injection secondary to the lipogenic effect of insulin. Lipohypertrophy is a significant problem associated with insulin therapy, leading to higher insulin requirement.

Our objective was to assess the frequency of lipohypertrophy (LH) and its relationship to site rotation, needle reuse and HbA1C.

### **METHODS**

The study included 50 outpatients with diabetes mellitus on insulin therapy who were enquired regarding their injection technique. A diabetes nurse examined their injection sites for the presence of lipohypertrophy.

### **RESULTS**

Lipohypertrophy was present in 45% of diabetes outpatients on insulin. There was a strong relationship between the presence of lipohypertrophy and non-rotation of sites. Among those with lipohypertrophy 98% either did not rotate sites or rotated incorrectly. Lipohypertrophy was also related to needle reuse, with risk increasing significantly when needles were used > 5 times. Total daily insulin doses for patients with and without lipohypertrophy averaged **53.6** and **44.1** IU/day, respectively.

The mean A1C with Lipohypertrophy was 9.4% and without LH was 8.4%

This 9 IU difference equates to a total annual cost of 23.2Cr.for an estimated population of 65 million.

### **CONCLUSION**

Lipohypertrophy is a significant problem in diabetic patients on insulin therapy. Reuse of needles and multiple injections at the same site are important risk factors leading to LH. This translates to increased insulin requirement and poor glycemic control, with higher HbA1C and economic burden.

**Title of the Study :** A Retrospective Study on the use of anterior Rocker footwear for forefoot ulcers in patients with type-2 diabetes mellitus.

**Authors**

Bharathi<sup>1</sup>, Sunitha<sup>1</sup>, Divya<sup>1</sup>, Mahesh<sup>1</sup>, Chaithanya<sup>1</sup>, Riddhi<sup>1</sup>, Swapna Patil<sup>2</sup>, Henry<sup>2</sup>, Anand Vishwanathan<sup>2</sup>, Suriya<sup>3</sup>, Mansoor<sup>3</sup>, John Joseph<sup>3</sup>, Anand<sup>3</sup>. Nihal Thomas<sup>1</sup>.

**Departments**

1Department of Endocrinology, 2Department of PMR and 3Department of P&O.

**Poster preference (Diabetes Educator)**

## **ABSTRACT**

**Introduction**

Foot problems are the leading cause of hospitalization for patients with diabetes. Foot ulcers in Diabetes mellitus precede 85% of non-traumatic lower extremity amputation. 15% of diabetes population develop foot ulcers in their life time.

**Aim:-**

To evaluate the effectiveness of using anterior rocker footwear on the outcome of forefoot ulcer and duration of the healing period.

**Methods:-**

The retrospective study included consecutive patients attending the Integrated Diabetes foot clinic, department of Endocrine over a period of two months (Jan – Feb 2015). Total patients were 138, out of which 60 (43%) had fore foot ulcers. Among these 47 (78%) were on regular follow-up and 13 (22%) were lost follow-up. Amongst those 47 patients, 23 (49%) were initially on other forms of foot wear and changed over to anterior rocker after a mean duration of 20 weeks. 19 patients (40%) were on forefoot rocker from the beginning. 5 patients (11%) continued to use the other forms of footwear throughout the study duration.

In patients, who used the anterior rocker from the beginning, 9 [47%] patients had complete healing, 6pts [32%] were improving within the period of 8 weeks, 3pts (16%) underwent amputation and were then put on a modified rocker and 1 patient (5%) did not heal due to osteomyelitis. Of those who were changed from other footwear to anterior rocker 8 patients (35%) had complete healing and 11 patients (48%) were improving within a period of 18 weeks. 2pts (8%) not healed due to osteomyelitis and 1 (4%) Charcot, 1patient (4%) underwent amputation.

## **Conclusion**

Use of anterior rocker footwear for forefoot ulcers from the beginning significantly reduced the time to initial improvement and positively influenced the outcome of the healing. Changing over to anterior rocker from previous footwear reduced the time of healing. From this retrospective analysis done at our centre we propose that anterior rocker should be the foot wear of choice for forefoot ulcers in diabetic patients.

## **LIFESTYLE FACTORS AND INCIDENCE OF GASTROINTESTINAL CANCERS**

### **ABSTRACT**

**Background:** *Lifestyle changes in the recent days have been identified as the trigger for multiple diseases including cancer, particularly the gastric, colon and rectal cancers. Lifestyle encompasses activities in various domains such as biological, psychological, social and spiritual which have an interlinked effect on the well being or illness of a person.*

**Objective:** *This study aimed to assess the various lifestyle activities that are thought to have an effect on causation of cancer. The study was conducted among two groups of population: (1) with incidence of cancer (incidence arm-IA) and (2) without incidence of cancer (non- incidence arm) in the outpatient and inpatient settings of selected departments that deal with gastrointestinal(GI) cancers in a tertiary health care setting.*

**Methodology:** *A descriptive study design was used to assess the various activities as lifestyle factors influencing the causation of GI cancers. A total of 216 study subjects (140 in the NIA and 76 in the IA) were selected using total enumerative sampling technique, based on the inclusion criteria. Data were collected using a self- administered questionnaire on six aspects which included physical activity, sunshine exposure, sleep, food frequency with eating habits, addictive habits and psycho-social-spiritual lifestyle. Data on demographic and clinical variables were obtained directly.*

**Results:** *The findings show that about 55.7% in NIA of the subjects had regular physical activity as compared to 37.6% in the IA which show significant relationship between lower physical activity and presence of GI cancers ( $p < .005$ ). About 40.7% and 22.4% in NIA and IA respectively had exposure to sunshine for more than 1 hour ( $p < .05$ ). Smoking was identified in 18.5 % and 32.8%, use of alcohol among 16.3% and 17.2%, consumption of tobacco was identified in 14.1% and 15.5 % of the males and 2.1% and 11.1% among female subjects in the NIA and IA respectively. There was no statistically significant relationship identified between addictive habits and presence of GI cancers. Less vegetable consumption was identified in 68.6% and 63.2%; consumption of red meat in 10% and 19.5% and consumption of high calories from non- grain sources in 26.4% and 34.4 % in the NIA and IA respectively. Majority of the subjects had occasional experiences of being stressed and nervous (34.3% and 27.6%), being unable to cope (32.1% and 30.3%), expressing anger ( 35 % and 27.6%) and breaking down at crisis (31.4% and 21.1% in the NIA and IA respectively ).*

**Conclusion:** *Lifestyle is the precursor to illness or wellness according to what nature of lifestyle has been practiced. The true challenge is that lifestyle is extremely difficult to be assessed because it is one's life adaptation. The present study highlights on the existing protective and risk factors such as food and food habits that may have predisposed the individual to developing a cancer.*

**Ms. Prasannakumari.S,**

**Junior Lecturer, CON, CMC, Vellore**

## **ABSTRACT**

### **A QUASI- EXPERIMENTAL STUDY TO DETERMINE THE EFFECTIVENESS OF REFLEXOLOGY (FOOT MASSAGE) IN REDUCING PAIN IN SPECIFIC UROLOGY CONDITIONS OF PATIENTS ADMITTED IN U WARD, CMC VELLORE.**

Pain is a Multidimensional phenomenon. Pain is very difficult to define and it is more subjective and personal. So it is Nurse's duty to help patient to overcome pain and make them comfortable. A quasi- experimental study to determine the effectiveness of Reflexology (Foot massage) in reducing pain in specific Urology conditions of patients admitted in U ward, CMC Vellore. Probability Sampling (Simple Random Sampling) was used to select 30 patients undergoing major and minor surgeries. The patient was given 30-45 mins of foot massage, pre and post assessment of pain was assessed by using visual analogue scale, with a ten point scale & an interview schedule using a 4 Likert scale with scoring 0-3. Descriptive and inferential statistics were used for analysis, the result showed that in Pre- assessment 21 patients (70%) have severe pain 7 (23.3%) have moderate pain & 2 (6.6%) had mild pain before nursing intervention (Foot massage) In post assessment 19 patients (63.3%) pain was reduced from severe to moderate pain 2 (6.6%) whereas from moderate to mild pain 9 patients (30%) remained the same level after foot massage. There was overall a significant difference between pre and post nursing interventions (Foot Massage) in reduction of pain among the participants at  $P < 0.001$ . Foot massage is one of complementary nursing intervention for pain management. This study recommends to include in the clinical nursing protocol along with invasive and non invasive strategies for pain reduction. Therefore nurses play a pivotal role in assessing, planning, implementing in different disease condition pain interventions especially foot massage (Reflexology) in reducing the pain intensity and adding maximum comfort to the patients quality life.

Mrs.Regina Xavier

Professor

CON,CMC,Vellore

***TITLE***

**AUDIT OF THE INTEGRATED DIABETIC FOOT CLINIC FOR THE MONTHS OF JANUARY –FEBRUARY 2015**

***AUTHORS***

<sup>1</sup>Divya N, <sup>1</sup>Chaithanya, <sup>1</sup>Mahesh DM, <sup>1</sup>Bharathi, <sup>1</sup>Sunitha, <sup>1</sup>Padma, <sup>1</sup>Riddhi, <sup>2</sup>Swapna Patil, <sup>2</sup>Henry, <sup>2</sup>Anand Vishwanathan, <sup>3</sup>Mansoor, <sup>3</sup>Suriya, <sup>3</sup>John Joseph, <sup>3</sup>Anand, <sup>1</sup>Nihal Thomas.

***AFFILIATIONS***

<sup>1</sup>Department of Endocrinology, Christian Medical College and Hospital, Vellore, <sup>2</sup>Department of PMR, <sup>3</sup>Department of Prosthetics and Orthotics.

***POSTER PREFERENCE (DIABETES NURSE EDUCATOR)***

***ABSTRACT***

***OBJECTIVE:*** DIABETIC FOOT ULCER IS THE MOST COMMON CAUSE OF NON TRAUMATIC LOWER LIMB AMPUTUATION.AN AUDIT OF THE INTEGRATED FOOT CLINIC WOULD ENABLE US TO DEVELOP STRATEGIES TO IMPROVE FOOT CARE ANE PREVENT AMPUTATIONS.

***METHOD:*** A total no of 120 patients from January to February were evaluated at the integrated diabetes foot clinic under the Dept. of Endocrinology of which around 40 were new. Detailed foot examination was done using Semmes Weinstein Mono filament, Biothesiometer, Doppler and Durometer. Patients were categorized into 5 groups based on the site of ulcer, presence of infection and Charcot’s foot. Analysis was done from our database and online charts.

TOTAL SAMPLE	120
FORE FOOT ULCER	69
MID FOOT ULCER	1
HIND FOOT ULCER	7
CHARCOTS FOOT	15
AMPUTATION	28

***RESULTS:***

A total of 120 patients have been evaluated in the foot clinic in the months of January and February of which 80(70%) were men and 40(30%) were women. The mean HbA1c was 8.29% and the mean duration of diabetes was 10.9%.15(12.5%) were admitted in the hospital, 24(20%)

had retinopathy, 12(10%) had neuropathy and 8(6.6%) had CAD.50 (41.6%) subjects were on Insulin. Of the 120, 97(80.8%) had forefoot ulcers, 1(0.83%) had a mid foot ulcer, 7 (5.8%) had hind foot ulcers and 15(12.5%) had Charcot's foot. Of the 97with forefoot ulcers, 28 have undergone various forms of minor amputations. Those with forefoot ulcers were given MCR with Anterior rocker, with hind foot ulcer were given complete off-loading either with TCC or Walker or Crutches or Wheel chair. Those with Charcot's were given molded insole.

**CONCLUSION:** The most common diabetic foot ulcers occur in the forefoot region (80.8%) and approximately 30% of them are associated with minor amputations. A larger prospective study on the impact of increasing awareness about foot attack and diabetic foot care would help in not only preventing foot ulcers but also amputations.

### ***In vitro and in vivo antidiabetic activities of methanolic leaf extract of *Acanthus ilicifolius****

G.A.Gayathri<sup>1</sup> and Mahalingam Gayathri<sup>1</sup> School of Biosciences & Technology, Division of Industrial Biotechnology, VIT University, Vellore 632014, Tamil Nadu, India.

## **ABSTRACT**

### **Background**

Diabetes is a complex, chronic metabolic disorder. Synthetic drugs are commonly prescribed to manage the diabetes. Since these drugs have undesirable side effects the world has turned towards the traditional treatment for diabetes. Medicinal plants offer an exciting opportunity to develop them into novel therapeutics that are considered to be less toxic with lower side effects and cost effective than synthetic drugs. One among the important plant is *Acanthus ilicifolius*, a mangrove plant belongs to acanthaceae family found in coastal areas.

### **Aim**

The main aim was to investigate the *in vitro* cytotoxicity and glucose uptake study in L6 cell lines, *in vivo* acute toxicity and antidiabetic activity of methanolic leaf extract of *Acanthus ilicifolius* (MEAIL) in STZ induced diabetic rats.

### **Methods**

Cytotoxic effect of the extract was evaluated by MTT assay and *in vitro* antidiabetic effect was studied using the glucose uptake in rodent skeletal muscle cells (L6 cell line) involved in glucose utilization. Acute toxicity studies were done for 14 days. Type II diabetes was confirmed after 3 days of single intraperitoneal injection of STZ (50mg/kg bw) in Wistar rats. MEAIL (200,400 mg/kg bw) and glibenclamide (5 mg/kg bw) were administered orally for 48 days. Body weight and glucose levels were recorded for every week. After the study period overnight fasted rats were sacrificed. Blood and tissues were collected for further analysis.

## Results

MEAIL enhances glucose uptake by  $56.27 \pm 2.19\%$  over control at 100  $\mu\text{g/ml}$  dose and also when compared with standard insulin (1U/ml). MEAIL up to 3000 mg/kg bw did not show any acute toxicity. On treatment with 100, 200 mg/kg body weight of MEAIL the diabetic rats showed significant reduction in fasting blood glucose, HbA<sub>1c</sub>, cholesterol, triglycerides, SGOT, SGPT, urea, creatinine and increase in body weight, HDL, total protein and electrolytes ( $p \leq 0.05$ ) when compared with diabetic control and glibenclamide treated groups.

## Conclusion

*In vitro* and *in vivo* studies revealed that MEAIL has antidiabetic and antihyperlipidemic activity. However, isolation and characterization of the active principle are needed to elucidate the exact mechanism of action, which may lead to development of new novel antidiabetic drug.

### **Synergism between PAG and CP-96,345 on the production of cytokines and adhesion molecules in acute pancreatitis associated lung injury**

**Leema George**,<sup>1</sup> KNS Sirajudeen,<sup>2</sup> VenkatramanManickam,<sup>1</sup> Ramasamy Tamizhselvi,<sup>1</sup> School of Biosciences and Technology, Vellore Institute of Technology, VIT University, Vellore 632014, Tamilnadu, India.<sup>2</sup> Department of Chemical Pathology, University Sains Malaysia, 16150-Kubang Kerian, Kelantan, Malaysia.

## Background

Acute pancreatitis is an autodigestive process resulting in acute inflammation of the pancreas. In the most severe forms of acute pancreatitis, acute lung injury and respiratory distress syndrome often occurs in the early stages and can lead to early death.<sup>1</sup> Although its pathogenesis is still incompletely resolved, several inflammatory mediators including cytokines, adhesion molecules,

hydrogen sulfide (H<sub>2</sub>S) and substance P (SP) are involved during different phases of disease severity. We still lack effective treatment directed at underlying pathophysiological mechanisms.

## **Objectives**

This study aimed to investigate the synergistic effect of CP-96,345 (specific neurokinin-1 receptor (NK1R) antagonist), and DL-propargylglycine (irreversible inhibitor of cystathionine- $\gamma$ -lyase (CSE)), on the regulation of the expression of cytokines TNF- $\alpha$  and IL-1 $\beta$  and adhesion molecules E-selectin, and P-selectin as well as Myeloperoxidase (MPO) activity in acute pancreatitis associated lung injury (APALI) via NF- $\kappa$ B.

## **Methods**

Acute pancreatitis was induced in male Swiss albino mice by 10 consecutive hourly intraperitoneal injections of cerulein (50 $\mu$ g/kg). Intraperitoneal injection of PAG (100 mg/kg) alone or CP-96,345 (2.5 mg/kg) alone or in combination was administered one hour after the first cerulein injection. Animals were killed, and the lungs were isolated for RT-PCR, ELISA and western blot.

## **Results**

PAG and CP-96,345 alone or in combination eliminated cerulein-induced increase in pulmonary TNF- $\alpha$ , IL-1 $\beta$ , E-selectin, P-selectin and NF- $\kappa$ B. The combined use of these inhibitors produced greater inhibition than the use of any inhibitor alone and reduces cerulein-induced lung NF- $\kappa$ B activity to a similar extent as BAY-11, 70 82.

## **Conclusions**

The present findings show for the first time that combined SP and H<sub>2</sub>S inhibition results in a marked synergistic inhibition of TNF- $\alpha$ , IL-1 $\beta$ , E-selectin and P-selectin in APALI via NF- $\kappa$ B pathway.

*“Plasmid associated multi-drug resistant bacteria isolated from poultry litter”.*

**Prasanth. M\*, Ramesh. N, Gothandam. K.M, Karthikeyan. S. School of Bio-Sciences and Technology, VIT University, Vellore, Tamil Nadu, India.**

## **Background**

Multi-drug resistant bacterial infections cause serious health problems worldwide. Uncontrolled use of antibiotics in poultry production has been linked to the presence of antibiotic resistant bacteria in poultry environment and product consumers. **Aim:** To isolate the multi-drug resistant bacteria from poultry litter.

## **Methods**

Samples were collected from three poultry farms in Karur district with the breeds around 50 to 85 days old to make sure that dosage of different drugs were completed. Serial dilution was performed with addition of different antibiotics (10mg/L each of meropenem, cefotaxime, ampicillin, tetracycline and 5mg/L of colistin). Different colonies were selected based on morphology and identification by 16S rRNA sequencing and MIC was performed. Based on MIC results strains were selected for PCR amplification of resistant genes (CTX-M, NDM-1, IMP, OXA, KPC). Plasmid was isolated and transconjugation experiments were performed to study the conjugation efficiency using *E. coli* AB1157.

## **Results**

Multi-drug resistant isolates were screened after serial dilution with different antibiotics. MIC results showed that 78 isolates were resistant to all the tested antibiotics (CLSI guidelines) and isolates were identified by 16S rRNA sequencing to be *Staphylococcus sciuri*. Screening of resistant genes showed 2 isolates carried NDM-1, 5 with CTX-M and 8 with IMP. Plasmid was isolated from all the resistant isolates and transconjugation experiments reveal that plasmid was successfully transformed to recipient (*E. coli* AB1157) to make them resistant that was confirmed by PCR.

## **Conclusion**

The results of this study illustrate the persistence of resistant bacteria in the environment, and highlight the spread of resistance associated with the use of antibiotics as a feed additive in poultry production. Though *S. sciuri* was associated with chicken its conjugation of drug resistance to other strains increases the potential for human exposure to drug resistant bacteria.

## **A non-surgical animal model for long term catheter associated urinary tract infection, an immunopathological investigation**

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### **Background**

Implantation of foreign bodies has become an essential component in almost all healthcare systems, which particularly played a major role in patient survival. However, the ability of microbes to adhere to the inert implant materials has notably contributed to the escalating problem of nosocomial infections, among which urinary tract being the most common site (30%-40%). Host immune system plays a major role to prevent the microbial adherence and proliferation. However, the inert catheter surface acts as a platform for biofilm formation thus helps to mask immune responses and treatment regimes. Till date, a defined scheme of host-pathogen interaction in CAUTI is limited.

### **Aim**

Present study aimed to illustrate the immunopathological analysis of female Wistar rats with experimentally induced CAUTI associated long term catheterization.

### **Materials and method**

Trans-urethral catheterization and subsequent inoculation of *P. aeruginosa* (MTCC 3541) was performed in female Wistar rats to induce CAUTI. Animals were divided into 3 groups; control group (no implant + no inoculum), insertion control group (sterile implant + no inoculum) and test group (implant + inoculum [ $10^{10}$  CFU/mL]). To ensure bacterial adhesion, bladder mucosal layer was damaged by mild acid base treatment, prior to inoculation. During the study period (45 days) the animals were sacrificed at regular intervals and organs (kidney and bladder) were extracted for bacteriological, gene expression (TLR-4 and NF $\kappa$ b) and histopathological (H&E and Alcian blue staining) analysis. Blood was collected and divided; heparanized (hematological analysis) and non-heparanized (for separating the serum). Inflammatory markers' (IL6, TNF $\alpha$  and MCP1) level in serum was quantified through sandwich ELISA technique. Urine (micro-protein, creatinine and urea) and serum (urea and creatinine) levels were quantified to verify the kidney damage. Implants were extracted and analyzed through SEM. Data was represented as Mean  $\pm$  SD (n=6) as all the statistical analysis was performed using two way ANNOVA and Bonferroni post-test.  $p < 0.05$  was considered significant through out the study.

### **Results**

A non-surgical transurethral catheterization procedure was established in female Wistar rats for the induction of long term catheterization associated UTI. Significant bacterial lodgment was observed in kidneys from day 3 post infection (p.i.) onwards as the evaluation of kidney damage markers confirmed damage in kidney from the 7<sup>th</sup> day p.i. Irregular urinary urea levels were observed through out the study, explained well by the urease positive nature of *P. aeruginosa*. Elevated levels of cytokines in the serum corroborated well with the hematological observations, in the study. Histopathological evaluation of kidney and bladder was in agreement with the biochemical and the ELISA observations. qRT-PCR analysis exhibited an elevated expression level of TLR-4 and NF $\kappa$ b, corresponding to the microbial lodgment, confirming the activation of LPS mediated inflammation pathway. Scanning electron micrographs revealed the encrustations within the implant's lumen.

## **Conclusion**

To the best of our knowledge, this is the first kind of study for long term catheterization associated UTI.

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## **ISOLATION AND CHARACTERIZATION OF PIGMENT PRODUCING HALOTOLERANT BACTERIA AND COMPARATIVE ANALYSIS OF ENZYME INVOLVED IN BIOSYNTHESIS OF PIGMENTS**

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## **ABSTRACT:**

Sea water contains diverse microbial population. Microbial diversity arises due to the evolutionary changes in the microbes in response to stressful conditions like hyper salinity, low oxygen concentration, high or low temperatures, low nutrient availability, and presence of toxic compounds. High salinity led to the evolution of halobacteria. As an adaptive strategy, these organisms produce several metabolites (Enzymes, pigments, siderophores etc.) for their survival. Also, in industries, there is raising imposition for the use of metabolites which can exhibit activity in a wide range of salt concentration. The microbial pigments can be exploited, as they offer significant advantages like use in therapeutics/diagnostics, easy accessibility, GRAS (Generally Recognized As Safe) and it can be produced in short time. These microbial pigments

have the potential to be used in pharmaceutical industries, food, cosmetics and textile industries. In the present study, soil samples were collected from Marakkanam saltern, Tamil Nadu. A total of 6 pigment producing strains were isolated. Taxonomic characterization revealed that two of these strains were *Bacillus* sp. and four of them were *Halobacillus* sp. To start with, the pigments from *Planococcus maritimus*VITP21 were purified using preparative TLC and were partially characterized by conventional spectroscopic methods. The results revealed that the pigment could possibly be a carotenoid. As phytoene synthase is one of the important enzyme in the biosynthesis of this class of pigments, a comparative analysis of the aminoacid sequence and three dimensional structure of phytoene synthase was performed.

## **Towards finding potential therapeutic targets for neurodegenerative diseases**

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### **Abstract**

Protein Kinases are known to be involved in brain stroke during hypoxia. In the mammalian central nervous system glutamate is the major excitatory transmitter which plays an essential role in neural development, excitatory synaptic transmission, and plasticity during ischemia. However, glutamate accumulates at synapses causes the extensive stimulation of its receptors, which can be toxic to neurons. Glutamate is responsible to activate three classes of ionophore-linked post-synaptic receptors, namely N-methyl-D-aspartate (NMDA),  $\alpha$ -amino-3-hydroxy-5-methyl-4-isoxazole propionic acid (AMPA), and kainate receptors. Activation of NMDA receptors involves two events: (1) binding of the co-agonists glycine and glutamate, and (2) simultaneous membrane depolarization, which removes the  $Mg^{2+}$  blockage of the channel pore, leading to the influx of  $Ca^{2+}$ . Further under physiological conditions, the entrance of  $Ca^{2+}$  produces partial inhibition of NMDA receptors via  $Ca^{2+}$ -dependent inactivation, thereby preventing the intracellular  $Ca^{2+}$  overload. However Under pathological conditions this negative feedback in  $Ca^{2+}$  regulation of NMDA receptors is disabled, resulting in excessive  $Ca^{2+}$  influx through the receptor channels.  $Ca^{2+}$  overload triggers multiple intracellular events that induce irreversible death of neuron cells. Recently a kinase protein is reported to act as a specific NMDA receptor “cell death signal” at extrasynaptic sites, where the kinase protein interact with NMDA receptor and leads to the neuronal cell death due to excitotoxicity. So, here our aim is to study to the mechanisms involved in neuronal survival and design modulators using *in-silico* approaches.

# **Predictive value of Pulmonary Function Tests for Respiratory Infections in Cervical Cord Injury**

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## **Background**

Respiratory complications are the leading cause of mortality, morbidity and decreased quality of life in persons with complete high level spinal cord injury, with an incidence of 50% to 100% in the acute stage. Respiratory infections significantly increase the length of hospital stay and hospital costs. Previous studies have demonstrated that pulmonary function tests can be used to predict respiratory infection in a community setting. Pulmonary functions in patients with cervical spinal cord injury have not been evaluated as predictors of respiratory infection during hospital stay. **Aim:** To determine whether pulmonary function tests can predict respiratory infection in persons with cervical spinal cord injury of less than one year duration.

## **Methods**

Pulmonary function tests and bedside measures of pulmonary function were assessed for all patients. Patients were followed up during the course of hospital stay and at 3 months after discharge to determine the incidence of respiratory infection. The differences in pulmonary function in patients who developed and those who did not develop respiratory infection were assessed and receiver operated characteristic curves were plotted to determine the predictive value of each test.

## **Results**

The Percentage predicted values of Forced vital capacity (FVC%) and Forced expiratory volume in 1 second (FEV1%) were the best predictors of respiratory infection. Using cut-offs of 44.7% for Forced vital capacity (FVC%), and 43.7% for Forced expiratory volume in 1 second (FEV1%), the sensitivity of these tests for prediction of respiratory infection was 100%, with a specificity of > 85%. Among the bedside measures of pulmonary function, the Index of Pulmonary dysfunction correlated well with FVC% and FEV1% with slightly reduced sensitivity.

## **Morbidity and mortality after tonsillectomy in children**

### **AIM**

To study the morbidity and mortality rates in children and analyze the possible etiological factors

### **MATERIALS AND METHODS**

Analysis of case records of children below 16 years who underwent tonsillectomy with or without adenoidectomy in past 44 months in a tertiary care centre. Variables analysed were demography, indication for surgery, duration of symptoms before surgery, intraoperative findings, any known comorbidity, post operative day and type of morbidity and its management.

### **RESULTS**

470 case records of children under 16 years of age who underwent tonsillectomy in past 44 months were studied. Mean age was 6.2 years. Male to female ratio was 1.1:0.9. Most common indication was Chronic hypertrophic adenotonsillitis (98%). Morbidity was 14.68% (69/470) overall, most common being bleeding 7.4% (35/470), followed by pain 4.6% (21/470), fever 0.8% (4/470), observation due to associated comorbidities 0.8% (4/470), and 2 had complications unrelated to surgery (drug reaction and pneumonia). Major morbidity was bleeding comprising of hospital admission more than 48 hours, including 6 re explorations under GA. We had one mortality due to secondary hemorrhage.

### **CONCLUSION**

Tonsillectomy is one of the most common procedures in children. In spite of our low threshold to admit the patient in postoperative follow up, morbidity and mortality rates are comparable with world literature.

# **EFFECTIVENESS OF AN INSTRUCTIONAL MODULE ON KNOWLEDGE, ANXIETY, PHYSIOLOGICAL AND BEHAVIOURAL RESPONSES OF PATIENTS UNDERGOING GASTROSCOPY**

## **Introduction**

Information is one of the important resources for coping and it can alter the subject's feeling of the threat and thus enhances compliance. Inadequate information regarding gastroscopy may cause severe anxiety, fear, and poor compliance and reduce the patient's tolerance.

## **Objectives**

The study was designed to assess the effectiveness of an instructional module on knowledge, anxiety, physiological and behavioral responses of patients undergoing gastroscopy.

## **Methodology**

An experimental design was used in this study. The study was conducted in Christian Medical College, Vellore. A total of 72 subjects were selected by block randomization technique who fulfilled the inclusion criteria and consent was obtained. On the day of appointment, State Trait Anxiety Inventory (Y1) was used to assess the anxiety and questionnaire prepared by the investigator to assess the knowledge regarding gastroscopy, its preparation and complications. For experimental group, the video was played and control group received routine information. On the day of gastroscopy procedure, same questionnaire was used to assess their anxiety and knowledge. Physiological responses were assessed using checklist prepared by the investigator before and during procedure. Behavioural responses were assessed during procedure using checklist. Pain was assessed post-procedurally using Visual Analogue Scale.

## **Results**

Most of the subjects (68.1%) were male, 83.3% were married. There was a statistically significant increase in mean scores of knowledge from 4.55 to 12.38 in experimental group ( $p < .001$ ). There was a statistically significant decrease in mean scores of anxiety from 42.83 to

35.75 in experimental group ( $p < 0.001$ ). The study revealed that there was a moderately negative correlation between knowledge and anxiety in experimental group ( $r = -.564$ ;  $p < .001$ ). A significant association found between age group between 41- 60 years and anxiety of the subjects ( $p < .001$ ).

## **Conclusion**

The study revealed that providing structured teaching using video will help the patient to increase knowledge and reduce anxiety. So, as Nurses need to play a major role in providing teaching regarding the procedure will help them to cope better during procedure.

## **Key words**

Knowledge, Anxiety, Behavioural responses, Physiological responses, Gastroscopy, Instructional Module.

## **D-dimer levels in patients with Thromboangitis Obliterans**

### Introduction

Thromboangitis obliterans (TAO) is a vascular disease presenting with obliterative endarteritis. This is secondary to a mixture of thrombosis and inflammation. The exact causation and etio-pathogenesis of this disease remains unknown with tobacco use being the only definite etiological factor. Drug therapy is guided by clinical experience but no Indian data from large treatment series or etiological studies is available.

### Methods

We studied if D-dimer (a marker of thrombosis) levels are elevated in patients with thromboangitis obliterans (TAO) as compared to normal age matched controls. We used a case control design with the calculated sample size of 62 cases and 330 controls performed on consecutive patients with TAO diagnosed between April 2014 to May 2015.

### Results

The median and inter-quartile range for D-dimer values were 61 (41-88) and 247(126-477) for the cases (n=62) and control (n=330) groups, respectively. The difference in the distribution was statistically significant between the two groups ( $P < 0.001$ ).

### Conclusions

D-dimer levels are elevated in patients with Thromboangitis obliterans. This point to an underlying thrombotic process in this disease. Future studies can assess if these patients benefit from anticoagulants

# ESTIMATION OF ACTUAL STRENGTHS OF DIFFERENT BRANDS OF COMMONLY AVAILABLE PARACETAMOL TABLETS BY SPECTROPHOTOMETRY AND COMPARING THEM WITH THE CORRESPONDING LABEL INFORMATION

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## BACKGROUND

Paracetamol is one of the most popularly used over-the-counter analgesic and anti-pyretic marketed by various companies. There are reported cases of wrong information in the labels pertaining to the strengths of paracetamol tablets leading to wrong dosage and abnormal therapeutic responses. There is a need for greater stringency in the manufacture of the correct strength of the drug.

## AIM

This study was done to evaluate the actual strengths of different brands of commonly available paracetamol tablets by spectrophotometry and comparing them with the corresponding label information of these medications and calculate the degree of variation.

## METHODS

8 different brands of paracetamol tablets in multiple batches of different brands were randomly sampled from various local pharmacies. Standard and validated method for paracetamol assay using spectrophotometer was used. Both inter-batch and inter-brand variations in the strength of the paracetamol tablets were studied. Non-parametric Kruskal-Wallis test was used using 'R' program (3.1.0) for statistical analysis and  $P < 0.05$  was considered significant.

## RESULTS

All the brands showed acceptable variation in mean strengths which ranged from  $91.3 \pm 0.00\%$  to  $101.7 \pm 12.59\%$  without significant variability. There was no significant inter-batch variability either.

## CONCLUSION

It can be concluded from the above study that all the different brands of paracetamol tablets have acceptable strengths (as per British and United States Pharmacopeia) as compared to their respective label information.

# **The impact of ASD and other neuro developmental disorders on the family: Comparisons and predictors**

Beena Koshy, Rachel Beulah, Lincy Glory, S Suganthi and Reeba Roshan

## **Background**

Autism spectrum disorders (ASD) and other neurodevelopmental disorders (NDD) impact families adversely. Published studies state that families of children with ASD report a higher impact than those with other NDD. There is a paucity of data evaluating these concepts in the Low Middle Income Countries (LMIC).

## **Objectives**

7. To evaluate whether families of children with ASD report a higher impact than those with other NDD
8. To understand the predictors for the impact on families of children with either disorder

## **Methods**

All families who were welcomed to an inpatient residential facility attached to the Developmental Paediatrics Unit in a tertiary care centre in India for detailed assessment and interventions from January 2015 to June 2015 were included in the analysis. The child was diagnosed by a multidisciplinary team of physicians, psychologists and therapists. The ASD diagnosis was confirmed by DSM-V and Childhood Autism Rating Scale (CARS). The Revised Impact on Family questionnaire was administered to all families to assess the impact.

## **Results**

130 children were included in this study. Both families of children with ASD and other NDD reported high impact on the family. There was no significant difference between the reported impact of ASD and NDD (38.17 and 38.13 respectively;  $p=.981$ ). Being a girl child (45.8 vs 36.84 respectively;  $p=.004$ ) and having associated developmental delay (39.82 vs 28 respectively;  $p=.022$ ) had higher impact on families of children, which remained significant in a linear regression.

## **Conclusions**

Both ASD and NDD have high impact on families. Additional support need to be provided for families of children with ASD and associated developmental delay. The impact of gender on ASD and other NDD needs to be explored further incorporating the local cultural milieu.

## **ABSTRACT**

### **Introduction**

*Cardiac pacing is an emerging life saving procedure that is being widely used in the recent times. It is therefore vital for the health care professionals to be aware of the patients' knowledge and experience after the cardiac device implantation and also the impact these implanted devices have on their life.*

### **Objective**

*The study was aimed to assess the Knowledge and Attitude of patients regarding Permanent Pacemakers and their Quality of Life after the Permanent Pacemaker Implantation.*

### **Method**

*A descriptive cross-sectional study design was used in this study. A total of 70 subjects were chosen by the total enumerative sampling technique among those patients attending the Cardiology Out-patient Department, Pacemaker Clinic and selected Cardiology wards of CMC, Vellore. The data instruments used for the study were a Knowledge questionnaire, an Attitude scale and RAND SF-36 tool to assess the QOL which were self administered questionnaires.*

### **Results**

*The study findings reported the mean age of the subjects being  $61.71 \pm 12.42$ , and 60% accounted for men. The median duration of implantation was  $2.9 \pm 5.21$  years. Majority of the participants 54.3% had moderately adequate knowledge, 55.7% of the participants had moderately favourable attitude and 46% of them experienced moderate QOL. A significant positive correlation was found between Knowledge of participants and their QOL ( $r= 0.340$ ;  $p=0.004$ ), also a significant positive correlation between Attitude of participants and their QOL ( $r= 0.559$ ;  $p=0.001$ ). A significant association between attitude and age was found ( $p = 0.001$ ).*

### **Conclusion**

*Conscious effort must be taken to help patients cope better and experience good QOL through systematic teaching after the pacemaker implantation. This will help the patients to function maximally and live life to their best capacities in the family and society.*

## **Key words**

Knowledge, Attitude, Quality of Life, Permanent Pacemaker, Permanent Pacemaker Implantation.

## **HPV testing in surveillance of patients after treatment for CIN 2-3 or cervical cancer**

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## **Background**

Persistent infection with hr- HPV following treatment for CIN or carcinoma cervix is associated with increased risk of recurrence.

## **Aim**

To study the role of cervical HPV testing in patients treated for CIN or cervical cancer

## **Methods**

A retrospective study was done with data collected from medical records. During the period from Aug 2013 to Dec 2014, a total of 239 patients with CIN or Carcinoma cervix attended the Gynaecologic Oncology Unit at CMC, Vellore. Of these, 48 patients who had undergone HPV testing post treatment for CIN 2-3 or cervical cancer were included in the study. HPV testing was done by Hybrid Capture II and Pap smear by Thin Prep LBC.

## **Results**

Of the study population, 24 had treatment for cancer and 24 for CIN. The follow up Pap was positive in 4 of the cancer patients (16.6%). All 4 tested positive for hr-HPV and underwent further evaluation. HPV was positive in a patient with negative Pap. Both the tests were negative in 19 patients. The OR for an abnormal Pap with positive hr-HPV after cancer treatment was 117 (95% CI 4.1 to 1371; p-value= 0.006). Pap was positive in 8 out of 24 patients (33.3%) who were treated for CIN 2-3. HPV was positive in 3 of these 8 patients (37.5%). All 3 patients underwent biopsy and 2 had carcinoma. HPV was positive in 3 patients with negative Pap. Both the tests were negative in 13 patients. The OR for an abnormal Pap with positive hr-HPV was 2.6 after treatment of CIN 2-3 (95% CI 0.4 to 17.5; p-value = 0.32)

## **Conclusion**

HR HPV testing may prove to be a useful initial test in surveillance of patients after treatment of cervical neoplasia. Further studies are required to decide the frequency of HR HPV testing in post treatment surveillance.

## **SENITIVITY AND SPECIFICITY OF CRP IN NEONATES AT RISK OF SEPSIS IN A SECONDARY HOSPITAL-A COHORT STUDY**

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## **Objective**

To determine the utility of CRP in the diagnosis of sepsis in neonates with maternal risk factors of sepsis.

## **Design**

Prospective observational cohort study.

## **Setting**

Secondary level hospital in Vellore, South India.

## **Participants**

Neonates with maternal risk factors of sepsis (Maternal fever; maternal UTI; any ungloved per vaginal examination, or >3 gloved per vaginal examination after rupture of membranes; chorioamnionitis; spontaneous preterm delivery; prolonged rupture of membranes and pre labor rupture of membranes).

## **Methods**

Neonates with maternal risk factors of sepsis were recruited. Demographic data, birth data and timings of blood culture, antibiotics and CRP were recorded. Clinical signs of sepsis were determined using the Singh Sepsis Score (grunting, abdominal distension, increased pre-feed aspirates, tachycardia, hyperthermia, chest retractions and lethargy). Results of blood culture, CRP and clinical signs of sepsis were compared.

## **Results**

CRP had a sensitivity 28.6%, specificity 81.9%, negative predictive value 80.9% and positive predictive value 30% when compared to clinical diagnosis of sepsis. Only 9 blood cultures grew possible pathogens. CRP by latex agglutination correlated with CRP values by nephelometry with a correlation coefficient of 0.684.

## **Conclusions**

A negative CRP excluded sepsis with reasonable confidence in blood culture negative neonates with maternal risk factors of sepsis.

## **Use of Nintendo Wii™ gaming console for rehabilitation of children with cerebral palsy**

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### **Background**

Cerebral palsy is a condition caused by non-progressive injury to the immature brain resulting in motor and postural impairment. Nintendo Wii (Wii) is virtual reality gaming console that has been shown to be useful in the rehabilitation of patients with stroke. The aim of this study is to evaluate the potential of using Wii as an adjunct to routine therapeutic regimen in the rehabilitation of children with cerebral palsy (CP).

### **Methods**

The study was designed as a pilot randomized controlled trial with 20 CP children. The children in the intervention group played Wii games for 18 sessions in 3 weeks as part of their routine therapy. The children in the control group received routine therapy alone. The outcome measures were posture control and balance, upper limb and hand function, visuo-perceptual skills and walking speed and endurance. These were measured before and after the intervention in each group. The Wilcoxon signed-rank test (for paired data) and Mann Whitney tests (for independent variables) were used for statistical analysis of the data.

### **Results**

A significant improvement in upper limb and hand function was seen in the post-test compared to pre-test in the intervention group, which was not seen in the control group. No statistically significant effects of the intervention were seen on the other outcomes measured compared to the control group. Children in the intervention group were highly motivated and enjoyed playing Wii games as part of their therapy sessions.

## **Conclusion**

Wii games-based therapy may be offered as an effective adjunct to routine therapy in CP rehabilitation. However, larger studies will have to be done in order to come to definite conclusions regarding the beneficial effect of this intervention.

## **Cytomorphometric markers – Early indicator for sepsis?**

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## **Background**

Early diagnosis of sepsis still remains elusive with no gold standard test. Studies have explored the significance of neutrophil and monocyte- volume, conductivity and scatter (VCS technology) generated in automated analyser, Beckman Coulter UniCel® DxH 800 as markers of sepsis. These provide an objective measurement for the cytomorphometric changes in leukocytes. Against this background we studied the sensitivity of VCS parameters in diagnosing sepsis in adult and other critically ill patients.

## **Aim**

The aim of the study was to look at changes in VCS parameters for neutrophils and monocytes which could be used as early markers of sepsis in adult population.

## **Methodology**

This study done over one year included 123 patients from MICU, of which 63 were cases and had sepsis and 59 were controls. We also compared all MICU patients with healthy blood donors. The diagnosis of sepsis and severity was based on the Surviving Sepsis Guidelines. ANOVA test was applied and ROC curve made for each of the significant parameters. VCS data was also compared to the Procalcitonin and CRP levels in the MICU patients.

## **Result**

Among the three study groups- the MICU sepsis cases (63), MICU controls (59) and blood donors (98), we found a highly significant difference in the neutrophil volume, conductivity and scatter and monocyte volume and scatter between all the three groups ( $P < 0.001$ ). Among the MICU cases and controls- the VCS parameters especially the neutrophil volume ( $P = 0.001$ ) and

monocyte volume (P= 0.0000) demonstrated better difference than the conventional Procalcitonin (P= 0.07) and CRP (P= 0.062) markers. The volume and scatter of neutrophils and monocytes together showed a sensitivity of 70% and specificity of 75% in diagnosing sepsis.

## **Conclusion**

This study found VCS parameters to be significantly different between healthy and critically ill patients. There was also a significant difference in the parameters between septic and other critically ill patients, though this needs further study to prove its absolute discriminating power. However this easily available test can be used in laboratories with automation to guide clinical suspicion of sepsis. With no separate sampling and analysis required it adds cost benefit along with better diagnostic accuracy.

## **Juvenile-onset recurrent respiratory papillomatosis: our experience**

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## **ABSTRACT**

Juvenile onset recurrent respiratory papillomatosis (JORRP) is a benign neoplasm of the upper respiratory tract, involving primarily the larynx, caused by Human papilloma viruses (HPV) type 6 and 11. The most common presenting symptom of JORRP is hoarseness followed by slowly progressive stridor. In the most severe cases, a tracheostomy may be necessary, but this procedure carries a risk of dissemination of lesion to the peristoma and to the lower airway. This case series highlights how we managed the airway without tracheostomy using endoscopic microdebridement (EM) technique.

## **MATERIALS AND METHODS**

Retrospective case series of seven children treated for recurrent laryngeal papillomatosis at our tertiary care institute between 2012 and 2015. They were in the age groups -range of one year eight months to nine years. All of them underwent endoscopic microdebridement of laryngeal and tracheal lesions.

## **RESULTS**

All seven children with JORRP underwent endoscopic microdebridement under spontaneous anaesthesia. Male: Female ratio was 1.6:1. Out of seven children with JORRP, four children were tracheostomized outside for airway obstruction. Out of this four children, two were asymptomatic after surgery and successfully decannulated. Two children were asymptomatic and three are under follow up.

## **CONCLUSION**

Although there is no “cure” for JORRP, repeated surgical excision is the primary treatment modality. The goal of surgery is removal of as much of the papilloma as possible without damaging normal structures. Recently, the EM can quickly debulk papilloma with less operative time, decreased mucosal injury and a cost benefit. EM is a minimally invasive and safe technique which provides accurate removal of papillomas, although recurrence is often unavoidable. Spontaneous ventilation during surgery is ideal. Traditionally many centres end up in doing tracheostomy for airway obstruction, but we could manage our patients without tracheostomy using our anaesthetic and surgical technique.

## **CLINICORADIOLOGICAL FEATURES AND OUTCOME OF MOYA MOYA DISEASE (MMD) AND SYNDROME IN A TERTIARY LEVEL TEACHING HOSPITAL IN SOUTH INDIA**

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Moya Moya disease is an idiopathic vasculopathy affecting terminal internal carotid arteries.

### **Type**

Retrospective chart review

Methodology: Chart of patients diagnosed to have Moya Moya disease (MMD) and syndrome (2003 to 2013) were analysed for demographic characteristics, clinical presentation, radiological features, management and outcome.

## **Results and discussion**

115 patients (62 males and 53 females) were studied. Age at onset of stroke was 15.4 years (Range 6 months - 60 years). Children formed majority (70%). 85% of patients hail from eastern India. Anterior circulation was involved in all, posterior circulation in 69 patients (60%) with 32 patients having posterior circulation infarcts. Most common presentation was hemiparesis (44%), followed by seizure (43%), headache(6%), language disturbances(2%), cognitive decline(0.08%), chorea(0.08%), visual symptoms(0.08%) and asymptomatic(0.08%). Family history was positive in 7 belonging to 3 families. 13 had syndromic diagnosis (Neurofibromatosis (4), tuberous sclerosis(1), downs syndrome(1), PHACES syndrome(1), EBV infection(1), Sickle cell anemia(2), thalessemia(1) and megaloblastic anemia(1) and a syndromic moya moya with cataract). All children presented with ischaemic events and 4 adults presented with hemorrhage. 26 patients (22.6%) underwent indirect surgical revascularisation with total of 36 procedures (16 patients with unilateral and 10 patients with bilateral procedures). Mean follow up was 2.19 years (Range 3 months to 10 years). Residual deficits, gain in mRS and frequency of events were comparable in surgical and non surgical group.

## **Conclusion**

Higher prevalence of MMD is found in North Eastern states of India and is an important cause for stroke in young. There is a lesser incidence of hemorrhage and posterior circulation involvement in children compared to adults. This is the first series in India to report familial cases.

## **Future directions**

Genetic studies in familial cases are under way National registry and outcome analysis

# **CEREBROSPINAL FLUID OTORRHINORRHEA AS A CAUSE OF RECURRENT LOWER RESPIRATORY TRACT INFECTION AND MENINGITIS**

**AUTHORS:** Dr. Manusrut, Dr. Mary John Dept: ENT UNIT 2 – Pediatric ENT, CMC, Vellore

## **ABSTRACT**

### **Background**

Cerebrospinal fluid (CSF) Otorrhinorrhea is the discharge of CSF through the middle ear and eustachian tube into the nose. Cochleovestibular malformations are a rare cause of CSF otorrhinorrhea. Patient can be asymptomatic or present with hearing loss or recurrent meningitis.

### **Case Report**

We report a 3 year old boy who presented with recurrent episodes of high grade fever, nocturnal cough, breathlessness and clear watery nasal discharge since 3 months of age. Child was treated for bronchopneumonia. He also developed an episode of pneumococcal meningitis. Magnetic resonance imaging was done for CSF rhinorrhea which showed CSF intensity fluid in the right middle ear. Subsequent High-resolution computed tomographic scan of temporal bones confirmed the diagnosis of Right Cochleovestibular malformation (Interpartition Defect Type 2). The site of leak could not be identified on imaging. Auditory brain stem response showed right sided profound hearing loss. Surgery revealed CSF leak through a hole in the stapes footplate. The defect was successfully closed with soft tissue and the middle ear obliterated with plugging of eustachian tube.

### **Conclusion**

Recurrent Lower respiratory tract infection and meningitis with rhinorrhea in a child should be investigated for inner ear malformations. A high index of suspicion of CSF otorrhea and early imaging with surgical intervention can prevent complications.

## **A descriptive study to assess the level of coping and quality of life among patients with epilepsy in neurology outpatient department of Christian Medical College, Vellore.**

Mary Jancy Joy, Jayarani Premkumar, Ilavarasi Jesudoss, Ajith Sivadasan

### **Background**

Epilepsy is considered to be a debilitating illness associated with a high level of stigma and impaired quality of life. Coping strategies influence the quality of life of patients with epilepsy.

### **Objectives**

The study is intended to assess the level of coping and quality of life of patients with epilepsy and to determine the relationship between the level of coping and quality of life among patients with epilepsy.

### **Methodology**

A descriptive study design was selected to assess the coping style and quality of life in patients with epilepsy in neurology outpatient department of Christian Medical College, Vellore. Total enumeration sampling technique was used. A total of 75 subjects who fulfilled the inclusion criteria were included to participate in the study. BRIEF COPE inventory was used to assess the level of coping and QOLIE was used to assess the quality of life among patients with epilepsy.

### **Results**

The study revealed that majority (73.3%) of the subjects was less than 35 years. The mean age was 30.5 years with the standard deviation (SD) of 11. It was found that most (54.7%) of them were males and 45.3% were females. Analysis revealed that majority (68%) of the subjects had generalized seizures. Majority (65.3%) of them had adequate coping and the most commonly used coping strategies were acceptance and planning. Less commonly used coping strategies were substance abuse and humor. The study shows that the mean QOLIE total scores had a mean of 61.4 and SD 12.7. The study showed that there was no association between coping and quality of life.

### **Conclusion**

People with epilepsy have impairment in their quality of life due to the effect of epilepsy on various aspects of life. Educating people can improve their quality of life. Enhanced awareness and a clearer perception of the ways to help people with epilepsy to cope more effectively with their problems will enormously benefit both patients and caregivers in the constant pursuit of improved health outcomes.

Key words: Epilepsy, Quality of life, Level of coping.

# **AN EVALUATION OF THE CLINICAL PREDICTORS OF THE CARTILAGE INVASION, EXTRA LARYNGEAL SPREAD AND THYROID GLAND INVOLVEMENT IN PATIENTS WITH LARYNGEAL AND HYPOPHARYNGEAL CANCERS (STAGE 3 AND STAGE 4)**

Dr. M. Mohamed Abdul Kathar, Dr. Rajiv Charles Michael, Department of ENT, Christian Medical College.

## **Background**

The aim of this study was to individually assess the accuracy of pre-operative CT scan, MRI and clinical/endoscopic staging of laryngeal cancers by comparing imaging and histopathological findings and the need for thyroidectomy along with laryngectomy

## **Aim**

To evaluate the clinical predictors of cartilage invasion and extra laryngeal spread and thyroid gland involvement in patients with laryngeal and hypo pharyngeal cancers (stage 3 and stage 4).

## **Methods**

All clinically diagnosed patients with T3 and T4 lesions were subjected to do contrast enhanced CT scan (from skull base to mediastinum) as a standard protocol of management. Those patients with doubtful cartilage invasion were subjected to undergo limited MRI cuts (STIR sequence) of the neck. They were later planned for the direct laryngoscopy and biopsy. The biopsy proven laryngeal malignancies (T3 and T4 with cartilage erosion and extra laryngeal spread) were advised to undergo total laryngectomy with the post-op specimen sent for histopathology. These all total laryngectomy were subjected to histopathological evaluation were noted for cartilage invasion, extra laryngeal spread and thyroid gland involvement.

## **Results and Conclusion**

In our study, a Primary laryngectomy was done in patients where cartilage invasion was noted on imaging and in individuals where extra laryngeal spread of tumour was evident without cartilage involvement. Salvage Laryngectomies were also done in irradiated individuals with post RT recurrences where conservative/ endoscopic or open partial laryngectomies were not possible. Contrast enhanced Computed tomography scan helped in identification of thyroid cartilage invasion accurately in 91.3 % of cases and this has immensely contributed in the staging and treatment planning of Stage 3 and Stage 4 laryngeal cancers. The addition of a 3tesla MRI scan STIR sequence axial cuts through the larynx in our study improved the accuracy and aided in detecting cartilage erosion in these cases(100% positive predictive value).

We therefore conclude that 3 Tesla MRI limited high resolution axial section should be considered as routine protocol for all patients in whom there is doubtful cartilage invasion on contrast enhanced CT scan. Since only limited cuts are done both the costs involved and time factors are kept to a minimum. All patients in our study in whom laryngectomy was done had one of the laryngeal cartilage invaded on CT scan or MRI scan or had extra laryngeal spread except post RT recurrences.

Our study showed that 3 tesla MRI STIR sequence axial cuts scan should also be considered to evaluate all patients where cartilage erosion is clinically suspected but not confirmed on CT scan and also in patients where CT scan shows extra laryngeal spread without any obvious cartilage invasion. The sensitivity of detecting extra laryngeal spread in CT scan was only 60%.

In our study we looked at the indications for ipsilateral thyroidectomy in patients undergoing total laryngectomy. Contrast enhanced CT scan suggested thyroid gland infiltration in four out of the forty cases. Histopathology was negative in all these four cases. Two other cases showed thyroid gland infiltration on histopathology but not on CT scan. These two cases were with thyroid gland involvement on histopathology were both transglottic tumours with extra laryngeal spread. Hence an ipsilateral hemithyroidectomy is probably still indicated in transglottic cancer with cartilage invasion and/or extra laryngeal spread.

## **Serum Vitamin D status and its relationship to metabolic risk factors in young Indian adults**

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### **Abstract**

#### **Background**

Vitamin D deficiency is associated with cardio-metabolic risk factors. Limited evidence exists regarding vitamin D deficiency and its association with cardio-metabolic risk factors in Indian population. The present study aims to examine the relationship between serum vitamin D concentration and cardio-metabolic risk factors in rural and urban young adults.

#### **Methods**

We investigated the relationship between serum 25-hydroxyvitamin D (25[OH]D) concentrations with cardio-metabolic risk factors in 373 individuals representing a population based birth cohort study during 2013-14. Vitamin D level was categorised into deficiency (<20 ng/ml), insufficiency (20 to less than 30 ng/ml) and sufficiency ( $\geq$ 30 ng/ml) and compared with various anthropometric, biochemical and life style variables using chi-square test for linear trend. Linear regression analysis was used to relate cardio-metabolic risk factors with vitamin D levels adjusting for potential confounding variables.

#### **Results**

The mean (SD) age and BMI of the cohort was 41.4 (1.1) and 25.5 (4.8) respectively. The mean (SD) serum vitamin D level was 23.4 (10.4). The prevalence of vitamin D deficiency (<20 ng/ml) was 41.6% (36.5% - 46.7%). Low vitamin D level was associated with female and urban participants. Higher BMI, waist circumference, body fat percentage, fasting insulin and insulin resistance (HOMA) were associated with lower vitamin D level. Female participants, urban residents and those with high BMI were independently associated with low vitamin D level.

#### **Conclusion**

Vitamin D deficiency is common in young and middle aged Indian population, with an increased risk in overweight or obese individuals. Further studies are warranted to understand the relationship between vitamin D status and obesity related metabolic disorders. In conclusion, the findings of the study suggest that along with intake of vitamin rich foods, body fat loss and outdoor physical activity should be promoted to improve the metabolic risk factors.

## **Serological characterization of autoantibodies in Autoimmune Hemolytic anemia and its clinical implications-A study from a tertiary care center in South India**

**Author- Dr. Rajeshwari B, Dr. Biju George, Dr. Visalakshi, Ambily Nadaraj, Dr.Dolly Daniel**

### **Background and Aim**

Autoimmune hemolytic anaemia (AIHA) has a wide range of clinical presentation from mild to fulminant life threatening anaemia. Immunoglobulin class, subclass, titre, ability to activate complement, thermal amplitude and strength of direct antiglobulin test (DAT) have been implicated as factors affecting severity. This study was undertaken to analyze factors which influence the severity of AIHA.

### **Material and Methods**

In this crosssectional study, patients with evidence of haemolysis and positive for polyspecific DAT were included. Monospecific DAT done to identify presence of IgG, IgM, IgA, IgG subtypes and complement. Correlations were drawn between the severity of AIHA and Immunoglobulin class, strength of DAT, IgG subtype and the titre of the latter.

### **Results**

Among 94 patients included in the analysis, the median age was 35.2(Range1-77 years), with a male: female ratio of 1:1.9. Primary AIHA was identified in 54.3% and secondary AIHA in 45.7%. Spread of autoantibodies identified included, 28.7% with solitary IgG followed by complement alone in 8.5% as opposed to 62.8% of patients who had a combination of

autoantibodies. Severe haemolysis was greater in patients with primary AIHA (71.2%) as compared to patients with secondary AIHA(28.7%,  $p<0.001$ ).

Severe haemolysis was seen in 89.1%, of patients who had a combination of autoantibodies as compared to 10.9% patients, with solitary IgG( $p<0.001$ ). IgG subtyping revealed the most common subtype to be IgG1(58.1%) followed by combination of IgG1 & IgG3 (11.6%).The remaining 30.2% were negative for IgG1or IgG3. Presence of IgG1 and IgG3 in combination, or IgG1alone showed statistically significant association with severity of haemolysis ( $p=0.04$  and  $0.012$ respectively).

Correlating strength of DAT revealed that severe haemolysis occurred in 80.8% patients with DAT strength of 4+ ( $p =0.006$ ). This association was consistent with all the IgG subgroups.

### **Conclusion**

This association in our study of DAT strength, IgG1 and IgG3 positivity, and complement fixation on severity of haemolysis suggest that an algorithm of following up DAT positivity, in patients with AIHA, with a monospecific DAT and IgG subtype analysis will allow for identification of this critical subgroup of patients in whom more intense clinical intervention and close follow up might be indicated.

# **Is Malodour in Cancer Better Managed By Oral Or Topical Metronidazole?**

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## **Background**

With the high proportion of head and neck, cervical and locally advanced breast cancers, malodour is a significant problem among palliative care patients in India. In the early years of our service in Vellore we managed malodour primarily by using topical metronidazole for dressings and mouth washes but the results were often unsatisfactory. In recent years we have used low dose oral metronidazole as maintenance.

## **Method**

We undertook a retrospective review of patients treated for malodour comparing the interventions and outcomes within two time periods.

## **Results**

Preliminary data indicate that there were fewer episodes of problematic “smell” with regular oral as compared to topical metronidazole. Compliance and tolerability were satisfactory within the limitation of a retrospective design. The results of the retrospective analysis will be presented at the conference.

## **Conclusion**

Malodour can have a negative impact on the quality of life and dignity of patients with terminal illness. It adds to the costs and burden of nursing care in home and in hospital settings. Severe malodour can lead to isolation and a negative spiral of reduced access to physical care and psychosocial support.

We plan to undertake a prospective study to evaluate if continuous low dose oral metronidazole can be a simple and cost effective intervention for reducing malodour.

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Is malodour in cancer patients better managed by oral or topical metronidazole? A ten year retrospective survey. *Can we SNIFFF the smell away?*

**A randomized control trial to evaluate the effectiveness of oral care using tooth brush and yaunker suction compared to regular oral care in reducing the incidence of Ventilator Associated Pneumonia (VAP) among mechanically ventilated patients in Medical Intensive Care Units of Christian Medical College, Vellore.**

*Ranjitha Chacko, Amala Rajan, Prabha Lionel, Thilagavathy, N, Jeyarani premkumar*

**ABSTRACT**

**Background**

Ventilator Associated Pneumonia (VAP) is one of the major nosocomial infections in the intensive care units contributing to increased mortality and morbidity. Recent studies have shown that oral decontamination through mechanical and pharmacological agents significantly reduces the incidence of VAP; but oral care practices in intensive care units are not consistent or standardized.

**Objective**

This study was done in the medical high dependency unit and medical intensive care unit of Christian Medical College , Vellore to assess the incidence of VAP among mechanically ventilated patients receiving two different oral decontamination interventions; ie regular oral care versus oral care using tooth brush and to find out the association between VAP and selected demographic and clinical variables.

**Methodology**

A prospective, randomized and double blinded study was under taken from January 14, 2013 to December, 27 2014. Patients included were 15 years and above and those who were on oral intubaion, recruited within 4-6 hours of intubation. Patients who met the eligibility criteria were randomized into two groups by simple random sampling technique. Oral care interventions were implemented by the staff nurse assigned to the patient, according to the oral care instructions

given after obtaining informed consent. Patients were followed up from the time of admission till discharge/death/transfer from ICU. Development of VAP was assessed based report sent from the HICC.

## **Results**

The primary outcome measured was the incidence of VAP. A total of 206 eligible subjects were recruited for the study, 102 patients in the control group and 104 patients in the experimental group. Data analysis showed that there was no significant association with the technique of mouth care to the development of ventilator associated pneumonia. Analysis showed that the greatest risk factor for developing VAP was the increase in number of ventilator days. (Odds ratio 1.3, 95% CI 1.02 to 1.66). Though there was a statistical association between gender ( $p=0.02$ ) and presence of antibiotics with VAP ( $p=0.03$ ), its clinical significance is questionable. Inference could not be drawn about association of the clinical diagnosis to the development of VAP. There was no association between the technique of mouth care to total number of ventilator days, length of stay in ICU or mortality.

## **Conclusion**

Tooth brushing with yaunker suctioning technique was not proved to be superior to regular mouth care in reducing development of ventilator associated pneumonia

# **Right Median nerve electrical stimulation to improve arousal and responsiveness of patients in vegetative or minimally conscious state following acquired brain injury- A Randomized controlled trial.**

## **AIM**

To study the effectiveness of right median nerve electrical stimulation to improve arousal in patients in vegetative and minimally conscious states following acquired brain injury, of less than one and a half years duration.

## **OBJECTIVES**

3. To test whether electrical stimulation of right median nerve produces statistically significant difference in the CRS, WHIM, GOSE and RLA scores.
4. To test whether electrical stimulation of right median nerve produces variation in the EEG pattern indicating arousal.

## **SUBJECTS AND METHODS**

### **STUDY DESIGN**

Randomized controlled double blind trial PARTICIPANTS- Patients in vegetative and minimally conscious states following acquired brain injury were recruited from the inpatient wards of CMC hospital and Rehabilitation Institute. Total number of patients who completed the study was 24, with 11 patients in the experimental group and 13 patients in the control group. Statistical analysis was done for 24 patients.

### **INTERVENTIONS**

In the experimental group, stimulation was done with Functional Electrical Stimulator (FES) with the standard operating protocol as Frequency= 40 Hz; Current=20mAmps; Pulse width=300µsec; on duration=20sec/min. Total 40 sessions of therapy, each session lasting for one hour was given. The control group received sham stimulation. Both groups received the standard coma stimulation programme.

## **OUTCOME MEASURES**

The primary outcome measures were 1. CRS-R (Coma Recovery Scale Revised) 2. WHIM Score (Wessex Head Injury Matrix score), 3. RLAS (Rancho Los Amigos Scale) and 4. GOSE (Glasgow Outcome Scale Extended). The secondary outcome measure was EEG.

## **RESULTS**

The improvement in the level of consciousness as measured by CRSR, WHIM Total, WHIM Maximum, GOSE and RLA scores of patients in the intervention group was not significantly different from that observed in the control group.( $p=0.57$ ,  $p=0.36$ ,  $p=0.68$ , $p=0.97$ ,  $p=0.80$  respectively) Analysis of the CRSR subscales also did not show any statistically significant difference between the two groups. Subgroup analysis of patients with positive SSEP median showed statistically significant difference between the two groups in the improvement in CRSR score ( $p=0.02$ )The highest scores attained in the CRSR,WHIM Total and GOSE scores was seen in the intervention group. The maximum score attained in the Visual, Motor, Oromotor and Communication scales were higher in RMNS group in comparison with the control group. The change in the EEG Pattern was not different between the two groups.

In both the groups, patients with DAI had a better percentage increase in the median value of CRSR score( $p=0.02$ )Patients with absence of abnormal posturing and positive BERA results had statistically significant association with the improvement in WHIM Maximum( $p=0.01$  and  $p=0.04$ ) and WHIM Total scores.( $p=0.04$  and  $0.008$ ).Patients in minimally conscious state showed statistically significant improvement in the RLA( $p=0.006$ ) and GOSE scores. ( $p= 0.02$ ).

Normal cortical wave pattern in SSEP median, VEP and BERA studies and presence of P14 wave obtained in SSEP median study are associated with better outcomes. None of the patients had any adverse effects during the procedure which was completely non-invasive.

More careful selection criteria for inclusion of patients and a larger sample size with more hours of stimulation over a longer duration may show significant results, so that right median nerve stimulation can be an useful adjunct in the management of patients

in vegetative and minimally conscious states.

## **KEY WORDS**

Disorders of consciousness, Vegetative state, Minimally conscious state, Right Median nerve stimulation, CRSR, WHIM,RLAS and GOSE scales, SSEP Median, BERA, Diffuse axonal injury, Coma stimulation

# **Risk factors for diabetic peripheral neuropathy: a community based cross sectional study**

Names and Affiliations (Roles):

Renu Mathew\*, Jai Mercy James, Tara Ann John, Ashley Joseph, Jahnawi Ravindra Marathe, James Theophil Benya, Syamambili C , Thomas Vinod Thomas , Sam David, Kurian Eapen, Praisey Nikita Paulina, # Beeson Thomas, # Anu Mary Oommen# \*MBBS batch of 2012, #Department of Community Health, CMC Vellore.

## **Abstract**

### **Background**

Diabetic neuropathy which can lead to foot ulcers is a condition which needs to be identified early and measures taken to reduce complications.

### **Aims**

The objectives of the study were to assess the prevalence of peripheral neuropathy among diabetics aged 30 to 70 years, residing in a rural block and to study the association of peripheral neuropathy with risk factors for the same.

### **Methods**

A cross sectional study was conducted among all those with diabetes in seven villages of Kaniyambadi block aged 30 to 70 years, who had been identified as part of a previous survey. Peripheral neuropathy was assessed using 10g Semmes Weinstein monofilaments, tested on five sites per foot and risk factors using a questionnaire. Records were used to assess glycemic control and hyperlipidemia.

### **Results**

Out of 158 diabetics aged 30 to 70 years examined in the study area, peripheral neuropathy was found in 44% (95% CI: 36%-52%). Age greater than 55 years (OR: 2.78, 95% CI: 1.06-7.31) and education below five years (OR: 8.37, 95% CI: 2.79-25.08) were significantly associated with peripheral neuropathy, after adjusting for sex, duration of diabetes, socioeconomic status of the family, glycemic control, insulin use, hypertension, smoking, alcohol, lipids and body mass index.

## Conclusions

Our prevalence was similar to another study among diabetics in a secondary hospital in Vellore (47), but needs to be interpreted with caution due to high sensitivity but relatively low specificity of our screening test for peripheral neuropathy. However screening tests are primarily done to find those at increased risk. From the point of view of public health, higher prevalence means that more people will benefit from the advice offered. The high prevalence of peripheral neuropathy among rural diabetics points to the need for additional inputs to prevent complications related to diabetic neuropathy in rural populations.

Table 3 Comparison of coronary heart disease in 1991-94 and 2010-12 (30 to 60 years)

	Year of study	Age adjusted rates of CHD*	
		Rural	Urban
Males	1991-94	2.75 (2.05-3.45)	4.63 (3.51-5.75)
	2010-12	2.58 (1.72-3.44)	5.79 (4.27-7.31)
Females	1991-94	2.39 (1.80-2.98)	5.48 (4.32-6.63)

	2010-12	6.33 (5.19-7.47)	12.69 (10.62-14.78)
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\* adjusted to 2001 Census of India 30 to 60 years

## **Enteropathogen presence and gut inflammation in asymptomatic infants and children residing in different environmental conditions in Vellore town.**

**Authors:** Revathi R., Mohammad Azharuddin, Rini Bandyopadhyay, Ira Praharaj, Gagandeep Kang

**Departments & Institution:** Wellcome Trust Research Laboratory, Division of Gastrointestinal Sciences, Christian Medical College, Vellore

### **Background**

Environmental conditions are considered to play an important role in the acquisition of enteric pathogens which in turn are hypothesized to be one of the important factors for environmental enteropathy.

### **Aim**

To compare the profile of enteropathogens among asymptomatic children residing in two different localities in Vellore town and evaluate the levels of gut inflammatory biomarkers in these children.

## **Methods**

A total of 139 asymptomatic children (86 children from Chinnallapuram(CAP) slum area and 53 children residing in CMC campuses) were included in this study. Stool samples were collected and used for TNA Extraction by Qiagen Stool DNA mini kit with some modifications. Gut enteropathogens present were detected using TAC array card realtime PCR for enteropathogens which tests for 32 different enteropathogens. Faecal calprotectin(FC) and myeloperoxidase(MPO) levels were also quantitatively measured using commercial ELISA assays and the results were expressed in units of  $\mu\text{g/g}$  of samples for FC and  $\text{ng/ml}$  for fecal myeloperoxidase.

## **Results and Conclusions**

Of the 139 children studied, 93% (n=80) of children from CAP slum area were found to harbour enteropathogens compared to 71.7% of children residing in CMC campuses. Mean number of enteropathogens among samples from CAP children was 3.3(2.9-3.7) whereas that for CMC campuses children was 1.4(0.99-1.7). Looking at the different types of enteropathogens, higher proportion of children from the CAP slum, compared to those from CMC campuses were found to be positive for enteric viruses (72.1% vs 32.1%) as well as bacterial enteropathogens(84.9% vs 60.4%). While none of the children from CMC campuses tested positive for enteric parasites, 30.2% (n=26) of children from CAP slum were positive for enteric parasites. The median levels of fecal calprotectin(FC) as well as MPO were significantly higher in children residing in CAP slum compared to those in CMC campuses (median FC=  $492\mu\text{g/g}$  vs  $130\mu\text{g/g}$ ; median fecal MPO=  $8095\text{ ng/ml}$  vs  $1080\text{ ng/ml}$ ).

# **Profile of Common Mental Illnesses and Identifying the Caregivers' Knowledge Gaps in Perception of Mental Illness in Rural Tamil Nadu**

Roshin Binoy,Ranjit Abraham,Thejus Thomas Abraham, Perumalapally Shalem Srikar,Manoj Jacob Dhinagar,Saran Teja,Daniel John,Reshma Subhash, Teenu Maria, Rithika Chandy, Shreya Rosa Stephen, Dr.Mohan Raaj, Dr.Biswajith, Dr. Rita Isaac RUHSA, Department of Community Health, Christian Medical College, Vellore.

## **BACKGROUND**

Worldwide about 10% of the population suffers from mental illness and World Health Organization estimates that by 2020 about 15% of global burden of disease will be due to mental illness. About 20% of the adult Indian population is affected with one or the other psychiatric disorders. Most of them are from rural areas and present initially to primary and secondary care centres. RUHSA's Mental Health Care Initiative has started since 2009 providing training to Community workers and self-help groups to identify individuals with mental illnesses in the community with treatment support from Psychiatry Unit III and RUHSA's Occupational Therapist.

## **AIM**

To identify common mental conditions prevalent in the community and assess the knowledge gaps of caregivers regarding causes, signs & symptoms and perception towards mental illness with an intention to provide a health intervention program.

## **METHODS**

Cross-sectional study design was chosen and the study was conducted by a group of 3<sup>rd</sup> year MBBS students between 18<sup>th</sup> and 25<sup>th</sup> March, 2015. Chart review was done to know about psychiatric illnesses. 100 caregivers of mentally ill patients from K V Kuppam block were chosen by convenient sampling and semi-structured questionnaire

was administered.

## **RESULTS and CONCLUSION**

Common mental illnesses seen in the community were Depression, Psychosis, Somatoform disorder, seizure disorder, anxiety and schizophrenia in that order. Most of the caregivers (73%) were between 30-60 years of age; about half of them had low educational status (46%). Most of them had good knowledge about signs and symptoms and considered counseling and medication as two most important modalities of treatment. Majority of the caregivers believed that they received good family and social support while governmental support was lacking. An awareness program about causes, signs and symptoms and other treatment options was conducted among the caregivers.

# **DRUG PRESCRIBING PATTERN IN PREGNANCY IN A SECONDARY CARE HOSPITAL IN SOUTH INDIA: A RETROSPECTIVE STUDY**

Saibal Das<sup>1</sup>, Blessed Winston A<sup>1</sup>, Deepasree Sukumaran<sup>1</sup>, Aniket Kumar Verma<sup>1</sup>, Margaret Shanthi FX<sup>1</sup> and Jasmin Helen Prasad<sup>2</sup> <sup>1</sup>Departments of Pharmacology, <sup>2</sup>Community Health and Development, Christian Medical College, Vellore

## **BACKGROUND**

In pregnancy drug treatment presents a special concern due potential teratogenic effects of drug and physiologic alterations in mother. Pharmaco-epidemiological studies can help in minimizing the use of potentially dangerous drugs by establishing a profile of drug consumption, by monitoring the health services and by investigating interventional measures.

## **AIM**

This study was done to evaluate the drug prescribing pattern in pregnancy retrospectively among all the pregnant women, attending the ante-natal clinic (out-patient department), irrespective of the duration of pregnancy in Community Health and Development Hospital, Christian Medical College, Vellore, a secondary care hospital.

## **METHODS**

This cross sectional retrospective study was done for 3 months (from October to December, 2014) using pre-formatted forms and patient's records.

## **RESULTS**

A total of 326 including 46 different types of drugs were prescribed to 606 pregnant

women. Of these 46 different drugs, 3 fall under category A, 14 fall under category B, 19 under category C and 3 under category D. The pregnancy categories of 7 of these drugs are undetermined (category N). 8 different types of medications were started before being seen at the ante-natal clinic. Of these 8 types of drugs, 2 fall under category A, 2 under category B, 2 under category C and 2 under category N. No history of any addiction or intake of 'over the counter' medication was recorded.

## **CONCLUSION**

This study reflects a very good, safe and rational medication practice during pregnancy in various common disorders in a secondary care hospital and can be cited as an example to similar primary and secondary care hospitals in the country.

## **To assess the cardio-vascular status and morbidity of patients with COPD presenting in pulmonary medicine OPD- A Pilot Study**

Dr. Sapan Kumar, Dr D.J Christopher, Dr Balamugesh T., Dr Lijo Verghese, Department of Pulmonary Medicine

### **BACKGROUND**

COPD is fifth leading cause of death worldwide. Cardiac cause is attributed to 60% of all mortality.

### **AIM**

To assess cardiovascular comorbidities, echocardiographic changes and its correlation to pulmonary functions in patients COPD

### **METHODS**

A Cross sectional observational study for a period of 1 year from 1st July 2014 to 30th July 2015. Patients were recruited from outpatient department of Pulmonary Medicine, CMC Vellore. A total of 122 COPD patients who fulfill the study criteria were recruited by random sampling. A detailed medical history along with physical examination was done. Patient's cardiac and respiratory functions were assessed by appropriate blood tests, ECG, ECHO and PFT.

### **RESULTS**

Of 122 COPD patients - 8.2% had mild, 48.3% had moderate, 29.5% had severe and 13.9% had very severe grade of COPD (GOLD criteria) The most prevalent cardiovascular comorbidity was hypertension 40.2% followed by coronary artery disease 20%, previous MI 7.4% and cerebrovascular accident 4%. Prevalence of PAH as determined by transthoracic ECHO was 61% with 59.2%, 27.6% and 13.1% being mild, moderate and severe respectively. Increasing trend of PH was observed from 50.8% in mild, 77.7% moderate, 88.2% in very severe COPD, of these 23% had cor pulmonale. We observed increase in CP with severity of COPD and PH. LV and RV systolic dysfunction observed in 14% of the patients. LV diastolic Dysfunction was observed in 65.57% patient.

### **CONCLUSION**

There is significant prevalence of cardiovascular co morbidities in COPD We recommend regular cardiovascular screening in all COPD patients for early identification, monitoring and early treatment.

# **EFFECT OF DYSEMBRYOGENESIS IN CHILDREN WITH AUTISM**

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## **ABSTRACT**

### **BACKGROUND**

Autism Spectrum Disorder is a behaviourally defined disorder characterised by deficits in social communication (both verbal and non verbal) and presence of repetitive, restricted patterns of behaviour and interest. It is a heterogeneous condition with varying etiologies, most of them being genetic or environmental. Children with autism are known to have increased prevalence of dysmorphic features, suggesting altered embryogenesis. There is a lack of studies evaluating the effect of dysembryogenesis in children with autism.

### **OBJECTIVE**

Evaluate the effect of dysembryogenesis on the development of children with autism.

### **METHODOLOGY**

The Miles Autism Dysmorphology measure was used to classify 30 children with autism into complex autism (if they had dysmorphic markers) or essential autism (no dysmorphic markers). The development and the clinical severity of both groups were compared using standardized measures..

Prevalence of dysmorphic markers was also estimated among 140 normal children.

### **RESULTS**

Dysmorphic markers were more prevalent among autistic children compared to normal controls ( $p=0.0002$ ). Among the autistic children, 30% had complex autism and these children had earlier onset of stereotypic symptoms ( $p=0.0138$ ), earlier age of regression of language and social milestones ( $p=0.027$ ) and more developmental delay ( $p=0.0257$ ).

## **CONCLUSIONS**

Dysembryogenesis in the prenatal period may contribute to the heterogeneity seen in children with autism

**Keywords:** Autism; dysmorphism; complex autism; essential autism

**Poster Number: 85**

**A non-surgical animal model for long term catheter associated urinary tract infection, an immunopathological investigation**

**Prasanth Rathinam<sup>1</sup>, Rajesh NG<sup>2</sup>&Pragasam Viswanathan<sup>1\*1</sup> Renal Research Lab, School of Bio Sciences and Technology, VIT University, Vellore - 632 014, Tamil Nadu, India <sup>2</sup> Department of Pathology, JIPMER, Puducherry – 605006, India.**

**Background**

Implantation of foreign bodies has become an essential component in almost all healthcare systems, which particularly played a major role in patient survival. However, the ability of microbes to adhere to the inert implant materials has notably contributed to the escalating problem of nosocomial infections, among which urinary tract being the most common site (30%-40%). Host immune system plays a major role to prevent the microbial adherence and proliferation. However, the inert catheter surface acts as a platform for biofilm formation thus helps to mask immune responses and treatment regimes. Till date, a defined scheme of host-pathogen interaction in CAUTI is limited.

**Aim**

Present study aimed to illustrate the immunopathological analysis of female Wistar rats with experimentally induced CAUTI associated long term catheterization.

**Materials and method**

Trans-urethral catheterization and subsequent inoculation of *P. aeruginosa* (MTCC 3541) was performed in female Wistar rats to induce CAUTI. Animals were divided into 3 groups; control group (no implant + no inoculum), insertion control group (sterile implant + no inoculum) and test group (implant + inoculum [ $10^{10}$  CFU/mL]). To ensure bacterial adhesion, bladder mucosal layer was damaged by mild acid base treatment, prior to inoculation. During the study period (45 days) the animals were sacrificed at regular intervals and organs (kidney and bladder) were extracted for bacteriological, gene expression (TLR-4 and NF $\kappa$ b) and histopathological (H&E and Alcian blue staining) analysis. Blood was collected and divided; heparanized (hematological analysis) and non-heparanized (for separating the serum). Inflammatory markers' (IL6, TNF $\alpha$  and MCP1) level in serum was quantified through sandwich ELISA technique. Urine (micro-protein, creatinine and urea) and serum (urea and creatinine) levels were quantified to verify the kidney damage. Implants were extracted and analyzed through SEM. Data was represented as Mean  $\pm$  SD (n=6) as all the statistical analysis was performed using two way ANNOVA and Bonferroni post-test. p<0.05 was considered significant through out the study.

**Results**

A non-surgical transurethral catheterization procedure was established in female Wistar rats for the induction of long term catheterization associated UTI. Significant bacterial lodgment was observed in kidneys from day 3 post infection (p.i.) onwards as the evaluation of kidney damage markers confirmed damage in kidney from the 7<sup>th</sup> day p.i. Irregular urinary urea levels were observed through out the study, explained well by the urease positive nature of *P. aeruginosa*. Elevated levels of cytokines in the serum corroborated well with the hematological observations, in the study. Histopathological evaluation of kidney and bladder was in agreement with the biochemical and the ELISA observations. qRT-PCR analysis exhibited an elevated expression level of TLR-4 and NF $\kappa$ b, corresponding to the microbial lodgment, confirming the activation of LPS mediated inflammation pathway. Scanning electron micrographs revealed the encrustations within the implant's lumen.

## **Conclusion**

To the best of our knowledge, this is the first kind of study for long term catheterization associated UTI.

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## **Poster Number: 86**

### **“Plasmid associated multi-drug resistant bacteria isolated from poultry litter”.**

**Prasanth. M\*, Ramesh. N, Gothandam. K.M, Karthikeyan. S. School of Bio-Sciences and Technology, VIT University, Vellore, Tamil Nadu, India.**

## **Background**

Multi-drug resistant bacterial infections cause serious health problems worldwide. Uncontrolled use of antibiotics in poultry production has been linked to the presence of antibiotic resistant bacteria in poultry environment and product consumers. **Aim:** To isolate the multi-drug resistant bacteria from poultry litter.

## **Methods**

Samples were collected from three poultry farms in Karur district with the breeds around 50 to 85 days old to make sure that dosage of different drugs were completed. Serial dilution was performed with addition of different antibiotics (10mg/L each of meropenem, cefotaxime, ampicillin, tetracycline and 5mg/L of colistin). Different colonies were selected based on morphology and identification by 16S rRNA sequencing and MIC was performed. Based on MIC results strains were selected for PCR amplification of resistant genes (CTX-M, NDM-1,

IMP, OXA, KPC). Plasmid was isolated and transconjugation experiments were performed to study the conjugation efficiency using *E. coli* AB1157.

## **Results**

Multi-drug resistant isolates were screened after serial dilution with different antibiotics. MIC results showed that 78 isolates were resistant to all the tested antibiotics (CLSI guidelines) and isolates were identified by 16S rRNA sequencing to be *Staphylococcus sciuri*. Screening of resistant genes showed 2 isolates carried NDM-1, 5 with CTX-M and 8 with IMP. Plasmid was isolated from all the resistant isolates and transconjugation experiments reveal that plasmid was successfully transformed to recipient (*E. coli* AB1157) to make them resistant that was confirmed by PCR.

## **Conclusion**

The results of this study illustrate the persistence of resistant bacteria in the environment, and highlight the spread of resistance associated with the use of antibiotics as a feed additive in poultry production. Though *S. sciuri* was associated with chicken its conjugation of drug resistance to other strains increases the potential for human exposure to drug resistant bacteria.

**Poster Number: 87**

## **Synergism between PAG and CP-96,345 on the production of cytokines and adhesion molecules in acute pancreatitis associated lung injury**

**Leema George,<sup>1</sup> KNS Sirajudeen,<sup>2</sup> VenkatramanManickam,<sup>1</sup> Ramasamy Tamizhselvi,<sup>1</sup> School of Biosciences and Technology, Vellore Institute of Technology, VIT University, Vellore 632014, Tamilnadu, India.<sup>2</sup> Department of Chemical Pathology, University Sains Malaysia, 16150-Kubang Kerian, Kelantan, Malaysia.**

## **Background**

Acute pancreatitis is an autodigestive process resulting in acute inflammation of the pancreas. In the most severe forms of acute pancreatitis, acute lung injury and respiratory distress syndrome often occurs in the early stages and can lead to early death. <sup>1</sup>Although its pathogenesis is still incompletely resolved, several inflammatory mediators including cytokines, adhesion molecules, hydrogen sulfide (H<sub>2</sub>S) and substance P (SP) are involved during different phases of disease severity. We still lack effective treatment directed at underlying pathophysiological mechanisms.

## **Objectives**

This study aimed to investigate the synergistic effect of CP-96,345 (specific neurokinin-1 receptor (NK1R) antagonist), and DL-propargylglycine (irreversible inhibitor of cystathionine- $\gamma$ -lyase (CSE)), on the regulation of the expression of cytokines TNF- $\alpha$  and IL-1 $\beta$  and adhesion

molecules E-selectin, and P-selectin as well as Myeloperoxidase (MPO) activity in acute pancreatitis associated lung injury (APALI) via NF- $\kappa$ B.

## **Methods**

Acute pancreatitis was induced in male Swiss albino mice by 10 consecutive hourly intraperitoneal injections of cerulein (50 $\mu$ g/kg). Intraperitoneal injection of PAG (100 mg/kg) alone or CP-96,345 (2.5 mg/kg) alone or in combination was administered one hour after the first cerulein injection. Animals were killed, and the lungs were isolated for RT-PCR, ELISA and western blot.

## **Results**

PAG and CP-96,345 alone or in combination eliminated cerulein-induced increase in pulmonary TNF- $\alpha$ , IL-1 $\beta$ , E-selectin, P-selectin and NF- $\kappa$ B. The combined use of these inhibitors produced greater inhibition than the use of any inhibitor alone and reduces cerulein-induced lung NF- $\kappa$ B activity to a similar extent as BAY-11, 70 82.

## **Conclusions**

The present findings show for the first time that combined SP and H<sub>2</sub>S inhibition results in a marked synergistic inhibition of TNF- $\alpha$ , IL-1 $\beta$ , E-selectin and P-selectin in APALI via NF- $\kappa$ B pathway.

**Poster Number: 88**

**Isolation And Characterization Of Pigment Producing Halotolerant Bacteria And Comparative Analysis Of Enzyme Involved In Biosynthesis Of Pigments**

Authors: S. Prathiba, Dr. G. Jayaraman School of Bio Sciences and Technology, VIT, University, Vellore - 632014.

**ABSTRACT:**

Sea water contains diverse microbial population. Microbial diversity arises due to the evolutionary changes in the microbes in response to stressful conditions like hyper salinity, low oxygen concentration, high or low temperatures, low nutrient availability, and presence of toxic compounds. High salinity led to the evolution of halobacteria. As an adaptive strategy, these organisms produce several metabolites (Enzymes, pigments, siderophores etc.) for their survival. Also, in industries, there is raising imposition for the use of metabolites which can exhibit activity in a wide range of salt concentration. The microbial pigments can be exploited, as they offer significant advantages like use in therapeutics/diagnostics, easy accessibility, GRAS (Generally Recognized As Safe) and it can be produced in short time. These microbial pigments have the potential to be used in pharmaceutical industries, food, cosmetics and textile industries. In the present study, soil samples were collected from Marakkanam saltern, Tamil Nadu. A total of 6 pigment producing strains were isolated. Taxonomic characterization revealed that two of these strains were *Bacillus* sp. and four of them were *Halobacillus* sp. To start with, the pigments from *Planococcus maritimus* VITP21 were purified using preparative TLC and were partially characterized by conventional spectroscopic methods. The results revealed that the pigment could possibly be a carotenoid. As phytoene synthase is one of the important enzyme in the biosynthesis of this class of pigments, a comparative analysis of the aminoacid sequence and three dimensional structure of phytoene synthase was performed.

## **In Vitro And In Vivo Antidiabetic Activities Of Methanolic Leaf Extract Of *Acanthus Illicifolius***

G.A.Gayathri<sup>1</sup> and Mahalingam Gayathri<sup>1</sup> School of Biosciences & Technology, Division of Industrial Biotechnology, VIT University, Vellore 632014, Tamil Nadu, India.

### **ABSTRACT**

#### **Background**

Diabetes is a complex, chronic metabolic disorder. Synthetic drugs are commonly prescribed to manage the diabetes. Since these drugs have undesirable side effects the world has turned towards the traditional treatment for diabetes. Medicinal plants offer an exciting opportunity to develop them into novel therapeutics that are considered to be less toxic with lower side effects and cost effective than synthetic drugs. One among the important plant is *Acanthus illicifolius*, a mangrove plant belongs to acanthaceae family found in coastal areas.

#### **Aim**

The main aim was to investigate the *in vitro* cytotoxicity and glucose uptake study in L6 cell lines, *in vivo* acute toxicity and antidiabetic activity of methanolic leaf extract of *Acanthus illicifolius* (MEAIL) in STZ induced diabetic rats.

#### **Methods**

Cytotoxic effect of the extract was evaluated by MTT assay and *in vitro* antidiabetic effect was studied using the glucose uptake in rodent skeletal muscle cells (L6 cell line) involved in glucose utilization. Acute toxicity studies were done for 14 days. Type II diabetes was confirmed after 3 days of single intraperitoneal injection of STZ (50mg/kg bw) in Wistar rats. MEAIL (200,400 mg/kg bw) and glibenclamide (5 mg/kg bw) were administered orally for 48 days. Body weight and glucose levels were recorded for every week. After the study period overnight fasted rats were sacrificed. Blood and tissues were collected for further analysis.

#### **Results**

MEAIL enhances glucose uptake by  $56.27 \pm 2.19\%$  over control at 100  $\mu\text{g/ml}$  dose and also when compared with standard insulin (1U/ml). MEAIL up to 3000 mg/kg bw did not show any acute toxicity. On treatment with 100, 200 mg/kg body weight of MEAIL the diabetic rats showed significant reduction in fasting blood glucose, HbA<sub>1c</sub>, cholesterol, triglycerides, SGOT, SGPT, urea, creatinine and increase in body weight, HDL, total protein and electrolytes ( $p \leq 0.05$ ) when compared with diabetic control and glibenclamide treated groups.

#### **Conclusion**

In vitro and in vivo studies revealed that MEAIL has antidiabetic and antihyperlipidemic activity. However, isolation and characterization of the active principle are needed to elucidate the exact mechanism of action, which may lead to development of new novel antidiabetic drug

**Poster Number: 126**

**Towards finding potential therapeutic targets for neurodegenerative diseases**

Pratibha Singh, Krishna Sundar Twayana, Palaniyandi Ramanan, Priti Talwar\* School of Biosciences and Technology, VIT University, Vellore-632014 \*Email: [priti.t@vit.ac.in](mailto:priti.t@vit.ac.in)

**Abstract**

Protein Kinases are known to be involved in brain stroke during hypoxia. In the mammalian central nervous system glutamate is the major excitatory transmitter which plays an essential role in neural development, excitatory synaptic transmission, and plasticity during ischemia. However, glutamate accumulates at synapses causes the extensive stimulation of its receptors, which can be toxic to neurons. Glutamate is responsible to activate three classes of ionophore-linked post-synaptic receptors, namely N-methyl-D-aspartate (NMDA),  $\alpha$ -amino-3-hydroxy-5-methyl-4-isoxazole propionic acid (AMPA), and kainate receptors. Activation of NMDA receptors involves two events: (1) binding of the co-agonists glycine and glutamate, and (2) simultaneous membrane depolarization, which removes the  $Mg^{2+}$  blockage of the channel pore, leading to the influx of  $Ca^{2+}$ . Further under physiological conditions, the entrance of  $Ca^{2+}$  produces partial inhibition of NMDA receptors via  $Ca^{2+}$ -dependent inactivation, thereby preventing the intracellular  $Ca^{2+}$  overload. However Under pathological conditions this negative feedback in  $Ca^{2+}$  regulation of NMDA receptors is disabled, resulting in excessive  $Ca^{2+}$  influx through the receptor channels.  $Ca^{2+}$  overload triggers multiple intracellular events that induce irreversible death of neuron cells. Recently a kinase protein is reported to act as a specific NMDA receptor “cell death signal” at extrasynaptic sites, where the kinase protein interact with NMDA receptor and leads to the neuronal cell death due to excitotoxicity. So, here our aim is to study to the mechanisms involved in neuronal survival and design modulators using *in-silico* approaches.

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**Leema George**,<sup>1</sup> KNS Sirajudeen,<sup>2</sup> VenkatramanManickam,<sup>1</sup> Ramasamy Tamizhselvi,<sup>1</sup> School of Biosciences and Technology, Vellore Institute of Technology, VIT University, Vellore 632014, Tamilnadu, India.<sup>2</sup> Department of Chemical Pathology, University Sains Malaysia, 16150-Kubang Kerian, Kelantan, Malaysia.

#### **Background**

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*“Plasmid associated multi-drug resistant bacteria isolated from poultry litter”.*

**Prasanth. M\*, Ramesh. N, Gothandam. K.M, Karthikeyan. S. School of Bio-Sciences and Technology, VIT University, Vellore, Tamil Nadu, India.**

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## **A non-surgical animal model for long term catheter associated urinary tract infection, an immunopathological investigation**

**Prasanth Rathinam**<sup>1</sup>, Rajesh NG<sup>2</sup>&Pragasam Viswanathan<sup>1\*1</sup> Renal Research Lab, School of Bio Sciences and Technology, VIT University, Vellore - 632 014, Tamil Nadu, India <sup>2</sup>  
Department of Pathology, JIPMER, Puducherry – 605006, India.

## **Background**

Implantation of foreign bodies has become an essential component in almost all healthcare systems, which particularly played a major role in patient survival. However, the ability of microbes to adhere to the inert implant materials has notably contributed to the escalating problem of nosocomial infections, among which urinary tract being the most common site (30%-40%). Host immune system plays a major role to prevent the microbial adherence and proliferation. However, the inert catheter surface acts as a platform for biofilm formation thus helps to mask immune responses and treatment regimes. Till date, a defined scheme of host-pathogen interaction in CAUTI is limited.

## **Aim**

Present study aimed to illustrate the immunopathological analysis of female Wistar rats with experimentally induced CAUTI associated long term catheterization.

## **Materials and method**

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## **Conclusion**

To the best of our knowledge, this is the first kind of study for long term catheterization associated UTI.

\*Corresponding Author: Dr. Pragasa Viswanathan, Renal Research Lab, Centre for Biomedical Research, School of Biosciences and Technology, VIT University, Vellore – 632014, +91-416-2202583 / [pragasam.v@vit.ac.in](mailto:pragasam.v@vit.ac.in)

# **ISOLATION AND CHARACTERIZATION OF PIGMENT PRODUCING HALOTOLERANT BACTERIA AND COMPARATIVE ANALYSIS OF ENZYME INVOLVED IN BIOSYNTHESIS OF PIGMENTS**

**Authors: S. Prathiba, Dr. G. Jayaraman School of Bio Sciences and Technology, VIT, University, Vellore - 632014.**

## **ABSTRACT:**

Sea water contains diverse microbial population. Microbial diversity arises due to the evolutionary changes in the microbes in response to stressful conditions like hyper salinity, low oxygen concentration, high or low temperatures, low nutrient availability, and presence of toxic compounds. High salinity led to the evolution of halobacteria. As an adaptive strategy, these organisms produce several metabolites (Enzymes, pigments, siderophores etc.) for their survival. Also, in industries, there is raising imposition for the use of metabolites which can exhibit activity in a wide range of salt concentration. The microbial pigments can be exploited, as they offer significant advantages like use in therapeutics/diagnostics, easy accessibility, GRAS (Generally Recognized As Safe) and it can be produced in short time. These microbial pigments have the potential to be used in pharmaceutical industries, food, cosmetics and textile industries. In the present study, soil samples were collected from Marakkanam saltern, Tamil Nadu. A total of 6 pigment producing strains were isolated. Taxonomic characterization revealed that two of these strains were *Bacillus* sp. and four of them were *Halobacillus* sp. To start with, the pigments from *Planococcus maritimus*VITP21 were purified using preparative TLC and were partially characterized by conventional spectroscopic methods. The results revealed that the pigment could possibly be a carotenoid. As phytoene synthase is one of the important enzyme in the biosynthesis of this class of pigments, a comparative analysis of the aminoacid sequence and three dimensional structure of phytoene synthase was performed.

## **Towards finding potential therapeutic targets for neurodegenerative diseases**

Pratibha Singh, Krishna Sundar Twayana, Palaniyandi Ramanan, Priti Talwar\* School of Biosciences and Technology, VIT University, Vellore-632014 \*Email: [priti.t@vit.ac.in](mailto:priti.t@vit.ac.in)

### **Abstract**

Protein Kinases are known to be involved in brain stroke during hypoxia. In the mammalian central nervous system glutamate is the major excitatory transmitter which plays an essential role in neural development, excitatory synaptic transmission, and plasticity during ischemia. However, glutamate accumulates at synapses causes the extensive stimulation of its receptors, which can be toxic to neurons. Glutamate is responsible to activate three classes of ionophore-linked post-synaptic receptors, namely N-methyl-D-aspartate (NMDA),  $\alpha$ -amino-3-hydroxy-5-methyl-4-isoxazole propionic acid (AMPA), and kainate receptors. Activation of NMDA receptors involves two events: (1) binding of the co-agonists glycine and glutamate, and (2) simultaneous membrane depolarization, which removes the  $Mg^{2+}$  blockage of the channel pore, leading to the influx of  $Ca^{2+}$ . Further under physiological conditions, the entrance of  $Ca^{2+}$  produces partial inhibition of NMDA receptors via  $Ca^{2+}$ -dependent inactivation, thereby preventing the intracellular  $Ca^{2+}$  overload. However Under pathological conditions this negative feedback in  $Ca^{2+}$  regulation of NMDA receptors is disabled, resulting in excessive  $Ca^{2+}$  influx through the receptor channels.  $Ca^{2+}$  overload triggers multiple intracellular events that induce irreversible death of neuron cells. Recently a kinase protein is reported to act as a specific NMDA receptor “cell death signal” at extrasynaptic sites, where the kinase protein interact with NMDA receptor and leads to the neuronal cell death due to excitotoxicity. So, here our aim is to study to the mechanisms involved in neuronal survival and design modulators using *in-silico* approaches.

## **redictive value of Pulmonary Function Tests for Respiratory Infections in Cervical Cord Injury**

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### **Background**

Respiratory complications are the leading cause of mortality, morbidity and decreased quality of life in persons with complete high level spinal cord injury, with an incidence of 50% to 100% in the acute stage. Respiratory infections significantly increase the length of hospital stay and hospital costs. Previous studies have demonstrated that pulmonary function tests can be used to predict respiratory infection in a community setting. Pulmonary functions in patients with cervical spinal cord injury have not been evaluated as predictors of respiratory infection during hospital stay. **Aim:** To determine whether pulmonary function tests can predict respiratory infection in persons with cervical spinal cord injury of less than one year duration.

### **Methods**

Pulmonary function tests and bedside measures of pulmonary function were assessed for all patients. Patients were followed up during the course of hospital stay and at 3 months after discharge to determine the incidence of respiratory infection. The differences in pulmonary function in patients who developed and those who did not develop respiratory infection were assessed and receiver operated characteristic curves were plotted to determine the predictive value of each test.

### **Results**

The Percentage predicted values of Forced vital capacity (FVC%) and Forced expiratory volume in 1 second (FEV1%) were the best predictors of respiratory infection. Using cut-offs of 44.7% for Forced vital capacity (FVC%), and 43.7% for Forced expiratory volume in 1 second (FEV1%), the sensitivity of these tests for prediction of respiratory infection was 100%, with a specificity of > 85%. Among the bedside measures of pulmonary function, the Index of Pulmonary dysfunction correlated well with FVC% and FEV1% with slightly reduced sensitivity.

## **Morbidity and mortality after tonsillectomy in children**

### **AIM**

To study the morbidity and mortality rates in children and analyze the possible etiological factors

### **MATERIALS AND METHODS**

Analysis of case records of children below 16 years who underwent tonsillectomy with or without adenoidectomy in past 44 months in a tertiary care centre. Variables analysed were demography, indication for surgery, duration of symptoms before surgery, intraoperative findings, any known comorbidity, post operative day and type of morbidity and its management.

### **RESULTS**

470 case records of children under 16 years of age who underwent tonsillectomy in past 44 months were studied. Mean age was 6.2 years. Male to female ratio was 1.1:0.9. Most common indication was Chronic hypertrophic adenotonsillitis (98%). Morbidity was 14.68% (69/470) overall, most common being bleeding 7.4% (35/470), followed by pain 4.6% (21/470), fever 0.8%(4/470), observation due to associated comorbidities 0.8%(4/470), and 2 had complications unrelated to surgery (drug reaction and pneumonia). Major morbidity was bleeding comprising of hospital admission more than 48 hours, including 6 re explorations under GA. We had one mortality due to secondary hemorrhage.

### **CONCLUSION**

Tonsillectomy is one of the most common procedures in children. In spite of our low threshold to admit the patient in postoperative follow up, morbidity and mortality rates are comparable with world literature.

# **EFFECTIVENESS OF AN INSTRUCTIONAL MODULE ON KNOWLEDGE, ANXIETY, PHYSIOLOGICAL AND BEHAVIOURAL RESPONSES OF PATIENTS UNDERGOING GASTROSCOPY**

## **Introduction**

Information is one of the important resources for coping and it can alter the subject's feeling of the threat and thus enhances compliance. Inadequate information regarding gastroscopy may cause severe anxiety, fear, and poor compliance and reduce the patient's tolerance.

## **Objectives**

The study was designed to assess the effectiveness of an instructional module on knowledge, anxiety, physiological and behavioral responses of patients undergoing gastroscopy.

## **Methodology**

An experimental design was used in this study. The study was conducted in Christian Medical College, Vellore. A total of 72 subjects were selected by block randomization technique who fulfilled the inclusion criteria and consent was obtained. On the day of appointment, State Trait Anxiety Inventory (Y1) was used to assess the anxiety and questionnaire prepared by the investigator to assess the knowledge regarding gastroscopy, its preparation and complications. For experimental group, the video was played and control group received routine information. On the day of gastroscopy procedure, same questionnaire was used to assess their anxiety and knowledge. Physiological responses were assessed using checklist prepared by the investigator before and during procedure. Behavioural responses were assessed during procedure using checklist. Pain was assessed post-procedurally using Visual Analogue Scale.

## **Results**

Most of the subjects (68.1%) were male, 83.3% were married. There was a statistically significant increase in mean scores of knowledge from 4.55 to 12.38 in experimental group ( $p < .001$ ). There was a statistically significant decrease in mean scores of anxiety from 42.83 to

35.75 in experimental group ( $p < 0.001$ ). The study revealed that there was a moderately negative correlation between knowledge and anxiety in experimental group ( $r = -.564$ ;  $p < .001$ ). A significant association found between age group between 41- 60 years and anxiety of the subjects ( $p < .001$ ).

## **Conclusion**

The study revealed that providing structured teaching using video will help the patient to increase knowledge and reduce anxiety. So, as Nurses need to play a major role in providing teaching regarding the procedure will help them to cope better during procedure.

## **Key words**

Knowledge, Anxiety, Behavioural responses, Physiological responses, Gastroscopy, Instructional Module.

## **D-dimer levels in patients with Thromboangitis Obliterans**

### Introduction

Thromboangitis obliterans (TAO) is a vascular disease presenting with obliterative endarteritis. This is secondary to a mixture of thrombosis and inflammation. The exact causation and etio-pathogenesis of this disease remains unknown with tobacco use being the only definite etiological factor. Drug therapy is guided by clinical experience but no Indian data from large treatment series or etiological studies is available.

### Methods

We studied if D-dimer (a marker of thrombosis) levels are elevated in patients with thromboangitis obliterans (TAO) as compared to normal age matched controls. We used a case control design with the calculated sample size of 62 cases and 330 controls performed on consecutive patients with TAO diagnosed between April 2014 to May 2015.

### Results

The median and inter-quartile range for D-dimer values were 61 (41-88) and 247(126-477) for the cases (n=62) and control (n=330) groups, respectively. The difference in the distribution was statistically significant between the two groups ( $P < 0.001$ ).

### Conclusions

D-dimer levels are elevated in patients with Thromboangitis obliterans. This point to an underlying thrombotic process in this disease. Future studies can assess if these patients benefit from anticoagulants

# **ESTIMATION OF ACTUAL STRENGTHS OF DIFFERENT BRANDS OF COMMONLY AVAILABLE PARACETAMOL TABLETS BY SPECTROPHOTOMETRY AND COMPARING THEM WITH THE CORRESPONDING LABEL INFORMATION**

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<sup>2</sup>*Department of Pharmacology, Christian Medical College, Vellore.*

## **BACKGROUND**

Paracetamol is one of the most popularly used over-the-counter analgesic and anti-pyretic marketed by various companies. There are reported cases of wrong information in the labels pertaining to the strengths of paracetamol tablets leading to wrong dosage and abnormal therapeutic responses. There is a need for greater stringency in the manufacture of the correct strength of the drug.

## **AIM**

This study was done to evaluate the actual strengths of different brands of commonly available paracetamol tablets by spectrophotometry and comparing them with the corresponding label information of these medications and calculate the degree of variation.

## **METHODS**

8 different brands of paracetamol tablets in multiple batches of different brands were randomly sampled from various local pharmacies. Standard and validated method for paracetamol assay using spectrophotometer was used. Both inter-batch and inter-brand variations in the strength of the paracetamol tablets were studied. Non-parametric Kruskal-Wallis test was used using 'R' program (3.1.0) for statistical analysis and  $P < 0.05$  was considered significant.

## **RESULTS**

All the brands showed acceptable variation in mean strengths which ranged from  $91.3 \pm 0.00\%$  to  $101.7 \pm 12.59\%$  without significant variability. There was no significant inter-batch variability either.

## **CONCLUSION**

It can be concluded from the above study that all the different brands of paracetamol tablets have acceptable strengths (as per British and United States Pharmacopeia) as compared to their respective label information.

# **The impact of ASD and other neuro developmental disorders on the family: Comparisons and predictors**

Beena Koshy, Rachel Beulah, Lincy Glory, S Suganthi and Reeba Roshan

## **Background**

Autism spectrum disorders (ASD) and other neurodevelopmental disorders (NDD) impact families adversely. Published studies state that families of children with ASD report a higher impact than those with other NDD. There is a paucity of data evaluating these concepts in the Low Middle Income Countries (LMIC).

## **Objectives**

9. To evaluate whether families of children with ASD report a higher impact than those with other NDD
10. To understand the predictors for the impact on families of children with either disorder

## **Methods**

All families who were welcomed to an inpatient residential facility attached to the Developmental Paediatrics Unit in a tertiary care centre in India for detailed assessment and interventions from January 2015 to June 2015 were included in the analysis. The child was diagnosed by a multidisciplinary team of physicians, psychologists and therapists. The ASD diagnosis was confirmed by DSM-V and Childhood Autism Rating Scale (CARS). The Revised Impact on Family questionnaire was administered to all families to assess the impact.

## **Results**

130 children were included in this study. Both families of children with ASD and other NDD reported high impact on the family. There was no significant difference between the reported impact of ASD and NDD (38.17 and 38.13 respectively;  $p=.981$ ). Being a girl child (45.8 vs 36.84 respectively;  $p=.004$ ) and having associated developmental delay (39.82 vs 28 respectively;  $p=.022$ ) had higher impact on families of children, which remained significant in a linear regression.

## **Conclusions**

Both ASD and NDD have high impact on families. Additional support need to be provided for families of children with ASD and associated developmental delay. The impact of gender on ASD and other NDD needs to be explored further incorporating the local cultural milieu.

## **ABSTRACT**

### **Introduction**

*Cardiac pacing is an emerging life saving procedure that is being widely used in the recent times. It is therefore vital for the health care professionals to be aware of the patients' knowledge and experience after the cardiac device implantation and also the impact these implanted devices have on their life.*

### **Objective**

*The study was aimed to assess the Knowledge and Attitude of patients regarding Permanent Pacemakers and their Quality of Life after the Permanent Pacemaker Implantation.*

### **Method**

*A descriptive cross-sectional study design was used in this study. A total of 70 subjects were chosen by the total enumerative sampling technique among those patients attending the Cardiology Out-patient Department, Pacemaker Clinic and selected Cardiology wards of CMC, Vellore. The data instruments used for the study were a Knowledge questionnaire, an Attitude scale and RAND SF-36 tool to assess the QOL which were self administered questionnaires.*

### **Results**

*The study findings reported the mean age of the subjects being  $61.71 \pm 12.42$ , and 60% accounted for men. The median duration of implantation was  $2.9 \pm 5.21$  years. Majority of the participants 54.3% had moderately adequate knowledge, 55.7% of the participants had moderately favourable attitude and 46% of them experienced moderate QOL. A significant positive correlation was found between Knowledge of participants and their QOL ( $r= 0.340$ ;  $p=0.004$ ), also a significant positive correlation between Attitude of participants and their QOL ( $r= 0.559$ ;  $p=0.001$ ). A significant association between attitude and age was found ( $p = 0.001$ ).*

### **Conclusion**

*Conscious effort must be taken to help patients cope better and experience good QOL through systematic teaching after the pacemaker implantation. This will help the patients to function maximally and live life to their best capacities in the family and society.*

## **Key words**

Knowledge, Attitude, Quality of Life, Permanent Pacemaker, Permanent Pacemaker Implantation.

## **HPV testing in surveillance of patients after treatment for CIN 2-3 or cervical cancer**

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## **Background**

Persistent infection with hr- HPV following treatment for CIN or carcinoma cervix is associated with increased risk of recurrence.

## **Aim**

To study the role of cervical HPV testing in patients treated for CIN or cervical cancer

## **Methods**

A retrospective study was done with data collected from medical records. During the period from Aug 2013 to Dec 2014, a total of 239 patients with CIN or Carcinoma cervix attended the Gynaecologic Oncology Unit at CMC, Vellore. Of these, 48 patients who had undergone HPV testing post treatment for CIN 2-3 or cervical cancer were included in the study. HPV testing was done by Hybrid Capture II and Pap smear by Thin Prep LBC.

## **Results**

Of the study population, 24 had treatment for cancer and 24 for CIN. The follow up Pap was positive in 4 of the cancer patients (16.6%). All 4 tested positive for hr-HPV and underwent further evaluation. HPV was positive in a patient with negative Pap. Both the tests were negative in 19 patients. The OR for an abnormal Pap with positive hr-HPV after cancer treatment was 117 (95% CI 4.1 to 1371; p-value= 0.006). Pap was positive in 8 out of 24 patients (33.3%) who were treated for CIN 2-3. HPV was positive in 3 of these 8 patients (37.5%). All 3 patients underwent biopsy and 2 had carcinoma. HPV was positive in 3 patients with negative Pap. Both the tests were negative in 13 patients. The OR for an abnormal Pap with positive hr-HPV was 2.6 after treatment of CIN 2-3 (95% CI 0.4 to 17.5; p-value = 0.32)

## **Conclusion**

HR HPV testing may prove to be a useful initial test in surveillance of patients after treatment of cervical neoplasia. Further studies are required to decide the frequency of HR HPV testing in post treatment surveillance.

## **SENITIVITY AND SPECIFICITY OF CRP IN NEONATES AT RISK OF SEPSIS IN A SECONDARY HOSPITAL-A COHORT STUDY**

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## **Objective**

To determine the utility of CRP in the diagnosis of sepsis in neonates with maternal risk factors of sepsis.

## **Design**

Prospective observational cohort study.

## **Setting**

Secondary level hospital in Vellore, South India.

## **Participants**

Neonates with maternal risk factors of sepsis (Maternal fever; maternal UTI; any ungloved per vaginal examination, or >3 gloved per vaginal examination after rupture of membranes; chorioamnionitis; spontaneous preterm delivery; prolonged rupture of membranes and pre labor rupture of membranes).

## **Methods**

Neonates with maternal risk factors of sepsis were recruited. Demographic data, birth data and timings of blood culture, antibiotics and CRP were recorded. Clinical signs of sepsis were determined using the Singh Sepsis Score (grunting, abdominal distension, increased pre-feed aspirates, tachycardia, hyperthermia, chest retractions and lethargy). Results of blood culture, CRP and clinical signs of sepsis were compared.

## **Results**

CRP had a sensitivity 28.6%, specificity 81.9%, negative predictive value 80.9% and positive predictive value 30% when compared to clinical diagnosis of sepsis. Only 9 blood cultures grew possible pathogens. CRP by latex agglutination correlated with CRP values by nephelometry with a correlation coefficient of 0.684.

## **Conclusions**

A negative CRP excluded sepsis with reasonable confidence in blood culture negative neonates with maternal risk factors of sepsis.

## **Use of Nintendo Wii™ gaming console for rehabilitation of children with cerebral palsy**

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### **Background**

Cerebral palsy is a condition caused by non-progressive injury to the immature brain resulting in motor and postural impairment. Nintendo Wii (Wii) is virtual reality gaming console that has been shown to be useful in the rehabilitation of patients with stroke. The aim of this study is to evaluate the potential of using Wii as an adjunct to routine therapeutic regimen in the rehabilitation of children with cerebral palsy (CP).

### **Methods**

The study was designed as a pilot randomized controlled trial with 20 CP children. The children in the intervention group played Wii games for 18 sessions in 3 weeks as part of their routine therapy. The children in the control group received routine therapy alone. The outcome measures were posture control and balance, upper limb and hand function, visuo-perceptual skills and walking speed and endurance. These were measured before and after the intervention in each group. The Wilcoxon signed-rank test (for paired data) and Mann Whitney tests (for independent variables) were used for statistical analysis of the data.

### **Results**

A significant improvement in upper limb and hand function was seen in the post-test compared to pre-test in the intervention group, which was not seen in the control group. No statistically significant effects of the intervention were seen on the other outcomes measured compared to the control group. Children in the intervention group were highly motivated and enjoyed playing Wii games as part of their therapy sessions.

## **Conclusion**

Wii games-based therapy may be offered as an effective adjunct to routine therapy in CP rehabilitation. However, larger studies will have to be done in order to come to definite conclusions regarding the beneficial effect of this intervention.

## **Cytomorphometric markers – Early indicator for sepsis?**

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## **Background**

Early diagnosis of sepsis still remains elusive with no gold standard test. Studies have explored the significance of neutrophil and monocyte- volume, conductivity and scatter (VCS technology) generated in automated analyser, Beckman Coulter UniCel® DxH 800 as markers of sepsis. These provide an objective measurement for the cytomorphometric changes in leukocytes. Against this background we studied the sensitivity of VCS parameters in diagnosing sepsis in adult and other critically ill patients.

## **Aim**

The aim of the study was to look at changes in VCS parameters for neutrophils and monocytes which could be used as early markers of sepsis in adult population.

## **Methodology**

This study done over one year included 123 patients from MICU, of which 63 were cases and had sepsis and 59 were controls. We also compared all MICU patients with healthy blood donors. The diagnosis of sepsis and severity was based on the Surviving Sepsis Guidelines. ANOVA test was applied and ROC curve made for each of the significant parameters. VCS data was also compared to the Procalcitonin and CRP levels in the MICU patients.

## **Result**

Among the three study groups- the MICU sepsis cases (63), MICU controls (59) and blood donors (98), we found a highly significant difference in the neutrophil volume, conductivity and scatter and monocyte volume and scatter between all the three groups ( $P < 0.001$ ). Among the MICU cases and controls- the VCS parameters especially the neutrophil volume ( $P = 0.001$ ) and

monocyte volume (P= 0.0000) demonstrated better difference than the conventional Procalcitonin (P= 0.07) and CRP (P= 0.062) markers. The volume and scatter of neutrophils and monocytes together showed a sensitivity of 70% and specificity of 75% in diagnosing sepsis.

## **Conclusion**

This study found VCS parameters to be significantly different between healthy and critically ill patients. There was also a significant difference in the parameters between septic and other critically ill patients, though this needs further study to prove its absolute discriminating power. However this easily available test can be used in laboratories with automation to guide clinical suspicion of sepsis. With no separate sampling and analysis required it adds cost benefit along with better diagnostic accuracy.

## **Juvenile-onset recurrent respiratory papillomatosis: our experience**

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## **ABSTRACT**

Juvenile onset recurrent respiratory papillomatosis (JORRP) is a benign neoplasm of the upper respiratory tract, involving primarily the larynx, caused by Human papilloma viruses (HPV) type 6 and 11. The most common presenting symptom of JORRP is hoarseness followed by slowly progressive stridor. In the most severe cases, a tracheostomy may be necessary, but this procedure carries a risk of dissemination of lesion to the peristoma and to the lower airway. This case series highlights how we managed the airway without tracheostomy using endoscopic microdebridement (EM) technique.

## **MATERIALS AND METHODS**

Retrospective case series of seven children treated for recurrent laryngeal papillomatosis at our tertiary care institute between 2012 and 2015. They were in the age groups -range of one year eight months to nine years. All of them underwent endoscopic microdebridement of laryngeal and tracheal lesions.

## **RESULTS**

All seven children with JORRP underwent endoscopic microdebridement under spontaneous anaesthesia. Male: Female ratio was 1.6:1. Out of seven children with JORRP, four children were tracheostomized outside for airway obstruction. Out of this four children, two were asymptomatic after surgery and successfully decannulated. Two children were asymptomatic and three are under follow up.

## **CONCLUSION**

Although there is no “cure” for JORRP, repeated surgical excision is the primary treatment modality. The goal of surgery is removal of as much of the papilloma as possible without damaging normal structures. Recently, the EM can quickly debulk papilloma with less operative time, decreased mucosal injury and a cost benefit. EM is a minimally invasive and safe technique which provides accurate removal of papillomas, although recurrence is often unavoidable. Spontaneous ventilation during surgery is ideal. Traditionally many centres end up in doing tracheostomy for airway obstruction, but we could manage our patients without tracheostomy using our anaesthetic and surgical technique.

## **CLINICORADIOLOGICAL FEATURES AND OUTCOME OF MOYA MOYA DISEASE (MMD) AND SYNDROME IN A TERTIARY LEVEL TEACHING HOSPITAL IN SOUTH INDIA**

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Moya Moya disease is an idiopathic vasculopathy affecting terminal internal carotid arteries.

### **Type**

Retrospective chart review

Methodology: Chart of patients diagnosed to have Moya Moya disease (MMD) and syndrome (2003 to 2013) were analysed for demographic characteristics, clinical presentation, radiological features, management and outcome.

## **Results and discussion**

115 patients (62 males and 53 females) were studied. Age at onset of stroke was 15.4 years (Range 6 months - 60 years). Children formed majority (70%). 85% of patients hail from eastern India. Anterior circulation was involved in all, posterior circulation in 69 patients (60%) with 32 patients having posterior circulation infarcts. Most common presentation was hemiparesis (44%), followed by seizure (43%), headache(6%), language disturbances(2%), cognitive decline(0.08%), chorea(0.08%), visual symptoms(0.08%) and asymptomatic(0.08%). Family history was positive in 7 belonging to 3 families. 13 had syndromic diagnosis (Neurofibromatosis (4), tuberous sclerosis(1), downs syndrome(1), PHACES syndrome(1), EBV infection(1), Sickle cell anemia(2), thalessemia(1) and megaloblastic anemia(1) and a syndromic moya moya with cataract). All children presented with ischaemic events and 4 adults presented with hemorrhage. 26 patients (22.6%) underwent indirect surgical revascularisation with total of 36 procedures (16 patients with unilateral and 10 patients with bilateral procedures). Mean follow up was 2.19 years (Range 3 months to 10 years). Residual deficits, gain in mRS and frequency of events were comparable in surgical and non surgical group.

## **Conclusion**

Higher prevalence of MMD is found in North Eastern states of India and is an important cause for stroke in young. There is a lesser incidence of hemorrhage and posterior circulation involvement in children compared to adults. This is the first series in India to report familial cases.

## **Future directions**

Genetic studies in familial cases are under way National registry and outcome analysis

# **CEREBROSPINAL FLUID OTORRHINORRHEA AS A CAUSE OF RECURRENT LOWER RESPIRATORY TRACT INFECTION AND MENINGITIS**

**AUTHORS:** Dr. Manusrut, Dr. Mary John Dept: ENT UNIT 2 – Pediatric ENT, CMC, Vellore

## **ABSTRACT**

### **Background**

Cerebrospinal fluid (CSF) Otorrhinorrhea is the discharge of CSF through the middle ear and eustachian tube into the nose. Cochleovestibular malformations are a rare cause of CSF otorrhinorrhea. Patient can be asymptomatic or present with hearing loss or recurrent meningitis.

### **Case Report**

We report a 3 year old boy who presented with recurrent episodes of high grade fever, nocturnal cough, breathlessness and clear watery nasal discharge since 3 months of age. Child was treated for bronchopneumonia. He also developed an episode of pneumococcal meningitis. Magnetic resonance imaging was done for CSF rhinorrhea which showed CSF intensity fluid in the right middle ear. Subsequent High-resolution computed tomographic scan of temporal bones confirmed the diagnosis of Right Cochleovestibular malformation (Interpartition Defect Type 2). The site of leak could not be identified on imaging. Auditory brain stem response showed right sided profound hearing loss. Surgery revealed CSF leak through a hole in the stapes footplate. The defect was successfully closed with soft tissue and the middle ear obliterated with plugging of eustachian tube.

### **Conclusion**

Recurrent Lower respiratory tract infection and meningitis with rhinorrhea in a child should be investigated for inner ear malformations. A high index of suspicion of CSF otorrhea and early imaging with surgical intervention can prevent complications.

## **A descriptive study to assess the level of coping and quality of life among patients with epilepsy in neurology outpatient department of Christian Medical College, Vellore.**

Mary Jancy Joy, Jayarani Premkumar, Ilavarasi Jesudoss, Ajith Sivadasan

### **Background**

Epilepsy is considered to be a debilitating illness associated with a high level of stigma and impaired quality of life. Coping strategies influence the quality of life of patients with epilepsy.

### **Objectives**

The study is intended to assess the level of coping and quality of life of patients with epilepsy and to determine the relationship between the level of coping and quality of life among patients with epilepsy.

### **Methodology**

A descriptive study design was selected to assess the coping style and quality of life in patients with epilepsy in neurology outpatient department of Christian Medical College, Vellore. Total enumeration sampling technique was used. A total of 75 subjects who fulfilled the inclusion criteria were included to participate in the study. BRIEF COPE inventory was used to assess the level of coping and QOLIE was used to assess the quality of life among patients with epilepsy.

### **Results**

The study revealed that majority (73.3%) of the subjects was less than 35 years. The mean age was 30.5 years with the standard deviation (SD) of 11. It was found that most (54.7%) of them were males and 45.3% were females. Analysis revealed that majority (68%) of the subjects had generalized seizures. Majority (65.3%) of them had adequate coping and the most commonly used coping strategies were acceptance and planning. Less commonly used coping strategies were substance abuse and humor. The study shows that the mean QOLIE total scores had a mean of 61.4 and SD 12.7. The study showed that there was no association between coping and quality of life.

### **Conclusion**

People with epilepsy have impairment in their quality of life due to the effect of epilepsy on various aspects of life. Educating people can improve their quality of life. Enhanced awareness and a clearer perception of the ways to help people with epilepsy to cope more effectively with their problems will enormously benefit both patients and caregivers in the constant pursuit of improved health outcomes.

Key words: Epilepsy, Quality of life, Level of coping.

# **N EVALUATION OF THE CLINICAL PREDICTORS OF THE CARTILAGE INVASION, EXTRA LARYNGEAL SPREAD AND THYROID GLAND INVOLVEMENT IN PATIENTS WITH LARYNGEAL AND HYPOPHARYNGEAL CANCERS (STAGE 3 AND STAGE 4)**

Dr. M. Mohamed Abdul Kathar, Dr. Rajiv Charles Michael, Department of ENT,  
Christian Medical College.

## **Background**

The aim of this study was to individually assess the accuracy of pre-operative CT scan, MRI and clinical/endoscopic staging of laryngeal cancers by comparing imaging and histopathological findings and the need for thyroidectomy along with laryngectomy

## **Aim**

To evaluate the clinical predictors of cartilage invasion and extra laryngeal spread and thyroid gland involvement in patients with laryngeal and hypo pharyngeal cancers (stage 3 and stage 4).

## **Methods**

All clinically diagnosed patients with T3 and T4 lesions were subjected to do contrast enhanced CT scan (from skull base to mediastinum) as a standard protocol of management. Those patients with doubtful cartilage invasion were subjected to undergo limited MRI cuts (STIR sequence) of the neck. They were later planned for the direct laryngoscopy and biopsy. The biopsy proven laryngeal malignancies (T3 and T4 with cartilage erosion and extra laryngeal spread) were advised to undergo total laryngectomy with the post-op specimen sent for histopathology. These all total laryngectomy were subjected to histopathological evaluation were noted for cartilage invasion, extra laryngeal spread and thyroid gland involvement.

## **Results and Conclusion**

In our study, a Primary laryngectomy was done in patients where cartilage invasion was noted on imaging and in individuals where extra laryngeal spread of tumour was evident without cartilage involvement. Salvage Laryngectomies were also done in irradiated individuals with post RT recurrences where conservative/ endoscopic or open partial laryngectomies were not possible. Contrast enhanced Computed tomography scan helped in identification of thyroid cartilage invasion accurately in 91.3 % of cases and this has immensely contributed in the staging and treatment planning of Stage 3 and Stage 4 laryngeal cancers. The addition of a 3tesla MRI scan STIR sequence axial cuts through the larynx in our study improved the accuracy and aided in detecting cartilage erosion in these cases(100% positive predictive value).

We therefore conclude that 3 Tesla MRI limited high resolution axial section should be considered as routine protocol for all patients in whom there is doubtful cartilage invasion on contrast enhanced CT scan. Since only limited cuts are done both the costs involved and time factors are kept to a minimum. All patients in our study in whom laryngectomy was done had one of the laryngeal cartilage invaded on CT scan or MRI scan or had extra laryngeal spread except post RT recurrences.

Our study showed that 3 tesla MRI STIR sequence axial cuts scan should also be considered to evaluate all patients where cartilage erosion is clinically suspected but not confirmed on CT scan and also in patients where CT scan shows extra laryngeal spread without any obvious cartilage invasion. The sensitivity of detecting extra laryngeal spread in CT scan was only 60%.

In our study we looked at the indications for ipsilateral thyroidectomy in patients undergoing total laryngectomy. Contrast enhanced CT scan suggested thyroid gland infiltration in four out of the forty cases. Histopathology was negative in all these four cases. Two other cases showed thyroid gland infiltration on histopathology but not on CT scan. These two cases were with thyroid gland involvement on histopathology were both transglottic tumours with extra laryngeal spread. Hence an ipsilateral hemithyroidectomy is probably still indicated in transglottic cancer with cartilage invasion and/or extra laryngeal spread.

# **Serum Vitamin D status and its relationship to metabolic risk factors in young Indian adults**

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## **Abstract**

### **Background**

Vitamin D deficiency is associated with cardio-metabolic risk factors. Limited evidence exists regarding vitamin D deficiency and its association with cardio-metabolic risk factors in Indian population. The present study aims to examine the relationship between serum vitamin D concentration and cardio-metabolic risk factors in rural and urban young adults.

### **Methods**

We investigated the relationship between serum 25-hydroxyvitamin D (25[OH]D) concentrations with cardio-metabolic risk factors in 373 individuals representing a population based birth cohort study during 2013-14. Vitamin D level was categorised into deficiency (<20 ng/ml), insufficiency (20 to less than 30 ng/ml) and sufficiency ( $\geq$ 30 ng/ml) and compared with various anthropometric, biochemical and life style variables using chi-square test for linear trend. Linear regression analysis was used to relate cardio-metabolic risk factors with vitamin D levels adjusting for potential confounding variables.

### **Results**

The mean (SD) age and BMI of the cohort was 41.4 (1.1) and 25.5 (4.8) respectively. The mean (SD) serum vitamin D level was 23.4 (10.4). The prevalence of vitamin D deficiency (<20 ng/ml) was 41.6% (36.5% - 46.7%). Low vitamin D level was associated with female and urban participants. Higher BMI, waist circumference, body fat percentage, fasting insulin and insulin resistance (HOMA) were associated with lower vitamin D level. Female participants, urban residents and those with high BMI were independently associated with low vitamin D level.

### **Conclusion**

Vitamin D deficiency is common in young and middle aged Indian population, with an increased risk in overweight or obese individuals. Further studies are warranted to understand the relationship between vitamin D status and obesity related metabolic disorders. In conclusion, the findings of the study suggest that along with intake of vitamin rich foods, body fat loss and outdoor physical activity should be promoted to improve the metabolic risk factors.

## **Serological characterization of autoantibodies in Autoimmune Hemolytic anemia and its clinical implications-A study from a tertiary care center in South India**

**Author- Dr. Rajeshwari B, Dr. Biju George, Dr. Visalakshi, Ambily Nadaraj, Dr.Dolly Daniel**

### **Background and Aim**

Autoimmune hemolytic anaemia (AIHA) has a wide range of clinical presentation from mild to fulminant life threatening anaemia. Immunoglobulin class, subclass, titre, ability to activate complement, thermal amplitude and strength of direct antiglobulin test (DAT) have been implicated as factors affecting severity. This study was undertaken to analyze factors which influence the severity of AIHA.

### **Material and Methods**

In this crosssectional study, patients with evidence of haemolysis and positive for polyspecific DAT were included. Monospecific DAT done to identify presence of IgG, IgM, IgA, IgG subtypes and complement. Correlations were drawn between the severity of AIHA and Immunoglobulin class, strength of DAT, IgG subtype and the titre of the latter.

### **Results**

Among 94 patients included in the analysis, the median age was 35.2(Range1-77 years), with a male: female ratio of 1:1.9. Primary AIHA was identified in 54.3% and secondary AIHA in 45.7%. Spread of autoantibodies identified included, 28.7% with solitary IgG followed by complement alone in 8.5% as opposed to 62.8% of patients who had a combination of

autoantibodies. Severe haemolysis was greater in patients with primary AIHA (71.2%) as compared to patients with secondary AIHA(28.7%,  $p<0.001$ ).

Severe haemolysis was seen in 89.1%, of patients who had a combination of autoantibodies as compared to 10.9% patients, with solitary IgG( $p<0.001$ ). IgG subtyping revealed the most common subtype to be IgG1(58.1%) followed by combination of IgG1 & IgG3 (11.6%).The remaining 30.2% were negative for IgG1or IgG3. Presence of IgG1 and IgG3 in combination, or IgG1alone showed statistically significant association with severity of haemolysis ( $p=0.04$  and  $0.012$ respectively).

Correlating strength of DAT revealed that severe haemolysis occurred in 80.8% patients with DAT strength of 4+ ( $p =0.006$ ). This association was consistent with all the IgG subgroups.

### **Conclusion**

This association in our study of DAT strength, IgG1 and IgG3 positivity, and complement fixation on severity of haemolysis suggest that an algorithm of following up DAT positivity, in patients with AIHA, with a monospecific DAT and IgG subtype analysis will allow for identification of this critical subgroup of patients in whom more intense clinical intervention and close follow up might be indicated.

# **Is Malodour in Cancer Better Managed By Oral Or Topical Metronidazole?**

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## **Background**

With the high proportion of head and neck, cervical and locally advanced breast cancers, malodour is a significant problem among palliative care patients in India. In the early years of our service in Vellore we managed malodour primarily by using topical metronidazole for dressings and mouth washes but the results were often unsatisfactory. In recent years we have used low dose oral metronidazole as maintenance.

## **Method**

We undertook a retrospective review of patients treated for malodour comparing the interventions and outcomes within two time periods.

## **Results**

Preliminary data indicate that there were fewer episodes of problematic “smell” with regular oral as compared to topical metronidazole. Compliance and tolerability were satisfactory within the limitation of a retrospective design. The results of the retrospective analysis will be presented at the conference.

## **Conclusion**

Malodour can have a negative impact on the quality of life and dignity of patients with terminal illness. It adds to the costs and burden of nursing care in home and in hospital settings. Severe malodour can lead to isolation and a negative spiral of reduced access to physical care and psychosocial support.

We plan to undertake a prospective study to evaluate if continuous low dose oral metronidazole can be a simple and cost effective intervention for reducing malodour.

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Is malodour in cancer patients better managed by oral or topical metronidazole? A ten year retrospective survey. *Can we SNIFFF the smell away?*

**A randomized control trial to evaluate the effectiveness of oral care using tooth brush and yaunker suction compared to regular oral care in reducing the incidence of Ventilator Associated Pneumonia (VAP) among mechanically ventilated patients in Medical Intensive Care Units of Christian Medical College, Vellore.**

*Ranjitha Chacko, Amala Rajan, Prabha Lionel, Thilagavathy, N, Jeyarani premkumar*

**ABSTRACT**

**Background**

Ventilator Associated Pneumonia (VAP) is one of the major nosocomial infections in the intensive care units contributing to increased mortality and morbidity. Recent studies have shown that oral decontamination through mechanical and pharmacological agents significantly reduces the incidence of VAP; but oral care practices in intensive care units are not consistent or standardized.

**Objective**

This study was done in the medical high dependency unit and medical intensive care unit of Christian Medical College , Vellore to assess the incidence of VAP among mechanically ventilated patients receiving two different oral decontamination interventions; ie regular oral care versus oral care using tooth brush and to find out the association between VAP and selected demographic and clinical variables.

**Methodology**

A prospective, randomized and double blinded study was under taken from January 14, 2013 to December, 27 2014. Patients included were 15 years and above and those who were on oral intubaion, recruited within 4-6 hours of intubation. Patients who met the eligibility criteria were randomized into two groups by simple random sampling technique. Oral care interventions were implemented by the staff nurse assigned to the patient, according to the oral care instructions

given after obtaining informed consent. Patients were followed up from the time of admission till discharge/death/transfer from ICU. Development of VAP was assessed based report sent from the HICC.

## **Results**

The primary outcome measured was the incidence of VAP. A total of 206 eligible subjects were recruited for the study, 102 patients in the control group and 104 patients in the experimental group. Data analysis showed that there was no significant association with the technique of mouth care to the development of ventilator associated pneumonia. Analysis showed that the greatest risk factor for developing VAP was the increase in number of ventilator days. (Odds ratio 1.3, 95% CI 1.02 to 1.66). Though there was a statistical association between gender ( $p=0.02$ ) and presence of antibiotics with VAP ( $p=0.03$ ), its clinical significance is questionable. Inference could not be drawn about association of the clinical diagnosis to the development of VAP. There was no association between the technique of mouth care to total number of ventilator days, length of stay in ICU or mortality.

## **Conclusion**

Tooth brushing with yaunker suctioning technique was not proved to be superior to regular mouth care in reducing development of ventilator associated pneumonia

# **Right Median nerve electrical stimulation to improve arousal and responsiveness of patients in vegetative or minimally conscious state following acquired brain injury- A Randomized controlled trial.**

## **AIM**

To study the effectiveness of right median nerve electrical stimulation to improve arousal in patients in vegetative and minimally conscious states following acquired brain injury, of less than one and a half years duration.

## **OBJECTIVES**

5. To test whether electrical stimulation of right median nerve produces statistically significant difference in the CRS, WHIM, GOSE and RLA scores.
6. To test whether electrical stimulation of right median nerve produces variation in the EEG pattern indicating arousal.

## **SUBJECTS AND METHODS**

### **STUDY DESIGN**

Randomized controlled double blind trial PARTICIPANTS- Patients in vegetative and minimally conscious states following acquired brain injury were recruited from the inpatient wards of CMC hospital and Rehabilitation Institute. Total number of patients who completed the study was 24, with 11 patients in the experimental group and 13 patients in the control group. Statistical analysis was done for 24 patients.

### **INTERVENTIONS**

In the experimental group, stimulation was done with Functional Electrical Stimulator (FES) with the standard operating protocol as Frequency= 40 Hz; Current=20mAmps; Pulse width=300µsec; on duration=20sec/min. Total 40 sessions of therapy, each session lasting for one hour was given. The control group received sham stimulation. Both groups received the standard coma stimulation programme.

## **OUTCOME MEASURES**

The primary outcome measures were 1. CRS-R (Coma Recovery Scale Revised) 2. WHIM Score (Wessex Head Injury Matrix score), 3. RLAS (Rancho Los Amigos Scale) and 4. GOSE (Glasgow Outcome Scale Extended). The secondary outcome measure was EEG.

## **RESULTS**

The improvement in the level of consciousness as measured by CRSR, WHIM Total, WHIM Maximum, GOSE and RLA scores of patients in the intervention group was not significantly different from that observed in the control group.( $p=0.57$ ,  $p=0.36$ ,  $p=0.68$ , $p=0.97$ ,  $p=0.80$  respectively) Analysis of the CRSR subscales also did not show any statistically significant difference between the two groups. Subgroup analysis of patients with positive SSEP median showed statistically significant difference between the two groups in the improvement in CRSR score ( $p=0.02$ )The highest scores attained in the CRSR,WHIM Total and GOSE scores was seen in the intervention group. The maximum score attained in the Visual, Motor, Oromotor and Communication scales were higher in RMNS group in comparison with the control group. The change in the EEG Pattern was not different between the two groups.

In both the groups, patients with DAI had a better percentage increase in the median value of CRSR score( $p=0.02$ )Patients with absence of abnormal posturing and positive BERA results had statistically significant association with the improvement in WHIM Maximum( $p=0.01$  and  $p=0.04$ ) and WHIM Total scores.( $p=0.04$  and  $0.008$ ).Patients in minimally conscious state showed statistically significant improvement in the RLA( $p=0.006$ ) and GOSE scores. ( $p= 0.02$ ).

Normal cortical wave pattern in SSEP median, VEP and BERA studies and presence of P14 wave obtained in SSEP median study are associated with better outcomes. None of the patients had any adverse effects during the procedure which was completely non-invasive.

More careful selection criteria for inclusion of patients and a larger sample size with more hours of stimulation over a longer duration may show significant results, so that right median nerve stimulation can be an useful adjunct in the management of patients

in vegetative and minimally conscious states.

## **KEY WORDS**

Disorders of consciousness, Vegetative state, Minimally conscious state, Right Median nerve stimulation, CRSR, WHIM,RLAS and GOSE scales, SSEP Median, BERA, Diffuse axonal injury, Coma stimulation

# **Risk factors for diabetic peripheral neuropathy: a community based cross sectional study**

Names and Affiliations (Roles):

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## **Abstract**

### **Background**

Diabetic neuropathy which can lead to foot ulcers is a condition which needs to be identified early and measures taken to reduce complications.

### **Aims**

The objectives of the study were to assess the prevalence of peripheral neuropathy among diabetics aged 30 to 70 years, residing in a rural block and to study the association of peripheral neuropathy with risk factors for the same.

### **Methods**

A cross sectional study was conducted among all those with diabetes in seven villages of Kaniyambadi block aged 30 to 70 years, who had been identified as part of a previous survey. Peripheral neuropathy was assessed using 10g Semmes Weinstein monofilaments, tested on five sites per foot and risk factors using a questionnaire. Records were used to assess glycemic control and hyperlipidemia.

### **Results**

Out of 158 diabetics aged 30 to 70 years examined in the study area, peripheral neuropathy was found in 44% (95% CI: 36%-52%). Age greater than 55 years (OR: 2.78, 95% CI: 1.06-7.31) and education below five years (OR: 8.37, 95% CI: 2.79-25.08) were significantly associated with peripheral neuropathy, after adjusting for sex, duration of diabetes, socioeconomic status of the family, glycemic control, insulin use, hypertension, smoking, alcohol, lipids and body mass index.

## Conclusions

Our prevalence was similar to another study among diabetics in a secondary hospital in Vellore (47), but needs to be interpreted with caution due to high sensitivity but relatively low specificity of our screening test for peripheral neuropathy. However screening tests are primarily done to find those at increased risk. From the point of view of public health, higher prevalence means that more people will benefit from the advice offered. The high prevalence of peripheral neuropathy among rural diabetics points to the need for additional inputs to prevent complications related to diabetic neuropathy in rural populations.

Table 3 Comparison of coronary heart disease in 1991-94 and 2010-12 (30 to 60 years)

	Year of study	Age adjusted rates of CHD*	
		Rural	Urban
Males	1991-94	2.75 (2.05-3.45)	4.63 (3.51-5.75)
	2010-12	2.58 (1.72-3.44)	5.79 (4.27-7.31)
Females	1991-94	2.39 (1.80-2.98)	5.48 (4.32-6.63)

	2010-12	6.33 (5.19-7.47)	12.69 (10.62-14.78)
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\* adjusted to 2001 Census of India 30 to 60 years

# **Enteropathogen presence and gut inflammation in asymptomatic infants and children residing in different environmental conditions in Vellore town.**

**Authors:** Revathi R., Mohammad Azharuddin, Rini Bandyopadhyay, Ira Praharaj, Gagandeep Kang

**Departments & Institution:** Wellcome Trust Research Laboratory, Division of Gastrointestinal Sciences, Christian Medical College, Vellore

## **Background**

Environmental conditions are considered to play an important role in the acquisition of enteric pathogens which in turn are hypothesized to be one of the important factors for environmental enteropathy.

## **Aim**

To compare the profile of enteropathogens among asymptomatic children residing in two different localities in Vellore town and evaluate the levels of gut inflammatory biomarkers in these children.

## **Methods**

A total of 139 asymptomatic children (86 children from Chinnallapuram(CAP) slum area and 53 children residing in CMC campuses) were included in this study. Stool samples were collected and used for TNA Extraction by Qiagen Stool DNA mini kit with some modifications. Gut enteropathogens present were detected using TAC array card realtime PCR for enteropathogens which tests for 32 different enteropathogens. Faecal calprotectin(FC) and myeloperoxidase(MPO) levels were also quantitatively measured using commercial ELISA assays and the results were expressed in units of  $\mu\text{g/g}$  of samples for FC and  $\text{ng/ml}$  for fecal myeloperoxidase.

## **Results and Conclusions**

Of the 139 children studied, 93% (n=80) of children from CAP slum area were found to harbour enteropathogens compared to 71.7% of children residing in CMC campuses. Mean number of enteropathogens among samples from CAP children was 3.3(2.9-3.7) whereas that for CMC campuses children was 1.4(0.99-1.7). Looking at the different types of enteropathogens, higher proportion of children from the CAP slum, compared to those from CMC campuses were found to be positive for enteric viruses (72.1% vs 32.1%) as well as bacterial enteropathogens(84.9% vs 60.4%). While none of the children from CMC campuses tested positive for enteric parasites, 30.2% (n=26) of children from CAP slum were positive for enteric parasites. The median levels of fecal calprotectin(FC) as well as MPO were significantly higher in children residing in CAP slum compared to those in CMC campuses (median FC= 492 $\mu$ g/g vs 130 $\mu$ g/g; median fecal MPO= 8095 ng/ml vs 1080 ng/ml).

## **Profile of Common Mental Illnesses and Identifying the Caregivers' Knowledge Gaps in Perception of Mental Illness in Rural Tamil Nadu**

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## **BACKGROUND**

Worldwide about 10% of the population suffers from mental illness and World Health Organization estimates that by 2020 about 15% of global burden of disease will be due to mental illness. About 20% of the adult Indian population is affected with one or the other psychiatric disorders. Most of them are from rural areas and present initially to primary and secondary care centres. RUHSA's Mental Health Care Initiative has

started since 2009 providing training to Community workers and self-help groups to identify individuals with mental illnesses in the community with treatment support from Psychiatry Unit III and RUHSA's Occupational Therapist.

## **AIM**

To identify common mental conditions prevalent in the community and assess the knowledge gaps of caregivers regarding causes, signs & symptoms and perception towards mental illness with an intention to provide a health intervention program.

## **METHODS**

Cross-sectional study design was chosen and the study was conducted by a group of 3<sup>rd</sup> year MBBS students between 18<sup>th</sup> and 25<sup>th</sup> March, 2015. Chart review was done to know about psychiatric illnesses. 100 caregivers of mentally ill patients from K V Kuppam block were chosen by convenient sampling and semi-structured questionnaire was administered.

## **RESULTS and CONCLUSION**

Common mental illnesses seen in the community were Depression, Psychosis, Somatoform disorder, seizure disorder, anxiety and schizophrenia in that order. Most of the caregivers (73%) were between 30-60 years of age; about half of them had low educational status (46%). Most of them had good knowledge about signs and symptoms and considered counseling and medication as two most important modalities of treatment. Majority of the caregivers believed that they received good family and social support while governmental support was lacking. An awareness program about causes, signs and symptoms and other treatment options was conducted among the caregivers.

# **DRUG PRESCRIBING PATTERN IN PREGNANCY IN A SECONDARY CARE HOSPITAL IN SOUTH INDIA: A RETROSPECTIVE STUDY**

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## **BACKGROUND**

In pregnancy drug treatment presents a special concern due potential teratogenic effects of drug and physiologic alterations in mother. Pharmaco-epidemiological studies can help in minimizing the use of potentially dangerous drugs by establishing a profile of drug consumption, by monitoring the health services and by investigating interventional measures.

## **AIM**

This study was done to evaluate the drug prescribing pattern in pregnancy retrospectively among all the pregnant women, attending the ante-natal clinic (out-patient department), irrespective of the duration of pregnancy in Community Health and Development Hospital, Christian Medical College, Vellore, a secondary care hospital.

## **METHODS**

This cross sectional retrospective study was done for 3 months (from October to December, 2014) using pre-formatted forms and patient's records.

## **RESULTS**

A total of 326 including 46 different types of drugs were prescribed to 606 pregnant

women. Of these 46 different drugs, 3 fall under category A, 14 fall under category B, 19 under category C and 3 under category D. The pregnancy categories of 7 of these drugs are undetermined (category N). 8 different types of medications were started before being seen at the ante-natal clinic. Of these 8 types of drugs, 2 fall under category A, 2 under category B, 2 under category C and 2 under category N. No history of any addiction or intake of 'over the counter' medication was recorded.

## **CONCLUSION**

This study reflects a very good, safe and rational medication practice during pregnancy in various common disorders in a secondary care hospital and can be cited as an example to similar primary and secondary care hospitals in the country.

## **To assess the cardio-vascular status and morbidity of patients with COPD presenting in pulmonary medicine OPD- A Pilot Study**

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### **BACKGROUND**

COPD is fifth leading cause of death worldwide. Cardiac cause is attributed to 60% of all mortality.

### **AIM**

To assess cardiovascular comorbidities, echocardiographic changes and its correlation to pulmonary functions in patients COPD

### **METHODS**

A Cross sectional observational study for a period of 1 year from 1st July 2014 to 30th July 2015. Patients were recruited from outpatient department of Pulmonary Medicine, CMC Vellore. A total of 122 COPD patients who fulfill the study criteria were recruited by random sampling. A detailed medical history along with physical examination was done. Patient's cardiac and respiratory functions were assessed by appropriate blood tests, ECG, ECHO and PFT.

### **RESULTS**

Of 122 COPD patients - 8.2% had mild, 48.3% had moderate, 29.5% had severe and 13.9% had very severe grade of COPD (GOLD criteria) The most prevalent cardiovascular comorbidity was hypertension 40.2% followed by coronary artery disease 20%, previous MI 7.4% and cerebrovascular accident 4%. Prevalence of PAH as determined by transthoracic ECHO was 61% with 59.2%, 27.6% and 13.1% being mild, moderate and severe respectively. Increasing trend of PH was observed from 50.8% in mild, 77.7% moderate, 88.2% in very severe COPD, of these 23% had cor pulmonale. We observed increase in CP with severity of COPD and PH. LV and RV systolic dysfunction observed in 14% of the patients. LV diastolic Dysfunction was observed in 65.57% patient.

### **CONCLUSION**

There is significant prevalence of cardiovascular co morbidities in COPD We recommend regular cardiovascular screening in all COPD patients for early identification, monitoring and early treatment.

# **EFFECT OF DYSEMBRYOGENESIS IN CHILDREN WITH AUTISM**

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## **ABSTRACT**

### **BACKGROUND**

Autism Spectrum Disorder is a behaviourally defined disorder characterised by deficits in social communication (both verbal and non verbal) and presence of repetitive, restricted patterns of behaviour and interest. It is a heterogeneous condition with varying etiologies, most of them being genetic or environmental. Children with autism are known to have increased prevalence of dysmorphic features, suggesting altered embryogenesis. There is a lack of studies evaluating the effect of dysembryogenesis in children with autism.

### **OBJECTIVE**

Evaluate the effect of dysembryogenesis on the development of children with autism.

### **METHODOLOGY**

The Miles Autism Dysmorphology measure was used to classify 30 children with autism into complex autism (if they had dysmorphic markers) or essential autism (no dysmorphic markers). The development and the clinical severity of both groups were compared using standardized measures..

Prevalence of dysmorphic markers was also estimated among 140 normal children.

### **RESULTS**

Dysmorphic markers were more prevalent among autistic children compared to normal controls ( $p=0.0002$ ). Among the autistic children, 30% had complex autism and these children had earlier onset of stereotypic symptoms ( $p=0.0138$ ), earlier age of regression of language and social milestones ( $p=0.027$ ) and more developmental delay ( $p=0.0257$ ).

## **CONCLUSIONS**

Dysembryogenesis in the prenatal period may contribute to the heterogeneity seen in children with autism

**Keywords:** Autism; dysmorphism; complex autism; essential autism

**Poster Number: 85**

**A non-surgical animal model for long term catheter associated urinary tract infection, an immunopathological investigation**

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**Background**

Implantation of foreign bodies has become an essential component in almost all healthcare systems, which particularly played a major role in patient survival. However, the ability of microbes to adhere to the inert implant materials has notably contributed to the escalating problem of nosocomial infections, among which urinary tract being the most common site (30%-40%). Host immune system plays a major role to prevent the microbial adherence and proliferation. However, the inert catheter surface acts as a platform for biofilm formation thus helps to mask immune responses and treatment regimes. Till date, a defined scheme of host-pathogen interaction in CAUTI is limited.

**Aim**

Present study aimed to illustrate the immunopathological analysis of female Wistar rats with experimentally induced CAUTI associated long term catheterization.

**Materials and method**

Trans-urethral catheterization and subsequent inoculation of *P. aeruginosa* (MTCC 3541) was performed in female Wistar rats to induce CAUTI. Animals were divided into 3 groups; control group (no implant + no inoculum), insertion control group (sterile implant + no inoculum) and test group (implant + inoculum [ $10^{10}$  CFU/mL]). To ensure bacterial adhesion, bladder mucosal layer was damaged by mild acid base treatment, prior to inoculation. During the study period (45 days) the animals were sacrificed at regular intervals and organs (kidney and bladder) were extracted for bacteriological, gene expression (TLR-4 and NF $\kappa$ b) and histopathological (H&E and Alcian blue staining) analysis. Blood was collected and divided; heparanized (hematological analysis) and non-heparanized (for separating the serum). Inflammatory markers' (IL6, TNF $\alpha$  and MCP1) level in serum was quantified through sandwich ELISA technique. Urine (micro-protein, creatinine and urea) and serum (urea and creatinine) levels were quantified to verify the kidney damage. Implants were extracted and analyzed through SEM. Data was represented as Mean  $\pm$  SD (n=6) as all the statistical analysis was performed using two way ANNOVA and Bonferroni post-test. p<0.05 was considered significant through out the study.

**Results**

A non-surgical transurethral catheterization procedure was established in female Wistar rats for the induction of long term catheterization associated UTI. Significant bacterial lodgment was observed in kidneys from day 3 post infection (p.i.) onwards as the evaluation of kidney damage markers confirmed damage in kidney from the 7<sup>th</sup> day p.i. Irregular urinary urea levels were observed through out the study, explained well by the urease positive nature of *P. aeruginosa*. Elevated levels of cytokines in the serum corroborated well with the hematological observations, in the study. Histopathological evaluation of kidney and bladder was in agreement with the biochemical and the ELISA observations. qRT-PCR analysis exhibited an elevated expression level of TLR-4 and NF $\kappa$ b, corresponding to the microbial lodgment, confirming the activation of LPS mediated inflammation pathway. Scanning electron micrographs revealed the encrustations within the implant's lumen.

## **Conclusion**

To the best of our knowledge, this is the first kind of study for long term catheterization associated UTI.

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## **Poster Number: 86**

### **“Plasmid associated multi-drug resistant bacteria isolated from poultry litter”.**

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## **Background**

Multi-drug resistant bacterial infections cause serious health problems worldwide. Uncontrolled use of antibiotics in poultry production has been linked to the presence of antibiotic resistant bacteria in poultry environment and product consumers. **Aim:** To isolate the multi-drug resistant bacteria from poultry litter.

## **Methods**

Samples were collected from three poultry farms in Karur district with the breeds around 50 to 85 days old to make sure that dosage of different drugs were completed. Serial dilution was performed with addition of different antibiotics (10mg/L each of meropenem, cefotaxime, ampicillin, tetracycline and 5mg/L of colistin). Different colonies were selected based on morphology and identification by 16S rRNA sequencing and MIC was performed. Based on MIC results strains were selected for PCR amplification of resistant genes (CTX-M, NDM-1,

IMP, OXA, KPC). Plasmid was isolated and transconjugation experiments were performed to study the conjugation efficiency using *E. coli* AB1157.

## **Results**

Multi-drug resistant isolates were screened after serial dilution with different antibiotics. MIC results showed that 78 isolates were resistant to all the tested antibiotics (CLSI guidelines) and isolates were identified by 16S rRNA sequencing to be *Staphylococcus sciuri*. Screening of resistant genes showed 2 isolates carried NDM-1, 5 with CTX-M and 8 with IMP. Plasmid was isolated from all the resistant isolates and transconjugation experiments reveal that plasmid was successfully transformed to recipient (*E. coli* AB1157) to make them resistant that was confirmed by PCR.

## **Conclusion**

The results of this study illustrate the persistence of resistant bacteria in the environment, and highlight the spread of resistance associated with the use of antibiotics as a feed additive in poultry production. Though *S. sciuri* was associated with chicken its conjugation of drug resistance to other strains increases the potential for human exposure to drug resistant bacteria.

**Poster Number: 87**

## **Synergism between PAG and CP-96,345 on the production of cytokines and adhesion molecules in acute pancreatitis associated lung injury**

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## **Background**

Acute pancreatitis is an autodigestive process resulting in acute inflammation of the pancreas. In the most severe forms of acute pancreatitis, acute lung injury and respiratory distress syndrome often occurs in the early stages and can lead to early death. <sup>1</sup>Although its pathogenesis is still incompletely resolved, several inflammatory mediators including cytokines, adhesion molecules, hydrogen sulfide (H<sub>2</sub>S) and substance P (SP) are involved during different phases of disease severity. We still lack effective treatment directed at underlying pathophysiological mechanisms.

## **Objectives**

This study aimed to investigate the synergistic effect of CP-96,345 (specific neurokinin-1 receptor (NK1R) antagonist), and DL-propargylglycine (irreversible inhibitor of cystathionine- $\gamma$ -lyase (CSE)), on the regulation of the expression of cytokines TNF- $\alpha$  and IL-1 $\beta$  and adhesion

molecules E-selectin, and P-selectin as well as Myeloperoxidase (MPO) activity in acute pancreatitis associated lung injury (APALI) via NF- $\kappa$ B.

## **Methods**

Acute pancreatitis was induced in male Swiss albino mice by 10 consecutive hourly intraperitoneal injections of cerulein (50 $\mu$ g/kg). Intraperitoneal injection of PAG (100 mg/kg) alone or CP-96,345 (2.5 mg/kg) alone or in combination was administered one hour after the first cerulein injection. Animals were killed, and the lungs were isolated for RT-PCR, ELISA and western blot.

## **Results**

PAG and CP-96,345 alone or in combination eliminated cerulein-induced increase in pulmonary TNF- $\alpha$ , IL-1 $\beta$ , E-selectin, P-selectin and NF- $\kappa$ B. The combined use of these inhibitors produced greater inhibition than the use of any inhibitor alone and reduces cerulein-induced lung NF- $\kappa$ B activity to a similar extent as BAY-11, 70 82.

## **Conclusions**

The present findings show for the first time that combined SP and H<sub>2</sub>S inhibition results in a marked synergistic inhibition of TNF- $\alpha$ , IL-1 $\beta$ , E-selectin and P-selectin in APALI via NF- $\kappa$ B pathway.

**Poster Number: 88**

**Isolation And Characterization Of Pigment Producing Halotolerant Bacteria And Comparative Analysis Of Enzyme Involved In Biosynthesis Of Pigments**

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**ABSTRACT:**

Sea water contains diverse microbial population. Microbial diversity arises due to the evolutionary changes in the microbes in response to stressful conditions like hyper salinity, low oxygen concentration, high or low temperatures, low nutrient availability, and presence of toxic compounds. High salinity led to the evolution of halobacteria. As an adaptive strategy, these organisms produce several metabolites (Enzymes, pigments, siderophores etc.) for their survival. Also, in industries, there is raising imposition for the use of metabolites which can exhibit activity in a wide range of salt concentration. The microbial pigments can be exploited, as they offer significant advantages like use in therapeutics/diagnostics, easy accessibility, GRAS (Generally Recognized As Safe) and it can be produced in short time. These microbial pigments have the potential to be used in pharmaceutical industries, food, cosmetics and textile industries. In the present study, soil samples were collected from Marakkanam saltern, Tamil Nadu. A total of 6 pigment producing strains were isolated. Taxonomic characterization revealed that two of these strains were *Bacillus* sp. and four of them were *Halobacillus* sp. To start with, the pigments from *Planococcus maritimus* VITP21 were purified using preparative TLC and were partially characterized by conventional spectroscopic methods. The results revealed that the pigment could possibly be a carotenoid. As phytoene synthase is one of the important enzyme in the biosynthesis of this class of pigments, a comparative analysis of the aminoacid sequence and three dimensional structure of phytoene synthase was performed.

**Poster Number: 89**

**In Vitro And In Vivo Antidiabetic Activities Of Methanolic Leaf Extract Of  
Acanthus Ilicifolius**

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**ABSTRACT**

**Background**

Diabetes is a complex, chronic metabolic disorder. Synthetic drugs are commonly prescribed to manage the diabetes. Since these drugs have undesirable side effects the world has turned towards the traditional treatment for diabetes. Medicinal plants offer an exciting opportunity to develop them into novel therapeutics that are considered to be less toxic with lower side effects and cost effective than synthetic drugs. One among the important plant is *Acanthus ilicifolius*, a mangrove plant belongs to acanthaceae family found in coastal areas.

**Aim**

The main aim was to investigate the *in vitro* cytotoxicity and glucose uptake study in L6 cell lines, *in vivo* acute toxicity and antidiabetic activity of methanolic leaf extract of *Acanthus ilicifolius* (MEAIL) in STZ induced diabetic rats.

**Methods**

Cytotoxic effect of the extract was evaluated by MTT assay and *in vitro* antidiabetic effect was studied using the glucose uptake in rodent skeletal muscle cells (L6 cell line) involved in glucose utilization. Acute toxicity studies were done for 14 days. Type II diabetes was confirmed after 3 days of single intraperitoneal injection of STZ (50mg/kg bw) in Wistar rats. MEAIL (200,400 mg/kg bw) and glibenclamide (5 mg/kg bw) were administered orally for 48 days. Body weight and glucose levels were recorded for every week. After the study period overnight fasted rats were sacrificed. Blood and tissues were collected for further analysis.

**Results**

MEAIL enhances glucose uptake by  $56.27 \pm 2.19\%$  over control at 100  $\mu\text{g/ml}$  dose and also when compared with standard insulin (1U/ml). MEAIL up to 3000 mg/kg bw did not show any acute toxicity. On treatment with 100, 200 mg/kg body weight of MEAIL the diabetic rats showed significant reduction in fasting blood glucose, HbA<sub>1c</sub>, cholesterol, triglycerides, SGOT, SGPT, urea, creatinine and increase in body weight, HDL, total protein and electrolytes ( $p \leq 0.05$ ) when compared with diabetic control and glibenclamide treated groups.

**Conclusion**

In vitro and in vivo studies revealed that MEAIL has antidiabetic and antihyperlipidemic activity. However, isolation and characterization of the active principle are needed to elucidate the exact mechanism of action, which may lead to development of new novel antidiabetic drug

**Poster Number: 126**

**Towards finding potential therapeutic targets for neurodegenerative diseases**

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**Abstract**

Protein Kinases are known to be involved in brain stroke during hypoxia. In the mammalian central nervous system glutamate is the major excitatory transmitter which plays an essential role in neural development, excitatory synaptic transmission, and plasticity during ischemia. However, glutamate accumulates at synapses causes the extensive stimulation of its receptors, which can be toxic to neurons. Glutamate is responsible to activate three classes of ionophore-linked post-synaptic receptors, namely N-methyl-D-aspartate (NMDA),  $\alpha$ -amino-3-hydroxy-5-methyl-4-isoxazole propionic acid (AMPA), and kainate receptors. Activation of NMDA receptors involves two events: (1) binding of the co-agonists glycine and glutamate, and (2) simultaneous membrane depolarization, which removes the  $Mg^{2+}$  blockage of the channel pore, leading to the influx of  $Ca^{2+}$ . Further under physiological conditions, the entrance of  $Ca^{2+}$  produces partial inhibition of NMDA receptors via  $Ca^{2+}$ -dependent inactivation, thereby preventing the intracellular  $Ca^{2+}$  overload. However Under pathological conditions this negative feedback in  $Ca^{2+}$  regulation of NMDA receptors is disabled, resulting in excessive  $Ca^{2+}$  influx through the receptor channels.  $Ca^{2+}$  overload triggers multiple intracellular events that induce irreversible death of neuron cells. Recently a kinase protein is reported to act as a specific NMDA receptor “cell death signal” at extrasynaptic sites, where the kinase protein interact with NMDA receptor and leads to the neuronal cell death due to excitotoxicity. So, here our aim is to study to the mechanisms involved in neuronal survival and design modulators using *in-silico* approaches.