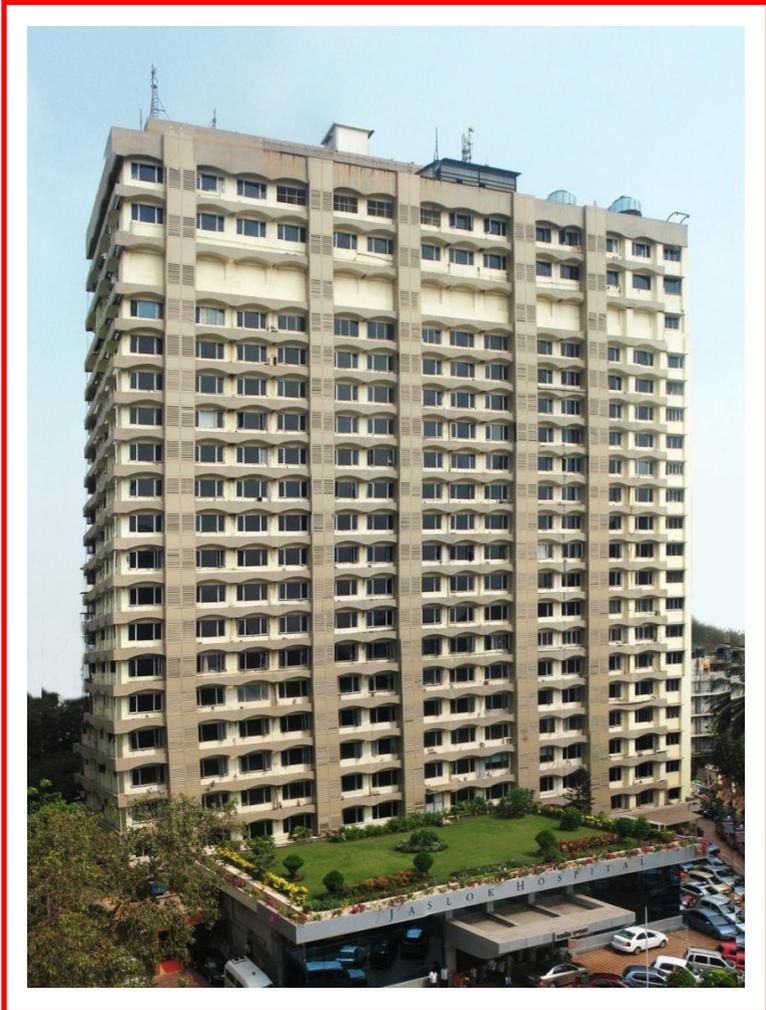




Jaslok Hospital & Research Centre, Mumbai

**Research eBulletin**

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## From the Chairman's Desk

Research is the process of creating new knowledge and it is one of the keys to the success of an institution. In an attempt to develop and build Jaslok as an institution with multiple centers of excellence, it is realized that research would play a pivotal role. Hence, it gives me great satisfaction and immense pleasure to inaugurate this Research eBulletin of our organization.

The objective is to support and promote a culture of research and innovation that is result driven. To achieve this objective, we are putting in place systems and procedures that will formalize all aspects of research through our Apex Committee for Research. We have started releasing a series of SOP's that will serve as a guide for all projects to follow.

I am pleased to announce that funding to the tune of Rs. 2 cr will be provided for the remaining portion of this financial year and Rs. 5 cr for the next financial year, to support good projects that would contribute towards the growth of knowledge and innovations useful for our patients.

With best wishes,

**Mr. Vinod (Gulu) Chanrai**

**Chairman, Apex Committee for Research**

## Editorial

### **Integrating Research into Clinical Practice**

Over twenty-five years ago, on joining the Jaslok Hospital & Research Centre, I sought the advice of some senior physicians on balancing my research interests with clinical practice. Almost all of them were skeptical that it could be done. I thought that difficult though it might be, it would certainly be worth attempting a balance between the two.

While not being the best judge of the success of this endeavour, I can unequivocally vouch for the immense joy that both activities have given me over the years. This year we want to induct some more of our consultants and residents into research. Hence this eBulletin which will provide regular reports of our research activities and hopefully enthuse more of us to participate in our institution's research projects. We look forward to reporting the resultant publications in this eBulletin.

The Jaslok Hospital & Research Centre was the first institution of its kind in the country. Great medical institutions across the world have built their reputations on the quality of their research. By integrating research into our clinical practice we can together ensure our institution's rightful position amongst the leading medical centres of the world. Besides, we can experience the tremendous joy of attaining balance in our profession.

**Rajesh M. Parikh, M.D., D.P.M., D.N.B.**

**Director, Medical Research**

## Research News

1. Dr. Hemant Rathore (DNB trainee in the Department of Nuclear Medicine) under the guidance of Dr Vikram Lele has submitted his research work on “Impact of use of ultrahigh resolution Fan beam Collimator in interpretation of Tc-TRODAT scans and comparison of image quality with Low Energy High Resolution collimator by inter-observer agreement using kappa statistics” in an annual international conference of the European Association of Nuclear Medicine (EANM 2015), Hamburg, Germany. This has been accepted for oral paper presentation.
2. Dr. Tattwamasi Bharadwaj (DNB trainee in the Department of Nuclear Medicine) under the guidance of Dr Vikram Lele has submitted his research work on “Assessment of Response in patients receiving  $^{177}\text{Lu}$ -DOTA-(Tyr3)-Octreotate therapy in a tertiary care centre in Western India” in an annual international conference of the European Association of Nuclear Medicine (EANM 2015), Hamburg, Germany. This has been accepted for poster presentation.

## Abstracts

### **Functional imaging in primary tumour-induced osteomalacia: relative performance of FDG PET/CT vs somatostatin receptor-based functional scans: a series of nine patients**

*Jadhav S, Kasaliwal R, Lele V, Rangarajan V, Chandra P, Shah H, Malhotra G, Jagtap V, Budyal S, Lila AR, Bandgar T, Shah NS*

**Clinical Endocrinology (Oxf). 2014; 81(1):31-37.**

**Context:** Localization of phosphatonin-producing mesenchymal tumours in patients with primary tumour-induced osteomalacia (pTIO) is challenging. Functional imaging plays an important role in the localization of these tumours.

**Objective:** We studied the relative performance of different functional imaging modalities (18F-FDG PET/CT,  $^{99}\text{Tc}$ -HYNIC-TOC SPECT/CT and  $^{68}\text{Ga}$ -DOTATATE PET/CT) in tumour localization in cases of pTIO.

**Design and Methods:** Retrospective chart evaluation of 16 patients with confirmed TIO treated from 2006 to 2013 was conducted in a tertiary care referral centre.

**Results:** Of 16, nine patients had pTIO. In these nine, the positivity rates of different functional imaging modalities were 50% for 18 F-FDG PET/CT (four of eight patients), 100% for  $^{99}\text{Tc}$ -HYNIC-TOC SPECT/CT (six of six patients) and 100% for  $^{68}\text{Ga}$ -DOTATATE PET/CT (seven of seven patients). Of nine patients, six were subjected to both the  $^{99}\text{Tc}$ -HYNIC-TOC SPECT/CT and  $^{68}\text{Ga}$ -DOTATATE PET/CT and all of them showed coregistration on the two scans.

**Conclusions:** In patients with pTIO, the somatostatin receptor-based functional scans performed better than 18F-FDG PET/CT in tumour localization. Amongst the somatostatin receptor-based scans,  $^{99}\text{Tc}$ -HYNIC-TOC SPECT/CT and  $^{68}\text{Ga}$ -DOTATATE PET/CT performed equally well for localization of tumours.

### **PGD by FISH for a reciprocal translocation: First baby from India**

*Dattatray J. Naik, Prochi F. Madon, Nandkishor J. Naik, Arundhati S. Athalye, Firuza R. Parikh*

**Journal of Fetal Medicine 2014; 1:41-43.**

A couple with a history of five early miscarriages due to a balanced reciprocal translocation t(6;19)(p22;q13.4) in the wife, was referred for preimplantation genetic diagnosis (PGD) by fluorescence in situ hybridization (FISH). After oocyte retrieval, nine embryos were obtained. One cell from each embryo was biopsied, fixed and subjected to FISH using centromere and subtelomere probes for chromosomes 6 and 19. Five embryos which had unbalanced translocations, were not transferred. A balanced translocation or absence of translocation was seen in three embryos, which were transferred. One embryo had an anucleate cell and subsequently arrested. A pregnancy was achieved in the first intracytoplasmic sperm injection cycle itself and resulted in the birth of a healthy baby. This is the first baby after PGD for a reciprocal translocation in India. In 2010, the team of the authors reported the first successful pregnancy after PGD for a Robertsonian translocation in India and a normal child was born.

### **HBx gene expression is a sensitive indicator of chronic Hepatitis B infection than expression of HBV Surface, Core and Polymerase gene**

*Pravin Potdar, Sanjukta Tyagi*

**International Journal of Current Microbiology and Applied Sciences 2014;3(10): 765-774.**

Recent studies have shown that chronic HBV infection may be responsible for development of hepatocellular carcinoma (HCC) and cirrhosis of liver and therefore the correlation and involvement of HBx gene in the development of HBV-related HCC and cirrhosis is one of the prime focus of researchers in the biomedical field. Many researchers are working on diagnostic front in order to fight the battle against HBV. In order to control the established infections, perfect diagnosis of chronic HBV infection is very important. Development of molecular diagnostic programs help to introduce PCR based diagnosis as the only diagnostic method which can detect HBV DNA at low copy number. We therefore propose to analyse the expression of all HBV genes such as pre S, Core, Polymerase and X in the infected patients from Western India. According to our analysis, HBx gene was found to be the most sensitive gene for diagnosis of chronic HBV infection as compared to other three genes. Positive expression of HBx gene was observed not only in samples below the viral load of  $1 \times 10^3$  DNA copies/mL, but also in samples with undetectable viral load when analyzed by conventional PCR for Pre S, Core and Polymerase gene. Hence we report here that HBx gene can be used as best biomarker to monitor minimal residual infection in HBV infected patients. This study further suggests the use of HBx DNA PCR as a primary approach in the diagnosis and management of chronic HBV infection.

## **Artificial neural network application in the diagnosis of disease conditions with liver ultrasound images**

*Karthik Kalyan, Binal Jakhia, Ramchandra Lele, Mukund Joshi, Abhay Chowdhary*  
**Advances in Bioinformatics. Volume 2014 (2014), Article ID 708279.**

The preliminary study presented within this paper shows a comparative study of various texture features extracted from liver ultrasonic images by employing Multilayer Perceptron (MLP), a type of artificial neural network, to study the presence of disease conditions. An ultrasound (US) image shows echo-texture patterns, which defines the organ characteristics. Ultrasound images of liver disease conditions such as “fatty liver,” “cirrhosis,” and “hepatomegaly” produce distinctive echo patterns. However, various ultrasound imaging artefacts and speckle noise make these echo-texture patterns difficult to identify and often hard to distinguish visually. Here, based on the extracted features from the ultrasonic images, we employed an artificial neural network for the diagnosis of disease conditions in liver and finding of the best classifier that distinguishes between abnormal and normal conditions of the liver. Comparison of the overall performance of all the feature classifiers concluded that “mixed feature set” is the best feature set. It showed an excellent rate of accuracy for the training data set. The gray level run length matrix (GLRLM) feature shows better results when the network was tested against unknown data.

## **Successful re-transplantation after graft loss due to BK virus nephropathy**

*Madan Bahadur, Vishal Ramteke, Chandan Chaudhary, Shaila Khubchandani*  
**Indian Journal of Transplantation, 2014, 8(3): 84-86.**

BK virus nephropathy (BKVN) is recognized as one of the major causes of renal allograft loss in recent years. A number of successful retransplantations have been reported worldwide, however the Indian data is singularly lacking in the same. Additionally, the need to perform an original graft nephrectomy before retransplantation is a debatable issue. We report a case of successful retransplantation in a young male with previous graft loss due to BKVN which to the best of our knowledge is the first reported case in the Indian literature.

## **Aortic dissection one year after aortic valve replacement**

*Ali Asgar Behranwala, Shyam Handa, Nihar Mehta*  
**Asian Cardiovascular and Thoracic Annals 2014, 22(9): 1099-1102.**

Acute aortic dissection after aortic valve replacement is rare. A 57-year-old man presented with an acute type A aortic dissection one year after aortic valve replacement, which originated from the previous aortotomy site. He underwent a Bentall procedure. Postoperatively, he developed complete heart block requiring permanent pacemaker implantation. During aortic valve replacement, risk factors for aortic dissection (diameter of the aorta and fragility and thinness of the aortic wall) should be assessed. Prophylactic aortic root replacement should be undertaken if the aortic root is more than 45 mm in diameter.

## **Modified regimen of Etanercept for tumor necrosis factor receptor associated periodic syndrome (TRAPS) like illness**

*Anita Dhanrajani, Raju Khubchandani*

**Indian Pediatrics 2014; 51(1):53-54.**

Background: TRAPS, an autosomal dominant auto inflammatory disorder occurs due to mutations of the TNFRSF1A gene. Mutation negative TRAPS (TRAPS like illness) is also known. Anti TNF molecules (Etanercept) is the mainstay of therapy.

Case characteristics: A 11-year-old boy with a 5 year clinical profile indicative of a TRAPS like illness and with negative mutation studies is described. He has been followed up for nearly 2 years after starting Etanercept.

Outcome: He had sustained response to Etanercept which has subsequently been titrated (0.4 mg/kg subcutaneously every 23-24 days) to keep him symptom free.

Message: Mutation negative cases of TRAPS can be diagnosed with a high index of suspicion. Treatment with Etanercept is expensive but possibly intervals between doses could be titrated to reduce cost.

## **Bilateral pedunculopontine nucleus stimulation for progressive supranuclear palsy**

*Paresh Doshi, Joy Desai, Bharati Karkera, Pettarusp Wadia*

**Stereotactic and Functional Neurosurgery 2015;93:59-65**

The pedunculopontine nucleus (PPN) is a potential target for gait disorders. We report 4 cases of bilateral PPN stimulation in progressive supranuclear palsy (PSP) patients with short term (6 months) and long-term (18 months) follow-ups. Patients with PSP who had gait disturbances, but were able to walk with or without assistance, were selected. The patients' median age was 64 years and the disease duration 3 years. Bilateral PPN deep brain stimulation (DBS) was performed. The pacemaker was programmed using a bipolar mode and lower frequencies (20-45 Hz). The PSP rating scores (PSPRS) and their gait subscores (No. 25, 26, 27 and 28) along with PSP staging scores were used as primary end points. The total Unified Parkinson's Disease Rating Scale (UPDRS), UPDRS III and the 39-item Parkinson's Disease Questionnaire were considered as secondary end points. Video recording of the gaits were performed before surgery and at the 6 and 18 month follow-ups. These were retrospectively reviewed by a blinded neurologist for the primary end points. At the 6- and 18-month follow-ups, the median change in PSPRS was from 33 (baseline) to 37.5 and 47, respectively. Similarly, the PSP staging changed from 3 to 2.5 and 3.5, item 25 from 1.5 to 2 and 3.5, item 26 from 2.5 to 2 and 3.5, item 27 from 3.5 to 3 and 3.5 and item 28 from 1.5 to 1.5 and 3. Two patients in the study with the PSP-parkinsonism phenotype experienced improvement in their gait until the last follow-up. Bilateral PPN DBS can be safely performed in PSP patients despite mid-brain atrophy.

# Nobel Prize in Medicine & Physiology 2014

## Our Brain's Navigation System Discovered!

How do we know where we are, where we went and how we can reach our next destination? These routine mental operations all require an internal map of our surroundings that contains all the places we experienced and the multiple paths that we took to go from one place to another. The so-called place and grid cells are two of the major neuron types that function as elementary parts in the brain's positioning system. A place cell becomes active only in a particular location or near a particular landmark in the environment, whereas a grid cell's activity peaks in multiple, equidistant places to form a geometric pattern akin to that formed by the intersections of a grid on a city map.

Last year's Nobel prize was shared by John O'Keefe of University College of London for his discovery of place cells and jointly by May-Britt & Edvard Moser, a couple from Norway, for their discovery of grid cells. By supporting the sense of space and place, grid cells also enable mental projections into the future and the past, where events take place in specific spatial contexts.

## Research Events

- 1) Apex Committee for Research (ACR):
  - a) The ACR was constituted at the initiative of our Trustee Mr. Vinod Chanrai and CEO Dr. Tarang Gianchandani in January 2015 to advise the board of trustees on matters relating to the planning, budgeting, evaluation and promotion of the hospital's basic and clinical research activities. It consists of 16 members who have met on five occasions in the current year.
  - b) Actions taken by ACR are evaluation of past research of the hospital, guidelines for evaluating future research, creation of SOPs for various aspects of research, collating data on research dissertations of DNB students, appointment of a statistician, financial planning and this Research eBulletin.
  - c) Actions initiated by ACR are the integration of electronic medical records (EMR) with research requirements, incentivising research for resident doctors, the formation of a mentorship committee for research, workshops on research, focus on publishing research dissertations and the promotion of nursing research.
- 2) Research Workshop: "The Precision and Joy of Medical Research" was held by Drs. Tarang Gianchandani, Atul Adaniya and Rajesh Parikh on 22/09/2015.

### **Editorial Board:**

Drs. Tarang Gianchandani, Rajesh Parikh, Fazal Nabi, Nihar Mehta, Prochi Madon & Pravin Agrawal.