Editorial: Advances in Neurology

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There have been great strides in the field of neuroscience in the past decade. This explosion of knowledge has helped us gain new insights into brain function as well as hitherto little-understood neurological disorders. Advances in genetics and imaging have led in this understanding. Therapeutics have lagged behind basic research and diagnostics, although there are many interesting treatments on the horizon as has been outlined by some of the authors in this symposium on neurology which is included in the present and the subsequent issue of the journal.

Dr. Manohar Shroff, Director of Neuroradiology and his team from the Hospital for Sick Children in Toronto give us an overview of advances in neuroimaging [1]. MRI has advanced beyond looking at structural alterations in the human brain. The article helps us understand how we can map white matter tracts with Diffusion Tensor Imaging (DTI), how we can localize sensorimotor, visual, language and other complex cognitive functions using the functional MRI (fMRI), look at the biochemical alterations in, for instance neurometabolic disease, with MR Spectroscopy (MRS) and look at perfusion of normal and diseased brain areas to help in diagnosis and treatment decisions in brain tumours and strokes.

Neurocysticercosis (NCC) remains the most common cause of the symptomatic epilepsies in India and to date there is a lot of confusion on what is the best way to diagnose and manage different forms of this condition. Professor Pratibha Singhi of the Post-Graduate Institute of Medical Education & Research, Chandigarh has through her many publications on

the subject clarified many of these vexing questions related to NCC. In this review she discusses the life cycle of the parasite, the characteristics of the types of NCC—both pathological and on imaging and the ideal diagnostic imaging sequences. She also highlights the many management controversies in NCC especially treatment of the granuloma stage of the disease. Anticysticidal drugs and steroids are discussed at length [2].

Dr. Venkataraman of the CHILD Trust and Apollo Hospital in Chennai is a leading neuromuscular disease expert who revisits an old disease—Duchenne Muscular Dystrophy (DMD) and Becker's Muscular Dystrophy (BMD) [3]. Over the last three decades the initial discovery of the genetic / protein defects of these disorders have now culminated in clinical treatment trials of exon-skipping and other therapies. This article succinctly outlines the genetic basis of the dystrophinopathies and how one should use this knowledge in counseling patients and their families in prevention of this dreaded disease not only in the proband's family but also in the extended maternal family. He also emphasizes the clinical stages of the disease and how to manage the patient at different stages including important issues like respiratory care. The current status of steroids in DMD is also discussed.

Dr. Mahendranath Moharir and his Pediatric Stroke team from the Hospital for Sick Children in Toronto, Canada review pediatric stroke [4]. The most accepted guidelines in diagnosis and management of pediatric stroke have been spearheaded by Dr. Moharir's mentor Professor Gabrielle DeVeber from the same institution. We realize that infections are the most common cause of strokes in India. The role of thrombophilic factors are clarified and the specific management of Moya-Moya disease and Sickle-Cell disease associated stroke is reviewed. The syndrome of Transient Cerebral Arteriopathy—a common stroke syndrome seen only in children and the role played by the Varicella-Zoster and other

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infections is emphasized. As there are no real randomized controlled trials for the role of anti-platelet agents, anticoagulant therapy and thrombolysis in pediatric stroke, current internationally accepted recommendations are highlighted.

The second part of this symposium contains an article by Dr. Soonu Udani, Director of the Pediatric/Neonatal ICU at the Hinduja Hospital in Mumbai who has emphasized the importance of neuroprotection for improving the quality of survival in brain injured children [5]. The point has been made that maintaining cerebral perfusion is the key factor in ensuring a good outcome. Hypertonic saline seems to score over mannitol in reducing ICP. Monitoring basic vital signs and routine chemistries should not be compromised at any cost is a key message. The current status of advanced monitoring techniques like ICP monitoring as well as cerebral function monitoring/cEEG have been highlighted.

I have outlined the present status of epilepsy surgery in children [6]. We at the Hinduja Hospital in Mumbai have a small experience since the last several years in evaluation and surgical treatment of children with refractory epilepsies. This field which took off in the 1980s in the western world had its beginnings in India in the late 1990s at our institution and other major centers in the country but unfortunately the total number of children treated are about 1500, a fraction of eligible candidates.

Finally there is an article by Professor Satyakam Bhagavati who is a neuroscientist at the Health Science Center in Brooklyn, New York and has spent several years in basic stem cell research [7]. Stem cell therapy in neurological diseases has a huge potential but the present way in which it is being used in the Indian setting leaves a lot to be desired. Any condition which does not have a specific therapy is being treated with stem cell infusions usually mesenchymal stem cells (MSC)

from the patient's own bone marrow. According to the author "MSC do not satisfy the hallmark characteristics of stem cells in vivo. The justification for their clinical use often lags behind laboratory observations and many studies lack scientific rigor. Insufficient data often makes it unclear whether the transplanted cells satisfy the criterion for being called stem cells..... No therapy based on MSC has received approval from the FDA (USA) to date". This article details the types of stem cells, challenges in stem cell therapies and the current state of clinical trials using stem cells. It is hoped that after reading this lucid review, the pediatrician would be able to advise his / her patients about the current status of stem cell therapies.

This symposium has taken a lot of effort and time and I sincerely hope that the readership of this prestigious journal find it of benefit.

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