wssfn
World Society for Stereotactic and Functional Neurosurgery
NEWSLETTER
FALL 2011

patient care | teaching | research

Letter From The President

Dear Members,

At around 2:30 pm on March 11th, 2011, I was checking in for a flight from Shanghai to Tokyo, and suddenly an American businessman queuing just behind me shouted, "Big earthquake in Japan!" He showed me the news with his i-phone. I think everybody in the world then witnessed the unbelievable catastrophic scene of the earthquake and tsunami.

Months have passed since then and daily life at least in Tokyo returned almost normal. Of course, there are still many difficulties in the northern part of Japan. The earthquake area is called "Tohoku" of which literary meaning is "north-east". Because of cold climate in this area, they suffered severe famine many times until about 100 years ago. Such history made Tohoku people stronger and tougher, and I do hope we can overcome with "Tohoku" spirit.

Despite unbelievably large-scale damage to the super-speed railways, they recovered within a month. I was amazed that the methods for recovery were very primitive. Rail workers "walked" along the 300-kilometer rail and checked every damaged part only with visual inspection and auscultation. They estimated the extent of damage of concrete pillars and bridges by listening to hammer-knock sounds. It was a manual handicraft, really, quite satisfying in a way. Now, again the trains run at 300km/h with very accurate minute-base schedule. I believe such "craftsmanship" is definitely indispensable in our specialty of neurosurgery.

Of course, hospital services in Tohoku also became chaotic. Top-down structured arrangement by the government was too slow and almost useless. What was really useful was direct communications among health workers through internet. They were able to respond immediately to live information from the spot. Such communication was especially smooth when they had known to each other through ordinary medical meetings. I believe communication among WSSFN members also played an important role to encourage many doctors. I received many heartfelt messages from all over the world and I really appreciate their kind and warm encouragement.

The issue of the nuclear power plant is a big concern, but biological adverse effect is negligible in most part of Japan including Tokyo. Many people over-reacted even without pointing out the risk of medical radiation exposure. We doctors should behave as scientist, and so please do not hesitate at all to visit Japan.

With best regards,
President, WSSFN
Takaomi Taira, MD, PhD

Letter From The Editor

Welcome to the fall edition of the newsletter. We continue to highlight the accomplishments of our membership in this edition. Our featured young functional neurosurgeon in this issue is Ash Sharan, on page 2. The lifetime career accomplishments of two prominent functional neurosurgeons are emphasized by the Ohye and Tsubokawa awards. We have lost important members of our community as well, and we pay our respects at the end of this issue. In between, we highlight the ongoing efforts to grow the society through the outreach program, educational developments in the ASSFN, and the early reports of deep brain stimulation for obesity. We hope this update is helpful, and as always, we are dependent on the membership for suggestions as to what material should be included. Please send us your requests and submissions!

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Founded in 1961 as the International Society for Research in Stereoencephalotomy

FEATURED NEUROSURGEON:

Ashwini D. Sharan, MD

Dr. Sharan is an Associate Professor in the Department of Neurosurgery at Thomas Jefferson University in Philadelphia, Pennsylvania. He also holds the role of Program Director for the Neurosurgical residency and is the Director of Functional Neurosurgery at this major academic center.

Dr. Sharan was born in Patna, a small city in Northeast India. In 1971, he and his family immigrated to the United States. His father, Guru Dayal Sharan, worked as an Engineering Audit Officer and his mother, Kumud Sharan, worked as a Senior Technical Advisor while raising him in Edison, New Jersey. This city is unique in that it hosts one of America's largest Indian populations. His parents brought him up with traditional Indian values and arranged for him to marry Kanu Priya. In 1995, Dr. Sharan travelled to India where he married Dr. Kanu Priya, daughter of Raj Kishore Prasad, then Chairman of Ground Water Board, India. Dr. Kanu Priya Sharan is presently an Assistant Professor of Oncology and Hematology at Cooper Medical Center. She is a well accomplished physician and is board certified in oncology, hematology, and internal medicine. Together, they have 2 daughters, Isha Priya and Maansi Dayal.

In 1995, Dr. Sharan completed his BA-MD degree from Boston University and UMDNJ - Newark, New Jersey in an accelerated medical program. He completed the majority of his neurosurgical residency at Thomas Jefferson University and then pursued a dual fellowship in both spine surgery and functional neurosurgery at the Cleveland Clinic under Dr. Edward Benzel and Dr. Ali Rezai.

Dr. Sharan's practice at Thomas Jefferson University includes a busy caseload of about 200 yearly spine cases including spinal trauma, spinal cord tumors, and degenerative disease. His expertise additionally includes deep brain stimulation (DBS) for movement disorders, intrathecal pump therapy, spinal cord stimulation for chronic pain disorders, and vagal nerve stimulation for epilepsy. As leader of the Jefferson Comprehensive Epilepsy program, he performs approximately 100 operations per year for intractable seizures. Despite his active clinical practice, Dr. Sharan has been very productive as an academician. He has been the recipient of the William H. Sweet Young Investigator Award and the William Buchhiet teacher of the year award. Dr. Sharan has been a co-investigator on several National Institutes of Health (NIH) funded projects including research on the safety of deep brain stimulation devices, on the genetic basis of epilepsy, and on neuronal dysfunction in AIDS.

Dr. Sharan's academic work in functional neurosurgery has been particularly impressive. In addition to his NIH-funded work, he has successfully collaborated with industry to push forward the frontier of neurostimulation. He has been a surgeon investigator in multiple industry-funded clinical studies of neuromodulation: spinal cord stimulation for pain, peripheral nerve stimulation for migraine, DBS of the anterior nucleus of the thalamus for epilepsy, and the NeuroPace device, the first closed-loop stimulation implant for seizures. His leadership role in functional neurosurgery is well illustrated by his very active involvement in organized neurosurgery. Dr. Sharan was previously the IT Chair for the Congress of Neurological Surgeons and is currently the head of the CNS University of Neurosurgery. Dr. Sharan serves on the board of directors of the North American Neuromodulation Society and is their current Secretary and the Scientific program Chair. He is the President of the American Association of South Asian Neurosurgeons, and is also on the board of the American Stereotactic and Functional Neurosurgery Society. He has authored numerous peer-reviewed manuscripts and chapters and has been invited to give many talks on topics in spine and neuromodulation. His educational work extends beyond the Thomas Jefferson neurosurgery residents as he has been a faculty instructor for more than 30 review courses in functional neurosurgery throughout the United States and internationally. His investigational work in spine surgery includes involvement in the STASCIS study which is endeavoring to determine the role of expedited versus routine decompression in cervical spinal cord injury and he has also participated in unique designs of spinal implants.

We are pleased to highlight Dr. Sharan and his outstanding accomplishments. In less than a decade since finishing his residency and fellowship, Dr. Sharan has become a leader in stereotactic and functional neurosurgery and we look forward to his continued contributions.

WSSFN Ohye and Tsubokawa Awards

The WSSFN leadership is pleased to announce two awards in honour of deceased professors Ohye and Tsubokawa. The award is $2,500 each. The awards will be bestowed during the WSSFN congress in 2013 in Tokyo.

WSSFN Ohye Award

The aim of the Ohye award is to promote and initialize basic or clinical research projects in the field of stereotactic and functional neurosurgery. The award can be used as a start-up spark both financially and ideologically to initialize a larger research project.

The applicant must be a member of the WSSFN. There is no age limit. Applicants for the award should include a short proposal of the research project (limited to 500 words) and a current curriculum vitae.

WSSFN Tsubokawa Award

The aim of the Tsubokawa award is to recognize important publications which have been published by WSSFN members in the field of functional and stereotactic neurosurgery.

The manuscript must have been published within the period from 2010-2011 in a peer-reviewed journal, or be available online in PubMed. Manuscripts not yet published, that is those "in press" or "accepted" are not being considered.

The applicant must be a member of the WSSFN. There is no age limit. Applicants for the award should send a copy of the publication and a current curriculum vitae.

Submission deadline for the awards is June 31, 2012.

Please submit manuscripts and documentation to ttaira@nij.twmu.ac.jp or krauss.joachim@mh-hannover.de.

Selections will be made by an independent committee which will be commissioned by the WSSFN leadership.

ASSFN Curriculum Initiative

In the United States, significant reform of residency education is underway. Beginning with the ACGME Outcomes project, a deliberate attempt is being made to transition postgraduate medical education from an apprenticeship, time-based model of education to a model with established and well-defined educational objectives and assessment methods. The new initiative by the ACGME is the Milestones Project, which envisions a consensus driven curriculum for resident education that is explicitly defined by training skill level, with graduated educational milestones for each discipline or subject area. The Society of Neurological Surgeons and the Residency Review Committee for Neurosurgery have been pursuing these goals under the Matrix Curriculum Project, and have requested the assistance of the ASSFN in determining these milestones and objectives for movement disorders, epilepsy, and surgery for psychiatric indications. A committee has been formed to address the request, and input from the membership of the WSSFN is very welcome. We will provide a more detailed update on this project in the next edition of this newsletter.

13th Interim Meeting

R L Melvill, MD
Continental VP
Interim Meeting Chairman

The WSSFN 2011 Interim Meeting in Cape Town is taking shape rather nicely. We have had a response from senior members of the society that can only be described as magnificent. Never have we in South Africa had so many world experts come to a single neurosurgical meeting.

It is our sincere hope that our objective of bridging the gap between the high-tech functional neurosurgery of the first world and the dearth of functional neurosurgery in less developed countries can be met. To those of you who are taking tentative steps in the direction of functional neurosurgery; come and be inspired and to those of you who are so generous in sharing knowledge, come and inspire.

See the programme at www.WSSFN2011.org

There are many challenges in Africa and elsewhere in the developing world of neurosurgery, but for these few days in November, we challenge you to taste our hospitality.

TripAdvisor an influential online travel web site has placed Cape Town as the Number 1 world travel destination.

Go to http://www.tripadvisor.com/TCDestinations

So come to Cape Town and see for yourself!

Links
http://www.cape-town.info/

http://www.sa-venues.com/attractionswc/waterfront.htm

Report on the 8th Asian-Australasian society of Stereotactic and Functional Neurosurgery (AASSFN) meeting at Jeju Island, Korea. 16-18th June and the meeting of International society of Reconstructive Neurosurgery (ICRN) and WFNS Neurorehabilitation committee 15th June, 2011.

Paresh K. Doshi, MD
Dept. of Stereotactic and Functional Neurosurgery
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Mumbai, India

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Jeju island, nominated for the new wonders of the world, selected by Chang (Korea) was a perfect place for the 8th AASSFN meeting. It is also labeled as Hawaii of the east. The meeting started with Neurorehabilitation focused half-day meet on 15th June. The WFNS Neurorehabilitation committee met and decided to give further impetus to the International Society of Reconstructive Neurosurgery (ISRN) and WFNS NR committee activities. The next meeting is scheduled in June in Kiel, Germany and will be hosted by Maximilian Mehdron. Several interesting topics of Neurorehab were discussed ranging from neural plasticity and neuro-recovery after grafting 1st order neuron in spinal cord injury rat model (von Wild, Germany), to neuromodulation in altered consciousness state (Yamamoto, Japan). Amongst the emerging therapies, stem cell work in spinal cord injury and surgery in anorexia nervosa were presented.

On the following days the AASSFN meeting was conducted. There were 315 delegates from 16 countries. The largest no. (203) were from Korea followed by Japan (47) and China (25). 118 lectures were delivered, including platform presentations over the next three days. Standard topics pertaining to movement disorders surgery and outcome, epilepsy surgery, radiosurgery and pain were covered. However, the highlight of the meeting was several innovative ideas and indications that captured the attention of eminent leaders like Benabid, Schulder, Mehdron etc.

Amongst the newer indications, capsulotomy for schizophrenia (follow up of 100 cases, Sun, China), Gamma-knife surgery for drug addiction, intrathecal baclofen infusion for coma, generated significant interest. One new aspect this meeting focused on was neurorehabilitation, where in a new QOL questionnaire was proposed by von Wild and insights in to advances of neurorehabilitation was provided by Steeves (Canada).

In the field of technological advances, early results of the WINCS system to measure neurotransmitter release following DBS were presented. This may help to further optimize DBS application (Lee, USA). Beautiful pictures of the brainstem nuclei, including STN, SNr and Red nucleus were shown by Cho (Korea), using a 7T MRI machine. He mentioned that with 7T MRI the resolution upto 200 micron could be achieved. Using a PET and PET-MRI fusion system he showed impressive results of molecular imaging which may provide insights into neurochemical activities of brain. The tractography resolution accomplished by 7T MRI was unbelievably clear. Katayama (Japan) spoke about feed back system that switches DBS on and off based on the EMG patterns. This would be useful in patients with tremors or task specific movement disorders. Benabid (France) spoke about the complex brain machine interface, where in they have successfully completed rat and primate experiments of sensing cerebral commands and directing them to produce desired motor movement. They have got approvals to test this in human in 2012. Schulder (USA) discussed the potential application of laser interstitial thermal therapy for functional neurosurgical procedures. Several other areas of emerging technologies like Bionics and nano equipments were discussed.

Some thought provoking questions like “Is there a role for thalamotomy?” (Taira, Japan) or is the present day Quality of life assessment of PD surgery adequate? (Doshi, India) were raised through their presentations. The meeting highlights also included elaborate cultural feast and half a day tour of Jeju island. The next meeting will be in January, 2014 in Sanghai, to be organized by Sun.

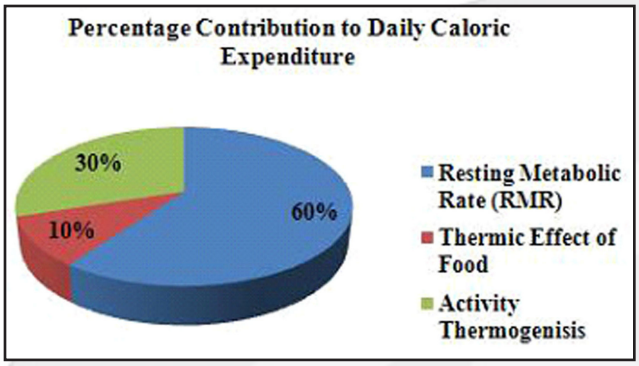
Dr. Paresh Doshi
EC member, AASSFN

Augmenting Metabolism with Electricity: The First Human Pilot Study of Deep Brain Stimulation for Obesity

Nestor D. Tomycz, MD

After years of planning and with the blessing of the IRB and the FDA, neurosurgeons Dr. Donald M. Whiting MD and Dr. Michael Y. Oh MD have successfully propelled the first human pilot study of lateral hypothalamic area (LH) deep brain stimulation. Three patients with intractable obesity have been implanted with bilateral LH DBS electrodes and have been followed now for almost two years. The goal of this pilot study was first and foremost to demonstrate safety and there has been no evidence of serious adverse events secondary to chronic high-frequency LH stimulation. The results of this pioneering study in functional neurosurgery are currently being prepared for publication and preliminary findings were presented at the American Association of Neurological Surgeons (AANS) annual meeting in Denver, Colorado (April 9-13, 2011).

The link between brain and body weight regulation was first recognized more than a century ago and brain surgery for obesity is not a novel concept. However, until now, DBS technology has not been applied to obese patients within a formal pilot study. Animal experiments in the 1940s and 1950s first revealed that damage to different hypothalamic subnuclei, most notably the lateral hypothalamus and the ventromedial hypothalamus, could change both body weight and feeding behavior. The lateral hypothalamus was dubbed the “feeding center” since lesions in this part of the brain would lead to decreased feeding. The first report of brain surgery for obesity in humans was published in Acta Neurochir by Quaade et al. in 1974. He reported reduced caloric intake and a temporary weight reduction in three humans after stereotactically lesioning the LH. With the rise of stimulation and fall of lesioning in functional neurosurgery, it was not a surprise that DBS would eventually be explored as a potential treatment for human obesity. The first report of hypothalamic DBS for obesity is a case report by Hamani et al. in Annals of Neurology 2008. Although the implanted man did report decreased appetite, the most notable finding was that stimulation improved his memory recollection. Dr. Michael Oh MD was co-author on this manuscript as a stereotactic and functional neurosurgery fellow under Andres Lozano in Toronto, Canada and this experience convinced him to investigate DBS for obesity in his academic career.



The majority of daily caloric expenditure is resting metabolic rate (RMR), which is energy used to maintain core temperature and run chemical processes within cells.

The first pilot study of DBS for human obesity was initiated by Whiting and Oh at West Virginia University. Patient selection involved a multidisciplinary team and the inclusion criteria required that patients had failed standard treatments for obesity including gastric bypass. “Failed bariatic surgery” was formally defined by the modified Reinhold classification which regards failure as an individual who remains greater than 50% over his or her ideal body weight despite a technically successful surgery. The United States FDA approved a total of 3 patients for this pilot study and bilateral LH DBS leads (Medtronic DBS lead 3389) have been implanted in 3 patients using CRW frame-based stereotactic targeting and microelectrode recording. Electrode position has been confirmed by fusing postoperative MRI data to a human stereotactic atlas.

The observation by Sani et al. that high-frequency LH stimulation in rats engendered weight loss without influencing food or water intake suggested that LH stimulation, unlike lesioning, may influence metabolism more than appetite. This important finding from hypothalamic stimulation studies in animals prompted Whiting and Oh to incorporate detailed metabolic chamber studies into the first human LH DBS study. A metabolic chamber is the gold standard method for measuring resting metabolism. It utilizes indirect calorimetry to calculate energy expenditure by measuring a patient’s oxygen consumption and carbon dioxide production. All three patients in the obesity LH DBS pilot study have traveled to Pennington Biomedical Research Center in Baton Rouge, Louisiana for metabolic chamber studies. Using a stepwise survey of increasing voltage on each contact (each DBS lead has 4 contacts) as a monopolar cathode, it was found that resting metabolic rate (RMR) could be increased in all 3 patients. Only stimulation through contacts located within the LH were effective in increasing metabolism.
Although the modern obesity pandemic is arguably more of an energy input than an energy output problem, modifying resting metabolic rate could have a significant impact on weight because RMR comprises the lionshare of energy expenditure (Figure). In addition, even though most cases of obesity are likely related to overeating, the tendency of RMR to slow down and protect against weight loss in the face of caloric restriction has been increasingly recognized as an deterrent to weight loss maintenance. The findings of this study are important in several ways. First, LH DBS appears safe

and the 2-year safety data will now permit a larger population to be approved for efficacy studies. Next, this is the first demonstration in humans that electrical stimulation of the brain can augment resting metabolic rate. The strategy of accelerating metabolism to treat obesity is not novel, however this is the first time that high-frequency electrical stimulation of the human brain has been linked with changes in resting metabolism. Previous attempts to increase metabolism with medications (e.g. thyroid hormone, amphetamines) for the purposes of treating obesity have been fraught with complications. DBS may prove to be a safe way to augment metabolism in certain patients struggling with obesity. The findings from this study will certainly be of interest to physicians and scientists outside of neurosurgery and we applaud Dr. Whiting and Dr. Oh for their efforts in expanding the therapeutic potential of DBS.

WSSFN Outreach Program

There are still opportunities available for WSSFN membership through the Outreach Program. This program, organized by Dr. Jason Schwalb in conjunction with Karger Publications, provides a one year complimentary membership in WSSFN including a one year online subscription to the journal Stereotactic and Functional Neurosurgery for neurosurgeons in countries categorized as low-income or low-middle-income by the World Bank (http://data.worldbank.org/about/country-classifications/country-and-lending-groups).

The intent is to encourage neurosurgeons that might otherwise be unable to join the society to participate and teach their colleagues about the challenges of performing Functional Neurosurgery in the developing world, while taking advantage of WSSFN benefits. To date, 14 neurosurgeons have taken advantage of this opportunity.

We hope that you will reach out to those who might benefit from this opportunity and provide them with information on this program. Further information on how to apply can be found on the web site at www.wssfn.org. WSSFN administrator Melody Dian, mdian@centurytel.net can also provide assistance.

Memorial Jan Gybels, MD, PhD

WSSFN would like to acknowledge the outstanding contributions of Jan Gybels, MD, PhD who passed away in May 2011. He was an exceptional neurosurgeon, outstanding teacher and mentor as well as a caring individual. He will be missed by those in the scientific community as well as all those whose lives he touched.

A pioneer in both neurosurgery and neurology, his research and continued interest in these fields broadened the understanding of these complex sciences.

More can be found on the International Association for the Study of Pain web site about this remarkable individual.

Upcoming Events:

Congress of Neurological Surgeons
10/1-10/6, 2011
Washington, DC
www.cns.org

14th European Congress of Neurosurgery
10/9-10/14, 2011
Rome, Italy
www.kenes.com/eans

Latin American Society of Stereotactic and Functional Neurosurgery (SLANFE) and Colombian Association of Neurosurgery II International Functional and Stereotactic Neurosurgery Symposium
10/27-10/29,2011
Cartagena, Colombia

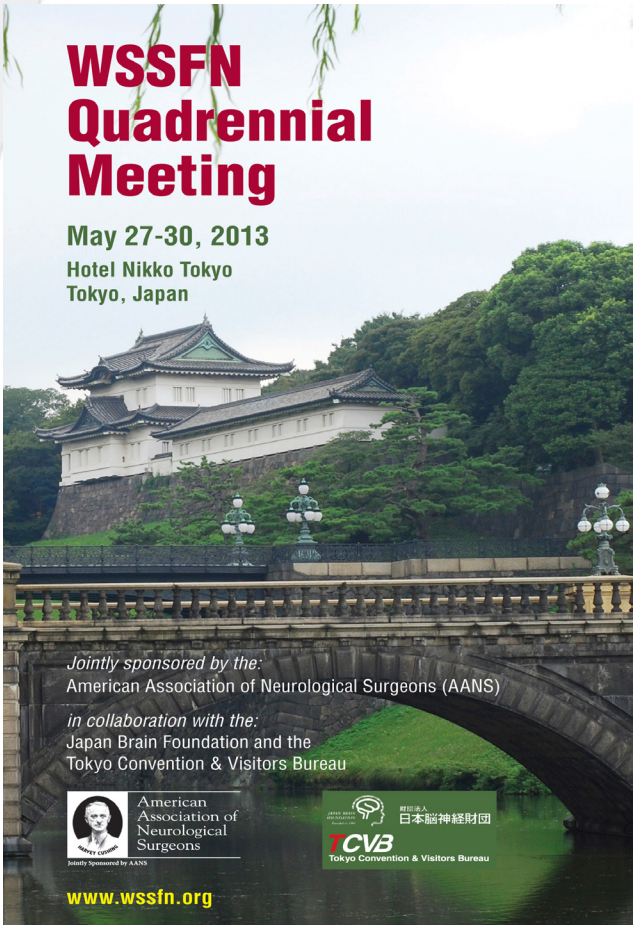
World Society for Stereotactic and Functional Neurosurgery Interim Meeting
11/21-11/23, 2011
Cape Town, South Africa
www.wssfn.org

North American Neuromodulation Society
12/8-12/11, 2011
Las Vegas, Nevada
www.neuromodulation.org

AANS
April 14-18, 2012
Miami Beach Convention Center
Miami, Florida
www.aans.org

American Society for Stereotactic and Functional Neurosurgery
6/3-6/6, 2012
San Francisco, California
www.assfn.org

World Society for Stereotactic and Functional Neurosurgery Quadrennial Meeting
5/27-5/30, 2013
Tokyo, Japan
www.wssfn.org



Some Things to Note:

The WSSFN web site will soon have a new look! Watch for an announcement of the updating.

An online survey constructed by Dr. Bernstein in Toronto will be sent to you early October. The focus will be to study trends worldwide of neurosurgery for psychiatric disorders.

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