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## SNACC NEWS

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Deborah J. Culley, MD
SNACC President

As winter comes to a close and the flowers of spring approach, I am reminded that we are nearly half way through the year and that it is time to share with you the developments thus far this year.

We have continued our relationship with International Anesthesia Research Society (IARS) and, as you will see below, SNACC was well represented at the IARS Annual Meeting by its members. This year’s official SNACC panel did provide the audience Updates in Neuroanesthesiology and will be moderated by Deepak Sharma, MBBS, MD, DM and was included in presentations by Deepak Sharma, MBBS, MD, DM; Jeff Pasternak, MD; George Mashour, MD, PhD and Ansgar Brambrink, MD, PhD. Other presentations at the IARS Annual Meeting by SNACC members included:

1. Review Course Lectures:
   a. Update on the Treatment of Traumatic Brain Injury by Christian Werner, MD.
   b. Lies, Damn Lies and Anesthetic Myths by John Butterworth.

2. Symposia:
   a. Rewiring the Brain with General Anesthesia: From Pathology to Therapy, moderated by Gregory Crosby, MD, with Laszlo Vutskits MD, PhD; Piyush Patel, MD and Sulpicio Soriano, MD as panelists.
   b. Strategic Use of Oxygen During Critical Care, moderated by Gary Fiskum, PhD

3. Resident Education Programs:
   a. Preparing Yourself For Your Future In Anesthesiology, moderated by Michael Avidan, MBBCh with a presentation on Key Attributes of the Future Anesthesiologist: The ASA’s Perspective by Daniel Cole, MD, MPH.
   b. Innovative Fellowship Opportunities with a presentation by George Mashour, MD, PhD, on Fellowship in Research Training.

4. Panel Sessions:
   a. Coordinating Perioperative Care Across the Continuum: Defining Roles and Responsibilities for Managing the Critically Ill Patient. Brenda Fahy, MD, served as a panelist.
   b. Optimization and Preservation of Organ Function in

The Perioperative Surgical Home Model. Deborah Culley, MD, served as a panelist.

c. The Aging Anesthesiologist: Knowing When to Say When. Gregory Crosby, MD, served as moderator and panelist.

d. Neurophysiology Over Numerology: New Approaches to EEG Monitoring During Anesthesia, Michael Avidan, MBBCh served as a panelist.

e. Neurotoxicity of Anesthetics In The Developing Brain – A Translational Update. Ansgar Brambrink, MD, PhD, served as a panelist.

f. Caring for Our Silver Tsunami Patients. Stacie Deiner, MD, served as moderator and a panelist.

5. Problem-Based Learning Discussions:
   a. Perioperative Stroke – Is It Anyone’s Fault?, moderated by Apolonia Abramowicz, MD.
   b. The Anesthetic Challenges in a Patient With Mitochondrial Metabolic Disorder, co-moderated by Ahmed Attaallah MD, PhD.
   c. Thoracolumbar Fusion Complicated by Unexpected Ventilation Problems, moderated by Deepak Sharma, MBBS, MD, DM.
   d. Transphenoidal Hypophysectomy and Anesthetic Implications for Patients with Cushing’s Disease, co-moderated by Letha Mathews, MD and Sheena Weaver, MD.

In addition, SNACC once again presented the Best Abstract Presentation in Neuroscience award during the Best of Meeting Awards Session on Monday, March 23 at the IARS Annual Meeting. As you can see, SNACC was well represented at the IARS Annual Meeting.

The Board of Directors, led by George Mashour, MD, PhD, has developed an impressive program for SNACC’s 43rd Annual Meeting that will be held at the Manchester Grand Hyatt Hotel.
in San Diego, California on October 22-23, 2015. The Scientific Affairs Committee, chaired by Chanannait Paisansathan, MD, will open the abstract submission site on the SNACC website between March 30 and May 11, 2015, so please get your abstracts ready and share your most innovative research and ideas with your colleagues.

The Education Committee, chaired by Deepak Sharma, MBBS, MD, DM, has been actively working on updating the SNACC Bibliography, and developing an Article of the Month, Neuroanesthesia Quiz, and Interactive Case Discussions, all of which can be easily accessed by any member on the SNACC website.

With the help of the Membership Committee chaired by Lauren Berkow, MD, we now have SNACC’s first International Affiliation with ISNACC and all of our newsletters are translated into Spanish.

To streamline payment of membership dues, we have implemented an automatic dues renewal system, to which any member can “opt in” at the next time they pay their dues by clicking on the “Online Dues Payment” tab on the SNACC website (www.snacc.org). In addition, any group or institution can now receive one comprehensive renewal notice to include all SNACC members in the group or practice and each member of the group will receive a 10% discount on their annual dues.

During our 42nd Annual Meeting, SNACC launched the SNACC Mobile App that is available from the Apple Store, Google Play and Blackberry World. This app will allow all members to track SNACC news, read the latest newsletter and renew their news from their smart phone or tablet. I would encourage you to download the new free app from your app store today.

Last, but certainly not least, I am grateful to the Board of Directors and our members for their contributions to Annual Meetings and other SNACC initiatives that ensure that SNACC will remain a leader of education, training and standard setting in the perioperative neurosciences for the foreseeable future.
Deepak Sharma MD, DM
Professor and Chief of Neuroanesthesiology & Perioperative Neurosciences
University of Washington
Seattle, WA

Given the recent advances in neurosciences, changing epidemiology, increasingly competitive funding environment, rapidly changing healthcare models and diverse research interests of the SNACC members which include neuroanesthesiologists, neurointensivists, and neuroscientists; we thought it would be important to reach out to some of the prominent leaders within SNACC to find out their opinions about current research priorities in Neuroanesthesia and Neurosciences. We are thankful to these senior SNACC members for taking the time to share with us their views on this topic. In the previous edition of the newsletter, we presented the first part of this article with the views of Drs. William L. Lanier, Karen B. Domino and Michael Todd. In this second part, we present the opinions of Drs. Adrian Gelb, Martin Smith, John C. Drummond and David S. Warner.

Martin Smith, MBBS, FRCA, FFICM, is consultant and honorary professor in Neuroanesthesia and Neurocritical Care at University College, London Hospitals, and senior faculty at the University College, London Hospitals National Institute for Health Research Biomedical Research Centre. He is the Reviews Section Editor of the Journal of Neurosurgical Anesthesiology and Neuroscience, Section Editor of Intensive Care Medicine. He has served as SNACC President (2012-13). Here are Dr. Smith’s opinions:

In the last issue of the newsletter, three eminent clinician scientists presented their perspectives of research priorities in neuroanesthesia and neuroscience. All were US-based, but their comments have broad applicability. Although the UK perspective is predicated on different models of research funding and healthcare provisions, the challenges and pressures are the same. Primarily, these lie in intense competition from other specialty groups for a diminishing pot of research funding, and a challenging financial healthcare environment that demands (and will continue to demand) that all clinically related research will at some point result in improvements in patient outcomes (preferably at lower cost). While such an environment undoubtedly brings challenges, it also brings opportunities.

It seems clear that basic science research will continue in a smaller number of high-achieving research laboratories, and some clinician scientists working in neuroanesthesia and neurocritical care will continue to lead or contribute to this crucial work. However, research opportunities for many will lie, as now, outside the laboratory and the challenge is to identify where our efforts will be best placed. I was struck by Dr. Todd’s comments in the last newsletter that the old questions addressed by clinical researchers are now resolved, at least with respect to the intraoperative period, and that we should focus on the challenges that lie beyond the operating room. Like Dr. Todd, I believe that this is one area, which brings enormous potential for future research opportunities in neuroanesthesia and clinical neuroscience.

The notion of anesthesiologists as perioperative physicians with clinical responsibilities beyond operating rooms and intensive care units is gaining ground, not least because anesthesiologists have the broad range of clinical credentials to fulfil this role. Importantly, anesthesiologists also have the expertise and experience to become world leaders in research in perioperative medicine, in our case perioperative neuroscience. The technical delivery of surgery and anesthesia is very safe in developed countries but, despite this, hundreds of thousands of patients continue to be subject to avoidable harm in the perioperative period. This can lead not only to premature death but also to significant morbidity and reduced quality of life that can persist for years. The potential to improve the quality of perioperative care, thereby reducing adverse perioperative outcomes and associated social and financial burdens is substantial. While basic scientists will continue to direct efforts towards understanding the biological mechanisms underlying postoperative morbidity and why some patients are more at risk of poor outcome than others, clinician scientists will focus on evaluating interventions that aim to reduce adverse outcomes. Large-scale clinical audit will identify areas for improvement and guide the development of subsequent pragmatic clinical trials designed to
identify which processes (or failures in processes) or interventions have a significant impact on perioperative outcome. This has been described as a new research field, Health Improvement Science, but in many ways it is simply an extension of the traditional areas in which neuroanesthesiologists and neurointensivists have always been active. Clinical trials will continue to be led by ‘classic’ academic clinicians, but collection of the background data informing such trials, and recruitment of large numbers of patients into the clinical studies, will allow a much wider contribution to the academic endeavour. The Sprint National Anaesthesia Project-1 (SNAP-1), a research study sponsored by the Health Services Research Centre of the UK National Institute of Academic Anaesthesia (NIAA), was a two-day evaluation of patient reported outcomes after anaesthesia; specifically, patient satisfaction and patient-reported awareness. This study was open to every anesthesiology department in the UK and, in the event, more than 250 registered investigators recruited more than 15,000 patients over a two-day period in May 2014. This is viewed in the UK as a remarkable achievement for a relatively new way of delivering clinical research. Although led by academically active clinicians, SNAP-1 involved large numbers of anesthesiologists who had not previously been research active. Such partnerships will ensure that the majority of hospitals, at least in state-funded healthcare systems, can contribute to the development and delivery of high quality clinical studies. In the UK, the NIAA is developing sustainable infrastructure, including the establishment of a network of Quality Audit and Research Coordinators and a clinical trials group, which, in combination with local National Institute for Healthcare Research (NIHR) Clinical Research Networks, will deliver high-quality, multi-center studies of novel perioperative interventions. The enthusiasm of trainees to become involved in SNAP-1 was also seen as very important. It is hoped that exposing trainees who are not part of NIHR-funded academic training programs to clinical research in the early stages of their professional development will embed an academic ethos in a broader group of future Specialists. Some will argue that what I have described is not ‘real’ research, but I believe that they are wrong. Healthcare Improvement Science will of course not replace other neuroscience clinical research, such as first in man studies of pharmaceuticals or neuromonitoring-guided therapy in patients with central nervous system disease or injury, but it does represent a research area that lies entirely within the expertise of neuroanesthesiologists and neurointensivists. It is also likely to receive funding, allow contributions from a broad range of academically interested clinicians and, importantly, lead to improved outcomes for patients.

John C. Drummond, MD, FRCPC is a Professor of Anesthesiology at the University of California, San Diego. He was the Chair of the Department of Anesthesia at USCD from 1997-2004 and the recipient of the SNACC Distinguished Services award for 2006. Here is Dr. Drummond’s opinion:

I am grateful for the opportunity to offer opinions about areas of research in which the neuroscience-oriented members of SNACC have an important potential to contribute. There are many. But I will highlight two as especially important: postoperative cognitive dysfunction (POCD) and postoperative delirium (POD). Why these two? It is largely a “numbers game.” Age entails a predisposition to both POCD and POD and whether you call it the Boomer Bulge or the Silver Tsunami, an increasingly large number of patients aged 65 and greater are presenting for surgery. POCD, though probably self-limited, can cause memory and executive dysfunction for up to six months, a substantial burden to anyone. POD, which is also self-limited, nonetheless interferes with recuperation, can make the patient a hazard to self and terrifies loved ones. Many predisposing factors associated with both have already been identified. Many of those factors are not modifiable. But investigations examining interventions aimed at those that might be modifiable and studies comparing anesthetic regimens are needed. Prevention or attenuation of “inflammation” (a familiar term but a loosely defined phenomenon) needs much study. This will probably be, at least initially, more the province of pre-clinical investigators. In that connection, I will mention what I see as a seminal demonstration of the role of inflammation in POCD. The laboratory group led by Mervyn Maze demonstrated that depletion of a line of macrophages prior to a standardized traumatic insult (tibial fracture) improved the subsequent cognitive performance of the subjects (mice). With respect to the role of anesthetics in disordered post-operative cognition, the research group led by Beverly Orser has done direction setting work in their identification of a subset of GABAa receptors, antagonism of which reverses experimentally anesthetic-induced memory impairment (mice).

I will not lay out any specific research agenda herein because that would require a more detailed analysis of the existing literature than this format allows. Nonetheless, I will highlight, in addition to the preclinical areas I have just mentioned, what I see as two broad clinical issues. First, the question of whether the occurrence of POD predisposes to subsequent POCD is unresolved. If the conclusion is that it does, vigorous attempts to prevent POD become even more important. My suspicion is that we will conclude that POD and POCD will have common
(and frequently unmodifiable) predisposing factors. But let’s find out. Second, the issue of whether depth of anesthesia (“depth” used with acknowledgement of its lack of scientific rigor) is a variable in the occurrence of POCD and/or POD. If POCD is some form of anesthetic neurotoxicity, greater doses or concentrations, should cause greater POCD. But, five of the six related studies I can identify do not confirm such a relationship. I am suspicious that this supports the notion that the relative roles of inflammation and anesthetic agents are respectively greater and lesser than we have heretofore imagined. What about POD? It seems more likely that deeper anesthesia does, in fact, increase the incidence of POD, at least in the elderly. This is fertile ground for investigation. Are there differences among anesthetic agents? How important are post-operative pain control, transfusion and environment of care variables in the incidence and severity of POD? There is so much that SNACC members can do.

I will add one small appeal related to terminology. I hope that investigators will conscientiously make the distinction between “risk factors” and “associated factors.” To many laymen (and some lawyers), the word “risk” implies a modifiable factor. For instance, advanced age and a history of alcoholism are associated with POCD but are decidedly not modifiable “risk factors.” By contrast, an in-hospital delay prior to repair of a hip fracture is a risk factor for POD that is within our power to modify.

Thank you again to SNACC for allowing me access to this forum.

Adrian Gelb, MD, is a Professor of Anesthesia and Perioperative Care at the University of California, San Francisco. He has served as the Section Editor (Neuroanesthesia & Neurosciences) for Anesthesia & Analgesia and as the SNACC President (1995-1996). Here are Dr. Gelb’s thoughts. He was assisted in this opinion piece by Dr. Lingzhong Meng, Associate Professor of Anesthesia & Perioperative Care, University of California San Francisco.

A potentially valuable function for a society such as SNACC is using the community as a sounding board for the setting of research priorities. Over the past 50 years, clinical neuroanesthesia research has been largely focused on short term and surrogate measurements while laboratory experimental outcomes have predominantly focused on ischemia, especially attempts to demonstrate a (potential) therapeutic role for anesthetics. Studies have been done with agents and techniques such as mannitol, hypertonic saline, hyperventilation and cerebrospinal fluid drainage for brain relaxation in order to make the surgeon’s work easier and reduce the presumed retractor-related ischemia. However, a satisfied surgeon is different than a satisfactory patient outcome. The consequence of these treatments may be decreased tissue perfusion and injury through a direct effect or the need for vasoconstrictors. Therefore, we need to ask what are the most important outcomes for patients? Surgical satisfaction may be a component, but we need to ask if what we do is beneficial to the patient outcome and how we can do even better. Some components of outcome are common among different neurological diseases while some are disease-specific. For example, for all patients we want excellent cardiopulmonary outcomes, but for brain tumor patients, the extent of tumor resection, recurrence, and survival and for aneurysm patients vasospasm, perioperative rupture, neurological deficit and survival are more relevant.

It is important, whenever possible, to differentiate the contribution of anesthesia, surgery and other aspects of care to the outcome for the purposes of quality improvement. This may be difficult due to ethical concerns, funding difficulty, or lack of organizational infrastructure. An organization such as SNACC can play an active role in helping investigators with good and important ideas to parlay them into strong grant applications and also help with the infrastructure. Here are a few examples of broad areas of clinical research that may be worthy of pursuit. First, there is much interest in the role that anesthesia and anesthetic choice may play in tumor outcome. This presumably is of potential importance for brain tumors as well. The Journal of Neurosurgical Anesthesiology recently published a systematic review showing an improved outcome after awake brain tumor resection compared with surgery under general anesthesia. While the surgeon’s ability to perform cortical and subcortical mapping in an awake patient is deemed crucial, it is unclear to us if the anesthesia contribution to the improved outcome is simply as facilitators or if it is more substantial. Does this improved outcome simply reflect a benefit of the awake state or a contributing benefit from the absence of the detrimental effect of (some) anesthetics and anesthetic techniques on tumor growth, other organ related morbidity, and hospital length of stay? Second, the surgical community is slowly facing recommendations for minimum number of cases for privileges based on outcome data that the more experience, the better the outcome. Does the same apply in neuroanesthesia? Surgeons think so! This would be important in driving mandatory neuroanesthesia fellowship training. Lastly, outcome in relation to neuro-monitoring is another
important area. Motor-evoked potential monitoring, especially for spine surgery, is a defacto standard in the USA, but not in other countries. Surely, this should be based on good prospective clinical trial data rather than historical controls. In summary, future neuroanesthesia and neuroscience research needs to define the role the neuroanesthesiologist plays in the outcomes that truly matter to patients and embrace patient outcome-oriented research rather than surgeon satisfaction-oriented research.

David S. Warner, MD, is Professor and Vice Chair for Research in the Department of Anesthesiology, Duke University. He is a member of the editorial boards for Anesthesiology, Journal of Neurosurgical Anesthesiology and Neurocritical Care. He is the 2005 recipient of the American Society of Anesthesiologists Excellence in Research Award and the SNACC’s 2011 Distinguished Service Award recipient. He also served as the SNACC President (1994-1995). Here is his opinion:

There are many reasons to believe that the next generation of research will be more fundamental, disruptive, and fruitful. I’ve been asked to speculate on promising directions and provide suggestions for what needs to be done.

What is anesthesia, which is another way to ask what is consciousness? Anesthesiologists now exploit advances in large data human electrophysiology, neural networks, and optogenetics. Instead of considering anesthesia to be a state of having the television tuned to the wrong channel, anesthetics actively engage specific neural networks, which are different for induction and emergence. Defining the precise neural substrate and functional integration necessary for consciousness will allow a more selective pharmacological or electrophysiological approach to manipulation of consciousness, with markedly diminished adverse effects. Until then, we need to understand how to care for populations vulnerable to those adverse effects.

Neuromonitoring. This field has seen little recent innovation. Yes, we can obtain focal measures of ICP, oxygen, neurotransmitters, etc., but this has had little impact on outcome because we’re treating a few cubic milliliters of tissue rather than a heterogeneous whole brain. Near infrared spectroscopy continues to struggle with extracranial contamination. Embedding PET scanning within a neurointensive care unit provides breakthroughs in our understanding of simultaneous local and global physiology, but this technology does not yet allow real-time measurement of ongoing interventions to guide practice and improve outcome. Bioengineers beg for opportunities to develop technology. We should focus on partnering with them.

Cognition in awake craniotomy. Malignant glioma survival is associated with resection completeness, often requiring mapping of speech or motor cortex. This is not new. However, a recent publication suggested that anesthesia used for awake craniotomy limits definition of intraoperative cognitive function. No surprise, but perhaps pertinent. Lesion excision and psychosurgery are likely to advance and require intraoperative patient interaction for mapping at a cognitive level previously not required. How can we safely and humanely achieve this? This will be more pressing with advances in minimally invasive laser ablation of lesions under stereotactic MRI/CT-guidance.

Electronic health record. We need to associate pre-operative risk factors, anesthetic management, and patient outcome. This cannot be effectively achieved in small populations. There is evidence that anesthesia impacts post-operative factors beyond pain, blood pressure and PONV. Enormous databases are currently accumulating. Neuroanesthesiologists should exploit these databases to generate hypotheses, define outliers needing special consideration, define implications from small study populations, and illustrate best practice, particularly so as to decrease rare but devastating complications.

Neuroprotection / neuroresuscitation. This has been a disappointing saga. We’ve progressed through metabolic suppression, anesthetic neuroprotection and excitotoxicity, all failing to yield any measurable benefit. These approaches now appear crude. What is increasingly appreciated is that the cell responds to injury in four dimensions and interventions must be concordant. Rather than trying to rescue the cell, more likely we will benefit from learning to help the cell heal itself. We have also learned hard lessons regarding bench to beside translation. In fact, pre-clinical research largely predicted the many clinical trial failures that now leave pervasive pessimism regarding potential therapeutic strategies. Improvements in our understanding of cell biology, the process by which efficacy is preclinically defined, and how clinical trials should be designed to match limits found in the laboratory offers far greater promise of changing practice than the tools previously employed.

Opening borders. One great benefit from the rise of ancient civilizations to join the community of peer-reviewed scientific inquiry is their contribution to the collective intellect and manpower required to provide answers to difficult questions. As these committed investigators join the community, they should be welcomed and assisted in developing methods of scientific training and inquiry. An effective intervention for glioblastoma/traumatic brain injury/etc. certainly would be welcome from any nation.
An Interview with Ruquan Han, MD, PhD

Reza Gorji, MD  Fenghua Li, MD
Editor  Assistant Editor

In this edition of the newsletter, Dr. Li and I had the privilege of interviewing Ruquan Han, MD, PhD. He is the chairman, Department of Anesthesiology at the Beijing Tiantan Hospital, Capital Medical University in Beijing, People’s Republic of China. We hope you enjoy the question and answer session with Dr. Han, who is Chair of one the biggest anesthesiology programs in China.

- Reza Gorji, MD, Editor

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Editors: Please tell us a little about your neuroanesthesia program. How many residents and fellows are enrolled? How long is the program and are there any specific rotations?

Dr. Han: National Health and Family Planning Commission of PR China with six ministries jointly issued the Guidance on the Establishment of Standardized Training System for Residency in December 2013. This regulation requires all medical students to participate in standardized resident training for three years. The system for anesthesiology residents includes the subspecialties rotation in anesthesia, critical care medicine and pain of which neuroanesthesia rotation time is about three months.

Editors: Is there a formal training program at your university and in institutions in China?

Dr. Han: National Health and Family Planning Commission of PR China with six ministries jointly issued the Guidance on the Establishment of the Standardized Training System for Residency in December 2013, which officially launched the implementation of the major national policy in the health sector. It was a milestone of the change from quantitative to qualitative in standardized training systems. The medical students without standardized training for three years, including post-graduate and doctoral graduate, could not directly become a doctor. China started “5 + 3” model of standardized training system in 2015, and will popularize all over the country in 2020. The system for anesthesiology resident includes the subspecialties rotation in anesthesia, critical care medicine and pain, of which neuroanesthesia rotation time is about three months.

Editors: Is research an active component of your program? Is it under clinical pressure like many programs in the North America and Europe?

Dr. Han: Yes, we faced great clinical pressure like many anesthesiologists in Europe and the North American countries. We also face the tremendous pressure from research, from promotion needs and from the leader of the department and the hospital. In order to obtain the better status and credibility, the department requires more publications, and more research funds. Every year, we need to conduct training in clinical and laboratory research. Tiantan International Neurosurgical Anesthesia Symposium (TINAS) focus on the latest developments in neurosurgical anesthesia, as well as the influx of patients to the comprehensive hospitals in major cities which results in the increase in the number of the patients scheduled for surgery by 10-15% per year. The need for anesthesiologists is more serious, and the workload on the doctor is much heavier. Therefore, medical students with an anesthesiology major more easily find the ideal (higher income) jobs. In some areas or hospitals, anesthesiology becomes the first choice for the newly graduated medical students.

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Editors: How do you think neuroanesthesia is different in China from the US and Europe?

Dr. Han: China has 1.3 billion people, and rapidly developed in the past few decades, however, there was still an imbalance of regional economic development including healthcare imbalance. Similar to the United States and Europe, we often first popularize the management of traumatic brain injury to most anesthesiologists, which is frequently encountered in the neuroanesthesia in China. Much more difficult neurosurgeries only can be done in a few major medical centers. As the largest neurosurgical center in China, Beijing Tiantan Hospital need to cooperate with other large neurosurgical centers to carry out clinical and basal research and make academic exchanges so as to promote common development.

Editors: How do you see the future of neuroanesthesia in China? Do you think care will be concentrated in a few centers only?

Dr. Han: The future of Chinese neuroanesthesia definitely is centered by a very few large medical centers which lead the direction of professional development, by carrying the continual basal training such as traumatic brain injury, so as to improve the overall level of neurosurgical anesthesia and well serve the patients.

Editors: Can you tell our readers about the upcoming Tiantan International Neurosurgical Anesthesia Symposium (TINAS)?

Dr. Han: Tiantan International Neurosurgical Anesthesia Symposium (TINAS) is jointly organized by Beijing Tiantan Hospital, Capital Medical University and the Beijing Society of Anesthesiology. The intent of TINAS is to advance the care of patients with neurological injury or those at risk of perioperative neurological injury. This is a scientific event and provides a great opportunity for anesthesiologists, researchers, and other professionals in neuroanesthesia and related fields from all over the world to meet and share their clinical experience, discuss new developments, new techniques, and recent research. According to the past five times of TINAS, there were about 500-600 participants every year most of which were residents and fellows. TINAS often takes two days. The Annual Meeting included the focus of neurosurgical anesthesia, such as traumatic brain injury, spinal cord injury, cerebrovascular disease, brain tumors, functional neurosurgery, and so on. The meeting also focused on the progress in the clinical neurology and neuroscience. We have also carried out neurophysiological monitoring workshops, which were welcomed by the participants. In addition to the formal agenda, we also organized the ward in the operating room of Beijing Tiantan Hospital and conducted patient-based learning (PBL) at bedside.

TINAS will be held in Beijing from May 15 -18, 2015 and includes (1) Clinical practice/updates in the field of neurosurgical anesthesia and neurocritical care; (2) Laboratory research and (3) Multi-center clinical study training programs.

Sharing what we know. There has been little effort to advance neuroanesthesia outside developed countries. One could say this is premature because in many environments there are few or no neurosurgeons. This is changing. Neurosurgeons are fostering neurosurgical residencies in home countries and providing resources to allow those trainees to practice in their home country. How can we engage in this process to assure the anesthetic/ICU enables, rather than limits the potential for neurosurgical intervention? How would we measure whether our efforts are of benefit and effective?

Forget anesthesia. We have been focused, appropriately, on defining implications of neuroanesthesia practice on outcome. Outcome from a malignant glioma? A ruptured intracranial aneurysm? A severed spinal cord? Incremental advances in anesthesia are unlikely to alter how individuals with these disorders carry on with their lives. Dr. Bill Young made a call to action. We should focus on the diseases themselves. Our contributions and leadership are needed.
Post-operative Vision Loss (POVL): What Can Be Done to Prevent It?

Reza Gorji, MD  Fenghua Li, MD
Editor  Assistant Editor

Postoperative vision loss (POVL) is a rare but devastating complication. Patients undergoing spine surgery and cardiac surgery are at higher risk of POVL. The incidence is about 3.09 to 9.4 per 10,000 in patients undergoing spine surgery,1 2 while the cardiac surgical patient has an incidence of 6/10,000 to 8.64/10,000.3 4 POVL has recently occurred in patients who have undergone robotic assisted prostatectomy in steep Trendelenburg position.4 Since the majority of reported POVL cases (67%) occurred in spine surgery,5 our focus will be on POVL in spinal surgery in the prone position.

The main cause of POVL is ischemic optic neuropathy (ION) that happens in 83% of cases during spinal surgeries.5 Posterior ION (PION) occurs more often than anterior ION (AION). Other causes include central retinal artery occlusion (CRAO) and cortical blindness.6 7 8 The most common form of POVL is PION that results from infarction of the optic nerve posterior to lamina cribrosa. It manifests as sudden onset of painless vision loss and can affect both eyes in two-thirds of cases. In patients with PION, physical exams show poor pupil reaction to light, no light perception, central scotomas, and altitudinal vision defect; however, fundoscopic exam is initially normal. Optic nerve pallor and atrophy appear four to six weeks later. AION occurs at the optic nerve head anterior to lamina cribrosa; it happens primary after cardiac and spine surgery. Patient with AION often presents with vision loss after a period of normal vision. Examination shows poor pupillary reaction to light, complete blindness, and altitudinal field defect, and central scotomas. Fundoscopic exam reveals swollen optic disc with or without peripapillary hemorrhage at the optic disc margin. CRAO unilaterally occurs in the affected eye and is associated with periorbital trauma in spinal surgery done in the prone position. Patients complain of vision loss after awakening from anesthesia and fundoscopy reveals retinal whitening and pathognomonic cherry red spots of the macula. Cortical blindness can occur in patients at high risk of emboli to posterior cerebral arteries.

The mechanisms that cause ION remain unclear. However, decreased optic nerve perfusion due to increased interstitial fluid accumulation and venous outflow reduction in the globe has been hypothesized to be mechanism of ION.9 10 11 12 POVL study group in 2012 has identified risk factors that are contributory in spinal surgery patients.9 Male sex, obesity, use of Wilson frame, longer anesthesia time, greater estimated blood loss, and colloid as a percent of non-blood replacement are risk factors. Anemia and hypotension were not confirmed to be risk factors of POVL in this study. The steep Trendlenburg position may cause POVL in robotic-assisted prostatectomy surgery.4

To enhance awareness and to reduce frequency of POVL associated with spine surgery, the American Society of Anesthesiologists (ASA) published a practice advisory on POVL in 200612 and updated in 201213. Patients who undergo spine surgery in position prone and those who have long procedures and experience substantial blood losses are at high risk. High-risk patients should be identified pre-operatively and POVL risk should be discussed with these patients.13 14 Intra-operatively, a patient’s head should be positioned at or above the level of the heart whenever possible and be maintained in neutral position. Direct compression of globes, hypotension and severe anemia (HCT <28) should be avoided. Staging procedures may be considered in patients who have experienced significant blood loss. Colloid along with crystalloid is recommended for fluid resuscitation. Post-operatively, anesthesiologists should check a patient’s vision in the case of high-risk patients and be vigilant to its occurrence. An urgent ophthalmology consult should be obtained if any visual loss presents postoperatively. Patient hemodynamics and head position should be optimized until patient is seen by an ophtomologist. Consider MRI and CT the head to rule out intracranial causes.

References:
A Message from the Special Interest Group (SIG) for Neuromonitoring

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The Special Interest Group (SIG) for Neuromonitoring conducted a survey to evaluate academic program curriculum and faculty interest to improve neuromonitoring.

Responses were collected from 41 out of 112 academic situations. The survey was completed by either the Director of Neuroanesthesia or the Residency Program director as applicable.

There were 24 questions. The following results represent some of the more interesting findings:

- 82.93% of the programs have no in-house training program for their faculty.
- 58.5% of the programs have no formal written curriculum for their residents.
- 80.49% of the institutions felt there was a need for an improvement or change in neuromonitoring education for their residents.
- 65.85% felt that SNACC should devote more time to neuromonitoring at the Annual Meeting.
- 5.37% felt they would like to see an increased presence in the SNACC newsletter.
- 87.80% of the institutions were interested in receiving more education in neuromonitoring.

Of particular interest is that 17.07% of faculty have < than 4 years of experience; 29.27% have 5-10 years of experience. This suggests that there is a renewed interest (46.34%) among the faculty to receive training in IOM.

Based on this pilot study it appears that there is a revived interest in creating an educational curriculum for both faculty and for the residents training programs. The authors acknowledge that only 41 institutions participated in the survey. We suggest repeating this study with a 100% response rate for all academic institutions to get a more accurate assessment.

ENLS iBook Review

Abhijit Lele, MD
Associate Professor
University of Kansas Medical Center
Medical Director, Neuro ICU

For those who like having information in the palm of their hand, the iBook is the perfect companion. If you have ever been a part of a neurological emergency, you wish that a neurological expert could always be with you. The Emergency Neurological Life Support (ENLS) iBook is endorsed by the Neurocritical Care Society and is co-authored by Wade Smith, MD, PhD, and Scott Weingart, MD, the pioneers of the ENLS program. It combines thirteen different clinical pathways into one exciting interactive iBook, which is designed to help healthcare professionals improve patient care and outcomes during the most critical time - the critical first hours of the patient’s neurological emergency.

The first thing I noticed after I opened the iBook on my Apple laptop, is the ease of navigation between the chapters, and within a particular chapter. The iBook acts as a companion to the already published ENLS protocols available with ENLS course registration. It sure was nice to download it and carry it with me, empowering me with all necessary information, such as calculating dose of FFP required in reversing warfarin, or tiered management of intracranial hypertension. One of the special features of this iBook is the ability to add notes or highlight text.

Available now, the ENLS iBook (30 MB, $39.99) can be purchased via iBook app on your Mac or iPad. It takes less than a minute to download using high-speed internet. It can be enjoyed on the iPad with iBooks 3 or later, iOS 5.1 or later, MAC with iBooks 1.0 or later, and the OS X 10.9 or later.

Group Billing is Available

The Society can now send one comprehensive renewal notice to include all SNACC members in your practice or institution as one “group”. Every member of your group will also receive 10% off of their membership dues.

We currently have four institutions participating in the group billing, representing 24 members! Those institutions are Anesthesia Consultants of Indianapolis, LLC; Montefiore Medical Center, Department of Anesthesiology; University of Washington, Department of Anesthesiology and Vanderbilt Anesthesiology.

Contact Greg Leasure, Membership Manager (greg@societyhq.com) TODAY to sign up!
Google Maps Neuroanesthesiology Fellowship Project

Tasha L. Welch, MD
CA-3 Anesthesiology Resident
Mayo Clinic College of Medicine
Rochester, MN

The SNACC Communications Committee is developing a Google Map to display locations of both US and International Neuroanesthesiology Fellowship locations. Included in the map is information regarding program location, fellowship program director, contact information, and program website. The map will allow members of the SNACC community and beyond to identify anesthesia departments with active fellowship opportunities in neuroanesthesiology. This will be a great resource for those interested in pursuing subspecialty fellowship training in neuroanesthesiology. Anesthesiologists, residents, and fellows will also be able to create and maintain relationships and contacts in neuroanesthesiology. If you would like your program to be included on this map please send your contact information, including fellowship director name, institution, and e-mail contact, to sandra@societyhq.com. Thank you and please share this with colleagues who may be interested in having their program information included on this map. Keep an eye out for the Neuroanesthesiology Fellowship Google Map in the near future!

Welcome New Members

ACTIVE

Neha Aggarwala, MD......................... Toronto, ON, Canada
Jose Hipolito M. Filho, MD.................. Madalena, Brazil
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Joseph M. Hughes, MD..................... Plano, TX
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Jovany Cruz Navarro, MD............... Houston, TX
Marc C. McLawhorn, MD, MS........ Summerville, SC
Camilo A. Lopez, MD...................... Panama City, Panama

Contact greg@societyhq.com with any membership questions.
EDUCATION CORNER

Presented below and going forward, the newsletter will be presenting educational material related to neuroscience, neuroanesthesia and critical care. We hope this proves educational to SNACC members. If you want to contribute materials to this section please email rgorji@gmail.com. Please make the subject line read: Neuromonitoring Case.

EEG Spike and Wave Activity
Presenters: Reza Gorji, MD; Fenghua Li, MD

Can you identify spike and wave activity in the EEG to the right?
What are they?
Answer is on page 14

SNACC NEWS

43rd Annual Meeting
October 22-23, 2015
Manchester Grand Hyatt Hotel • San Diego, California

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**EDUCATION CORNER ANSWER**

Answer: Spike and wave activity is a wave form observed during epileptic seizures. These waves originate in the neocortex and travel to the thalamus via thalamocortical networks as bilateral synchronous firing. Spike and wave activity is sometimes called paroxysmal depolarizing shift. Spikes are a type of sporadic IED’s (interictal epileptiform discharges). By convention, a spike is defined as an IED of less than 70 milliseconds in duration and a sharp wave as an IED of 70-200 milliseconds in duration. Differentiation between the two has no prognostic value. The areas circled in red are representations of spikes.

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**SNACC Newsletter Schedule**

SNACC’s newsletter is open to submission by members of SNACC. Please adhere to the following schedule. Submissions do not guarantee publication. We are interested in news and articles of interest from the membership at large. In addition, if you have a question to ask any of the officers of SNACC, you can submit them as well. Due to time and the volume of issues anticipated, not all questions can be answered.

**Publication & Submission Deadlines**

- **Summer Issue**
  Published June 15, 2015
  May 15, 2015 - Copy Deadline

- **Fall and Pre-Meeting Issue**
  Published September 15, 2015
  August 15, 2015 - Copy Deadline

- **Winter Issue**
  Published December 15, 2015
  November 15, 2015 - Copy Deadline

- **Spring Issue**
  Published April 15, 2016
  March 15, 2016 - Copy Deadline

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