

Neurotrauma & Critical Care NEWS



March 1999

AANS/CNS Section on Neurotrauma & Critical Care

Editor: Michael G. Fehlings, MD, PhD

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Chairman's Message



Brian T. Andrews,
MD, FACS

I am deeply concerned about a recent manuscript published in *The Journal of Trauma*, titled "Intracranial Monitoring Placement by Mid-level Practitioners," highlighting the successful placement of intracranial pressure monitors (ICP) by mid-level practitioners,

including physician assistants and registered nurses. The article reports a similar complication and success rate in the performance of ICP monitor placement by mid-level practitioners, as compared to neurosurgeons. It suggests that when neurosurgeons are unavailable for the placement of such monitors, it is logical and appropriate for mid-level practitioners to provide this service.

As Chairman of the AANS/CNS Section on Neurotrauma and Critical Care, I stand firm that neurosurgeons are extremely committed to patients with severe head injury, subarachnoid hemorrhage, acute hydrocephalus, and other problems that will require intracranial pressure monitors and ventricular drainage. I know of exceedingly few instances where neurosurgeons are unavailable at any time of the day or night to evaluate patients and perform these neurosurgical procedures. Given that the neurosurgeon is ultimately responsible for the management of these patients, he or she should be responsible for the placement of such monitors and the data derived from them. To allow these procedures to fall into the hands of mid-level practitioners is wrong.

Throughout the United States, there are instances where patients with head injury of any level, including severe, are being managed primarily by trauma surgeons for all but technical procedures such as craniotomies and the like. In these circumstances, some neurosurgeons have been willing to forego the opportunity and privilege to manage intracranial pressure and provide the direct care necessary for such patients beyond the operating room. By relegating ourselves to a pure technical position, we forego our duties as being a complete physician.

I encourage each and every member of the AANS/CNS Section on Neurotrauma and Critical Care to reassess their own practices. We must remain committed to the complete care of the neurotrauma patient. We must remain physicians, not technologists.

With kindest personal regards,

Brian Andrews, MD, FACS

Section Leadership

Chairman

Brian T. Andrews, MD, FACS

Chairman-Elect

M. Ross Bullock, MD, PhD

Secretary-Treasurer

Michael G. Fehlings, MD, PhD

Neurotrauma and Critical Care Section Annual Meeting Highlights

Monday, April 26 **Scientific Sessions I-IV**
2:45–5:15 PM

- 709** **Utility of a Clinical Care Pathway for Severe Closed Head Injuries**
Todd Vitaz, Laura McIlvoy, George Raque, Susanne Fix, Christopher Shields (Discussant: Alex Valadka)
- 710** **The AANS Guidelines for Management of Head Injury: The First Year's Experience**
Anthony Marmarou, John Nichols, Paul Muizellar, Lawrence Pitts, and the American Brain Injury Consortium Study Group (Discussant: John McVicker)

Tuesday, April 27 **Breakfast Seminars**
6:45–9:30 AM

- 202** **Trauma Guidelines for the Management of Severe Head Injury**
Moderator: Raj Narayan
Panelists: Donald Marion, Jack Wilberger, Ben Blackett, Beverly Walters
- 203** **Cerebral Protection and Monitoring**
Moderator: Donald Becker
Panelists: Paul Muizelaar, Mary Gumerlock, Robert Solomon, Theodoros Kombos

Tuesday, April 27 **Neurotrauma and Critical Care Section Sessions**
2:45–5:15 PM

Special Lecture

2:45–3:40 PM

Cerebral Perfusion Pressure Management After Severe Head Injury: Right or Wrong?

Michael Rosner, Kenneth L. Mattox

Neurotrauma Resident Award

3:40–3:50 PM

Activity Dependent Neurotrophic Protein in a Mouse Model of Closed Head Injury

Liana Beni-Adani

Neurotrauma Research Fellowship Award Lecture

3:50–4 PM

Calcium and Regeneration in a Cell Culture Model of Nevrite Transection

Gordon Chu



Photo courtesy of the New Orleans Convention and Visitor Bureau

Scientific Session

4–5:30 PM

Moderator: Alex B. Valadka

Co-Moderator: Michael Caron

- 801** **Early Fluorodeoxyglucose PET is Predictive of Delayed Neuroanatomical Findings Following Human Traumatic Brain Injury**
Marvin Bergsneider, Paul M. Vespa, Nouzhan Sehati, Ehud Shalmon, Daniel F. Kelly, Sung-Cheng Huang, Michael E. Phelps, David A. Hovda, Donald P. Becker
- 802** **Continuous Autoregulation Monitoring in Comatose Patients**
Ralf Steinmeier, Robby Hofmann, Christian Bauhof, Ulrich Hybner
- 803** **The Family Handgun: Safety and Child Access**
Mimi Sutherland, Antonio M. Rubi, Scott D. Cohen, Barth A. Green
- 804** **Neurologic Outcome of Patients Treated With IGF-1/GH Following Traumatic Brain Injury**
Byron Young, Jimmi Hatton, Phillip Tibbs, Deborah Blades, C.J. McClain
- 805** **Aspirin Prophylaxis in Minor and Moderate Head Injury in the Elderly Population**
Sergey Spektor, Shmuel Agus, Vladimir Merkin, Shlomo Constantini
- 806** **Hemispheric Asymmetry of Cerebral Vasoreactivity After Traumatic Brain Injury: Implications for Mechanisms**
Jae Hong Lee, Daniel F. Kelly, Neil A. Martin, Thomas C. Glenn, Diana Nikas

1998 Neurotrauma and Critical Care Fellowship Award Recipient

Calcium and Regeneration in a Cell Culture Model of Axonal Transection.

Gordon Chu

Calcium influx into neurons after injury is believed to be detrimental to their survival. However, since intracellular calcium is important for controlling various cellular mechanisms crucial to survival, such as enzyme activation and gene transcription, it is possible that the calcium influx also may aid neurons after injury. I tested the role of calcium in neuronal injury due to axonal transection. A culture model of axonal transection was used to simulate *in vivo* CNS trauma. The model consisted of a pure culture of sympathetic neurons which grew long neurites in parallel tracks. The neurites were transected by a motor driven rubber impactor. The resulting regeneration was then quantified by three parameters:

- 1) the percentage of tracks with initiation of regeneration (i.e. growth cones or short sprouts);
- 2) the number of branches per regrowing neurite; and,
- 3) the average hourly rate of regeneration over 24 hours.

In addition, the entry of calcium into the neuron after transection was assessed by use of a calcium indicator dye and laser scanning confocal microscopy. Calcium entry into neuronal somata after transection in normal calcium medium was significantly higher than in uninjured neurons or neurons injured in zero calcium medium. These results show that the source of the calcium rise post transection is from the extracel-

lular medium. Experiments were then conducted to attenuate the intracellular calcium rise in the neuron after transection. BAPTA-AM, a calcium chelator, was preloaded into the neurons that were then injured. The cells loaded with BAPTA-AM showed a significant delay in the initiation of regeneration and decreased branching when compared to nonloaded cells. The chelator did not have an effect on the rate of regeneration. Neurites also were transected in a zero calcium environment and there was no initiation of regeneration until extracellular calcium was restored.

Finally, using specially prepared chambers that can isolate the extracellular medium of cell bodies from that of neurites, the neurites were transected in a medium with normal calcium while the cell bodies were in an environment of zero calcium. This resulted in a significant delay in the initiation of regeneration but not to the same extent as when the entire cell was immersed in zero calcium. The results of these experiments show that calcium influx is required for regeneration after transection. The cellular mechanisms that may be initiated by this calcium influx may be gene transcription, calcium activated proteases such as calpain, and the influx may also enhance the function of growth factors such as NGF. These possibilities require further exploration.

Continued from Annual Meeting Highlights

Business Meeting

5:30 PM

Wednesday, April 28

Breakfast Seminars

6:45–9:30 AM

- 315 Current Management of Cerebral Trauma**
Moderator: Harold F. Young
Panelists: Randy Chesnut, John Peter Gruen, Kevin Gibbons

Wednesday, April 28

Scientific Sessions V–VIII

9:45–11:15 AM

- 758 Time Course of Cerebral Blood Flow and Metabolism in Acute Head Injury: Influence of Hypothermia**
Walter D. Obrist, Donald W. Marion, Shushma Aggarwal, Mary E. Kerr (Discussant: Paul Muizelaar)

Thursday, April 29

Breakfast Seminars

6:45–9:30 AM

- 401 History of Neurological Treatment of Trauma**
Moderator: Tom Gennarelli
Panelists: T. Forcht Dagi, James Goodrich, Mark McLaughlin
- 404 Contemporary Management of Spinal Cord Injury**
Moderator: Charles Tator
Panelists: Michael Fehlings, Fred H. Geisler, Barth Green, Jack Wilberger

CSNS

John H. McVicker, MD

With increasing socioeconomic and political concerns emerging in the practice of neurosurgery, the Executive Committee of the AANS/CNS Section on Neurotrauma and Critical Care has established a liaison with the Council of State Neurosurgical Societies (CSNS) through the CSNS Neurotrauma Committee. As the Neurotrauma Committee is moved from ad hoc status to a permanent standing committee of the CSNS, improved interaction, information exchange, and the development and implementation of neurotrauma policy can be anticipated. Such a move will better equip our Section members with the information needed to interact with hospitals, local and state trauma systems, state and federal governments, patients, payers and peers, with greater competence and confidence. The interaction between the Section's leadership and the CSNS should provide for more timely socioeconomic communication and broader interaction with those in organized neurosurgery.

Emergency Call Reimbursement

An increasing number of hospitals or trauma systems are solving problems with neurosurgical ER coverage by reimbursing their neurosurgeons for emergency call availability. Several models for ER call reimbursement are presently being used across the United States. The CSNS Neurotrauma Committee is collecting and evaluating as many of these arrangements as possible, and is concurrently acting as a resource for neurosurgeons examining options with their own hospitals and healthcare systems. The Committee will be developing a report on the most widely used models for emergency call reimbursement to help inform neurosurgeons' discussions with hospitals in their own communities.

Head Injury Guidelines

The CSNS Neurotrauma Committee also plans to conduct a broader survey of reimbursement methodologies in neurotrauma and critical care next spring, as funding becomes available.

Concerns over the practical use of the Guidelines for the Treatment of Traumatic Brain Injury have been surfacing in the CSNS even as they achieve broader utilization in trauma hospitals. Some concerns have arisen over specific applications of the Guidelines among trauma specialists who disagree on their interpretation. However, many institutions do not have specific provisions for their utilization.

Early measures of incorporation into practice have suggested their use is inconsistent. Several neurosurgeons have charged that the Guidelines may be, or have been, used as a quality measure in trauma program verification or misinterpreted as a legal standard, although the document was explicitly not meant

to be used as a comprehensive protocol or a community standard of care in the legal sense.

In response to these concerns, the CSNS Neurotrauma Committee and the Section's Executive Committee encourages neurosurgeons to use the Guidelines as a foundation upon which to develop complete and extensive internal protocols that are acceptable to other trauma specialists.

Section members are voicing their concern over the utilization of physician extenders and mid-level practitioners, in some cases without neurosurgical sponsorship, to evaluate and manage neurotrauma or critically ill patients in the emergency department or ICU. Although some programs may not be able to function without such extenders, quality is affected when the neurosurgeon surrenders responsibility for direct patient care. Minimum certification requirements for physician extenders who are acting in this capacity should be delineated, and neurosurgical sponsorship should be mandated. Initial patient evaluation by the attending neurosurgeon and direct supervision of the physician extender has been suggested as the appropriate standard of care. The Neurotrauma Committee plans to present this protocol to the CSNS at their meeting in New Orleans, immediately preceding the AANS Annual Meeting. All Section members are welcome to attend.

Head Injury Committee

Alex B. Valadka, MD

The Head Injury Committee remains active in a variety of projects. A position paper addressing the problems of slow publication of data after completion of clinical trials, especially those sponsored by pharmaceutical and medical device companies, has been submitted for presentation to the Officers of the AANS and CNS. An algorithm for the acute management of head-injured patients also has been completed.

In response to an invitation from the CNS Education Committee, an outline for a Resident Curriculum in Neurotrauma and Critical Care is being assembled. Plans are underway to survey the membership of the American Association for the Surgery of Trauma about their perceptions of the role of neurosurgeons in managing head-injured patients. As part of the COSIN project, which will soon be gathering data from practicing neurosurgeons about carotid endarterectomies, cerebral aneurysms, and lumbar discectomies, David Adelson, MD, is organizing a project that will focus on the management of subdural hematomas. Finally, the Head Injury Committee is looking forward to the Neurotrauma Symposium at the 1999 AANS Annual Meeting, which will feature a discussion on the role and efficacy of cerebral perfusion pressure-based therapy of head injury.

Membership Committee

Alex B. Valadka, MD

Membership in the AANS/CNS Section on Neurotrauma and Critical Care currently stands at 1,068. All new neurosurgery residents will soon receive letters inviting them to become members. The Membership Committee also will investigate ways to increase membership from allied disciplines, such as neurology and trauma surgery, as well as increase international membership.

NEUROSURGERY://ON-CALL®

Alex B. Valadka, MD

A list serve to facilitate communication between the leadership of the Neurotrauma Section with the membership has been established. With the assistance of David McKalip, MD, an online, interactive chat about sports-related concussion was recently held, during which a presentation was given by Julian Bailes, MD, and Alex Valadka, MD. A transcript of this session can be found online at www.neurosurgery.org.

In addition to the neurotrauma job placement service that is organized by P. David Adelson, MD, the neurotrauma fellowship registry will be updated and will be placed on the **N://OC®** site by Dr. McKalip. As always, any comments or suggestions about how **N://OC®** can better serve your needs are always appreciated.

Pediatric Neurotrauma Committee

P. David Adelson, MD

The Pediatric Neurotrauma Committee and its members remain quite active in different facets of pediatric neurotrauma. A new initiative is in the works to develop Child Abuse Guidelines and informational materials for the practicing neurosurgeon to use in the diagnosis and treatment of these children, as well as to better understand the medical and legal implications of such treatment. The subcommittee for developing these Guidelines is being chaired by Michael Partington, MD, and involves many AANS/CNS Pediatric Section members. The subcommittee had their inaugural meeting at the Pediatric Section Meeting in December and plan to meet within the next six months to draft a report. The reports will be forthcoming at both the AANS and CNS Annual Meetings.

The Pediatric Neurotrauma Committee also remains active in the development of the Pediatric Head Trauma Guidelines both for severe injury and mild injury/concussion, as well as the development of the multi-center concept for the study of children with traumatic brain injury.

Prevention Committee

Michael J. Caron, MD

The AANS/CNS Section on Neurotrauma and Critical Care's primary prevention initiative, which is affiliated with the THINK FIRST Foundation, is working on the following projects:

- 1) **Change in Leadership.** At the 1998 Congress of Neurological Surgeons Annual Meeting, Thomas Saul, MD, concluded his term as the Foundation's Chairman of the Board and passed the baton to Jeffrey Lobosky, MD, who served the past two years as the Foundation's Medical Director. Michael Caron, MD, continues to serve as Vice Chairman of the Board and assumes the role of Medical Director.
- 2) **Injury Prevention Initiative.** THINK FIRST For KIDS continues to be the primary focus for expansion of the injury prevention educational activity of the Foundation. An outstanding program spearheaded by Dorothy Zirkle, Chapter Director, Sidney Tolchin, MD, physician sponsor of the THINK FIRST San Diego, California chapter, and Sharp Healthcare has been initiated to develop THINK FIRST For KIDS in all 300 San Diego County elementary schools. Funded by \$2.5 million in grants, the four-year program serves as a model initiative between local government, school systems, health care corporate partners, local chapters and the National THINK FIRST Foundation.
- 3) **Funding For Children.** Several grants from the Ronald McDonald House Charities (\$50,000), the American Legion Child Welfare Foundation (\$25,000) and the Medtronic Foundation (\$10,000) will provide THINK FIRST For KIDS curriculum packets, free of charge, to the Foundation's local chapters. The packets will be distributed in schools where the funding is not available to purchase them.
- 4) **Educate Children.** An Efficacy Committee has been formed to assess the retention rate of children hearing the THINK FIRST injury message. In addition, a committee to update the teaching material and format the THINK FIRST For TEENS program is presently recruiting volunteers.
- 5) **Funding Levels Drop.** Annual contributions to the fund development of new programs, and volunteers for committee and leadership positions from the neurosurgical community continue to decline. All members of organized medicine and the supporting industries are encouraged to contribute their donations and volunteer their time to the Foundation. To make your contribution to the THINK FIRST Foundation, call (800) THINK-56 or e-mail thinkfirst@aans.org.

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Spinal Cord Injury Committee

Charles H. Tator, MD

During the past year, the STASCIS (Surgical Treatment of Acute Spinal Cord Injury Study) group has been writing reports on the pilot studies it conducted. The retrospective study of the current use of surgery for the management of 585 patients with acute spinal cord injury in 36 centers was reported last year at the AANS Annual Meeting and is featured in the January 1999 issue of *Neurosurgical Focus* posted on the **N//OC**® Web site (www.neurosurgery.org). The STASCIS prospective trial of early decompression in 26 patients managed in 10 centers also is published in the same issue. The imaging study conducted by the STASCIS group will be published in the March 1999 edition of the *Journal of Neurosurgery: Spine*.

The AANS/CNS Section on Neurotrauma and Critical Care and the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves provided funds for the aforementioned pilot studies. External support was requested from the National Institutes of Health (NIH), but was denied. Our last grant application to NIH submitted in 1997 in the new pilot clinical trials format received low priority rankings. Unfortunately, NIH appears to be the only agency with sufficient resources to fund a large multi-center trial of the type we envision. In the past six months, grant applications were submitted to the American Paralysis Association, the Spinal Cord Research Foundation of the Paralyzed Veterans of America, and the Eastern Paralyzed Veterans of America. To date, none of these applications have resulted in funding.

At the last STASCIS investigators meeting held at the 1998 AANS Annual Meeting, most of the STASCIS investigators indicated that they would be able to proceed with the current protocol, even in the absence of external funding. However, external funding would still be necessary for the Central Coordinating Office and for the Statistical Center. No decision has been made about proceeding.

Two major changes have been made to the protocol as a result of the pilot studies described above. First, MRI evidence of both compression and the effectiveness of decompression will be a requirement for all patients. It has been found that CT evidence of compression is insufficient. Second, one must attempt decompression within 8 hours of injury to conform with the therapeutic window established by the NASCIS trials—the only evidence-based successful therapeutic time interval in acute spinal cord injury trials to date.

The Spinal Cord Injury Committee will meet during the 1999 AANS Annual Meeting and is interested in receiving proposals for clinical trials in spinal cord injury at that time. To submit a proposal, please write to Charles Tator, MD, 399 Bathurst St., MC 2-435, Toronto, Ontario, Canada M5T2S8.

Sports Medicine Committee

Julian E. Bailes, Jr., MD

The Sports Medicine Committee is currently working on several projects that are important to the continued involvement of neurosurgeons in various aspects of neurological sports medicine. The Annual Sports Related Concussion and Nervous System Injuries Conference will be held May 28-30, 1999 at the Hotel Royal Plaza in Lake Buena Vista, Florida. The AANS/CNS Section on Neurotrauma and Critical Care, The National Football League Players Association, the National Athletic Trainers Association, and the University of Florida endorse this meeting. The Orlando Regional Healthcare System, who is sponsoring the event, will coordinate continuing medical education credits.

Course directors for this year's conference includes Julian Bailes, MD, Mark Lovell, PhD, Arthur Day, MD, and Michael Ray, MD. As in previous years, there will be national experts on the diagnosis and treatment of neurological sports injuries, including concussions, major head injuries, spinal cord injuries, neuropsychological assessment, on-field management, and more. We are pleased with the continued support of the aforementioned organizations and for the opportunity the conference awards neurosurgeons in defining their role as spine specialists.

The Sports Medicine Committee also has been actively involved with other organizations in the classification and categorization of athletes with suspect head or spinal column/cord injuries. We will continue to be an active voice in these groups and advocate the integral role the neurosurgeon brings to the care of critically ill patients.

For those Section members interested in getting involved in the Sports Medicine Committee, please contact Dr. Bailes at (407) 944-0515 or via e-mail at julianb@neuro-link.com.

We Want to Hear from You

The AANS/CNS Section on Neurotrauma and Critical Care is interested in hearing your comments and queries on this issue of the newsletter, as well as your ideas for future issues.

Please send your comments to:

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399 Bathurst Street, Suite 2-417
Toronto, Ontario M5T 2S8 Canada
Fax: (416) 603-5298
E-mail: mfehlings@torhosp.toronto.on.ca

Application for Membership

AANS/CNS Section on Neurotrauma and Critical Care



I. Biographical

(A) Name: _____

(B) Home Address: _____

(C) Office Address: _____

Phone: _____ Fax: _____

(D) E-Mail: _____

II. Category of Membership Requested: (Must be a member of the AANS or CNS.)

Active

Associate

International

Resident

III. Membership, Certification and Practice:

(A) Are you certified by the American Board of Neurological Surgery?

Yes

No

(B) Are you a member of

1. The American Medical Association?

Yes

No

2. A Local or Regional Medical Society?

Yes

No

3. A State or Provincial Medical Society?

Yes

No

Name: _____

4. The American Association of Neurological Surgeons?

Yes

No

5. The Congress of Neurological Surgeons?

Yes

No

Signature of Applicant

Date

*Membership dues are waived for applicants currently enrolled in a neurosurgical residency program.

**Please return the completed application with your membership fee of \$50 to:
AANS/CNS Section on Neurotrauma and Critical Care
Dept. 77-7597
Chicago, Illinois 60678-7597**

AANS/CNS Section on Neurotrauma and Critical Care

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We are pleased to offer you a new, convenient way to receive Section-related information—via e-mail. The state-of-the-art e-mail announcement service is available through **NEUROSURGERY://ON-CALL**[®], and open to all members of the AANS/CNS Section on Neurotrauma and Critical Care.

To sign up for this service, visit the Neurotrauma's Section area of **N://OC**[®] at <http://www.neurosurgery.org>. The link can be found by clicking on the "Sections" navigation graphic. Once there, enter your name and e-mail address and you will receive a confirmation message via e-mail once you have successfully been signed up to the announcement service.

Codman/Section on Neurotrauma and Critical Care Fellowship Award

The Executive Council of the AANS/CNS Section on Neurotrauma and Critical Care and David M. Hable, President of Codman, are pleased to announce the creation of the Codman Neurotrauma Fellowship Award.

The award, which will provide \$45,000/year of salary and research support, is intended to allow neurosurgical residents and fellows obtain focused clinical or basic research training in neurotrauma or critical care.

For more information, contact Michael G. Fehlings, MD, PhD, at (416) 603-5627 or via e-mail at mfehlings@torhosp.toronto.on.ca