

Mark A. Warner, M.D., Editor

Society of Neurosurgical Anesthesia and Critical Care Annual Meeting, Chicago, Illinois, October 13, 2006

The Annual Meeting of the Society of Neurosurgical Anesthesia and Critical Care (SNACC) was held at the Hilton Chicago (Chicago, Illinois) on Friday, October 13, 2006. Sulpicio G. Soriano, M.D. (Associate Professor of Anesthesia, Harvard Medical School, Children's Hospital Boston, Boston, Massachusetts), organized the program, which included lectures on brain function monitoring, leukocyte trafficking and neuroinflammation, pediatric traumatic brain injury, and anesthetic-induced neurodegradation. Two hundred eighty-six SNACC members attended the meeting this year. The SNACC continues to have a strong international presence with attendees from the United States, Canada, the United Kingdom, Germany, Japan, The Netherlands, Italy, Belgium, South Korea, India, Denmark, Portugal, Australia, Israel, Sweden, and Switzerland.

Dinner Symposium

The evening before the meeting, a dinner symposium titled "Brain Function Monitoring" was moderated by Cornelis J. Kalkman, M.D., Ph.D. (Professor, Department of Perioperative Medicine, Anesthesiology and Pain Treatment, University of Utrecht, The Netherlands). The symposium was supported by an unrestricted educational grant from Aspect Medical Systems (Newton, Massachusetts) and Hospira, Inc. (North Billerica, Massachusetts). Ira Rampil, M.D. (Professor of Anesthesiology and Neurologic Surgery, SUNY Stony Brook Medical Center, New York, New York), discussed the basic technology behind brain function monitoring, including electrode placement, signal amplification, filtering, and analog-to-digital conversion. He also delineated the differences of digital signal processing and computation between different commercially available monitors. Michael Struys, M.D., Ph.D. (Professor of Anesthesiology, Ghent University Hospital, Ghent, Belgium), then discussed brain function monitors and anesthetic pharmacology. He reviewed the relation between drug serum concentration, drug effect site concentration, and clinical and electroencephalographically measured depth of anesthesia. Finally, Paul Myles, M.D. (Professor and Director of Anesthesia, The Alfred Hospital, Melbourne, Australia), discussed the results of several large multicenter trials using brain function monitoring and discussed the ability of brain function monitors to prevent awareness during anesthesia and improve patient outcome. One hundred eighty-five members of the society attended the dinner symposium.

Basic Science Keynote Lecture

Richard M. Ransohoff, M.D. (Director Neuroinflammation Research Center, Department of Neurosciences, Lerner Research Institute/Cleveland Clinic Foundation, Cleveland, Ohio), delivered a lecture on "Leukocyte Trafficking in the CNS." He introduced the topic of neuroinflammation by presenting data to suggest that there are three distinct routes for leukocyte entry into the central nervous system: from blood to cerebrospinal fluid across the choroid plexus, from blood to the subarachnoid space through meningeal vessels, and from blood to parenchymal perivascular spaces. He outlined the function of chemokines, chemokine receptors, and their role in the recruitment of hematogenous leukocytes into the central nervous system. He indicated that, because of their central role in this process, chemokines and their receptors are some of the most tractable drug targets in the

regulation of inflammation. He ended his talk with a discussion of natalizumab, a monoclonal antibody to $\alpha 4$ -integrin that was approved for the treatment of multiple sclerosis and the first drug to target leukocyte transmigration. Natalizumab is believed to function by reducing the migration of activated T lymphocytes into the central nervous system; however, its use has been associated with a rare complication, progressive multifocal leukoencephalopathy. The impressive efficacy and appearance of this adverse effect underlines both the promise and the challenges involved in the modification of leukocyte transport for the treatment of inflammatory diseases.

After Dr. Ransohoff's lecture, the morning poster session commenced. Twenty-four moderators facilitated the presentation of 128 posters in 12 areas of neuroanesthesia and neuroscience.

Mini-Symposium on Pediatric Traumatic Brain Injury

The morning concluded with a mini-symposium on pediatric traumatic brain injury that was moderated by Monica S. Vavilala, M.D. (Associate Professor, University of Washington, Harborview Medical Center, Seattle, Washington). The first speaker was Patrick M. Kochanek, M.D. (Director, Safar Center for Resuscitation Research, Children's Hospital of Pittsburgh, University of Pittsburgh, Pittsburgh, Pennsylvania), who gave an exciting talk titled "Critical Mechanisms of Damage and Repair in Pediatric Traumatic Brain Injury: From Blood Pressure to Proteomics." Dr. Kochanek discussed the response of the pediatric brain to injury and the evolution and control of secondary injury, highlighting the differences between the adult and the pediatric brain. The second speaker was P. David Adelson, M.D. (Professor of Neurological Surgery, Children's Hospital of Pittsburgh, University of Pittsburgh), who gave a thought provoking talk titled "Contemporary and Novel Treatment of Pediatric Traumatic Brain Injury." Dr. Adelson discussed both surgical and nonsurgical means to reduce secondary injury after traumatic brain injury, with a focus on the aggressive reduction of increased intracranial pressure. He also highlighted differences between adult and pediatric traumatic brain injury, including the increased incidence among children of diffuse cerebral swelling with its associated mortality.

Presentation of the Distinguished Teaching Award and New Investigator Award

During the business luncheon, the 2006 Distinguished Teacher Award was presented to John Drummond, M.D. (Professor and Chairman, Department of Anesthesiology, University of California at San Diego, San Diego, California). There were numerous accolades from several of Dr. Drummond's trainees at various institutions that attested to the positive impact Dr. Drummond has had, and continues to have, on their careers.

The 2006 John B. Michenfelder, M.D., SNACC New Investigator Award was presented by Rona G. Gifford, M.D., Ph.D. (Professor, Department of Anesthesia, Stanford University, Stanford, California), to Ines P. Koerner, M.D., Ph.D. (Fellow in Critical Care, Department of Anesthesiology and Peri-Operative Medicine, University of Oregon, Portland, Oregon). Dr. Koerner gave a short lecture on her research titled "Polymorphisms in Human Soluble Epoxide Hydrolase Gene (*EPHX2*) Linked to Neuronal Survival after Ischemic Injury." She used site-directed mutagenesis to create *EPHX2* mutants and then studied the impact of these mutations on soluble epoxide hydrolase activity and the susceptibility to ischemic injury. She found that these variations in the *EPHX2* gene impacted the susceptibility to ischemic injury and neuronal survival, and these changes were based on changes in the

Dr. David O. Warner served as Section Editor for this report.

enzyme's hydrolase activity. Dr. Koerner and 10 other resident-investigators received travel awards for the Integra Foundation.

Emerging Issues in Neuroscience and Critical Care

William Slikker, Jr., Ph.D. (Director, National Center for Toxicological Research/Food and Drug Administration, Jefferson, Arkansas), delivered a fascinating talk on the controversial topic of "Anesthetic-induced Neurodegeneration during Development." Dr. Slikker began by reviewing some of the data suggesting that general anesthetics trigger widespread apoptotic neurodegradation in the immature rats. The relevance of neurotoxicity observed in 7-day-old rat pups to infants and children is unknown; however, it could have broad implications. Given the importance of this issue and the need for a primate model, Dr. Slikker presented fascinating *in vivo* data regarding the effects of ketamine on infant monkeys. Infant monkeys were evaluated after 3 h and 24 h of intravenous ketamine anesthesia. The 24-h exposure was selected as a longer duration, whereas a 3-h exposure was selected because it closely represents clinical general anesthesia. The 24-h ketamine infusion was associated with evidence of apoptosis and necrosis in infant monkeys. In addition, Dr. Slikker explained that the monkey brain, like the rat brain, seems particularly sensitive during the early development stages. Finally, he presented data to suggest that

short-term (3-h) ketamine exposure did not produce cell death in the perinatal primate.

Clinical Forum

The afternoon concluded with the Clinical Forum, which consisted of two case discussions lead by Basil Matta, M.B., F.R.C.A. (Clinical Director, Cambridge University Foundation, Trust Hospital, Cambridge, United Kingdom), and Arthur M. Lam, M.D. (Professor, University of Washington, Harborview Medical Center). The format for these discussions included real-time audience polling, which served to make the session more interactive and inspired many lively discussions. The first case involved a pediatric victim of a motor vehicle crash with a significant traumatic brain injury. Issues generating the most discussion included pharmacologic treatment for increased intracranial pressure, fluid management, and the timing of a decompressive craniectomy. The second case discussed involved a patient with a subarachnoid hemorrhage. The issues of appropriate surgical management were debated, and an exciting discussion regarding the options for intraoperative neuromonitoring ensued.

The society will reconvene at the 2007 annual meeting on October 12, 2007, in San Francisco, California.

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