

## Reports of Scientific Meetings

*Ellis N. Cohen, M.D., Editor*

### **Society of Neurosurgical Anesthesia and Neurologic Supportive Care**

The Society of Neurosurgical Anesthesia and Neurologic Supportive Care met for its annual scientific meeting in San Francisco on October 8, 1976. During the day-long meeting, seminars were conducted on Pharmacologic Protection against Brain Injury, Management of Spinal Cord Injury, Education in Neuroanesthesia, and Venous Air Embolism. A series of free papers concerning work in progress was also presented.

In the symposium on Pharmacologic Protection against Brain Injury, Alan Smith (San Francisco) reported that agents reducing  $CMR_{O_2}$  and increasing cerebrovascular tone exerted a sparing effect against hypoxia-ischemia. John Michenfelder (Rochester), while noting the protective effects of barbiturates in both focal and global experimental ischemia, also observed a paradoxical response of the barbiturates in not delaying the rate of energy failure in total ischemia. Frank Yatsu (Oregon) described the protection afforded by barbiturates in the animal model in global ischemia-hypoxia with prolonged isoelectric EEG. Professor Bo Siesjö, Director of the Brain Research Laboratory, University of Lund, and a pioneer in cerebrovascular neurochemistry, reviewed energy metabolism in the normal and ischemic states. His studies suggest that incomplete ischemia is more damaging than total ischemia, since in the former restitution of energy charges does not occur with reperfusion, and tissue lactate remains high. In the latter state, the energy charge is replenished rapidly after reperfusion. Siesjö also noted that pretreating the incompletely ischemic preparation with barbiturates allowed for energy recycling and metabolic recovery after 30 minutes of incomplete ischemia. He speculated that the barbiturates acted to scavenge free radicals liberated during the post-hypoxic hyperemic period. All panel members concurred as to the need for controlled clinical trials with barbiturates.

In the panel on Venous Air Embolism, Gerald Gronert (Rochester) discussed placement of the right atrial catheter using the ECG technique. A tape of the Doppler recording in a patient with air embolism showed that the Doppler tones returned to normal as the site of entrance was sealed and air evacuated by aspiration. Robert Carroll (Pittsburgh) introduced a new concept in the physiopathology of air embolism by demonstrating the perfusion deficits that may be seen following technetium macroaggregate albumen ( $T_E$ MAA) scan in patients with intraoperative venous air embolism. These patients showed evidence of decortication and scalloping that was not confined to a single lung segment. The changes were not observed in a normal chest x-ray, and resolved in a week. William Paul (Gainesville) discussed the use of

end-expiratory  $CO_2$  and pulmonary arterial pressure (via Swan-Ganz catheter) monitoring as an indicator of air embolism. It was agreed by the panel and participating members of the audience that the ultrasonic Doppler air-bubble detector is the most sensitive method of air-bubble detection.

In the symposium on Spinal Cord Injury, Maurice Albin (Pittsburgh) discussed the physiopathology of acute spinal cord trauma, indicating that it is an expanding, time-dependent lesion that has been shown in the experimental animal to be amenable to hypothermia and corticosteroid therapy. Robert White (Cleveland) and Donald Becker (Richmond) presented current neurosurgical concepts of treatment and emphasized the need to deliver these patients as quickly as possible to specialized centers and the importance of total cardio-respiratory support. C. Fred Brindle (Sherbrooke) delineated the pertinent anesthetic management of patients with acute cord injury and emphasized methods used for safe intubation of the individual who has a high cord lesion.

In the Neuroanesthesia Education Symposium, Peter Jannetta (Pittsburgh) pointed out that the primary goal of educators must be recruitment of excellent students. Criteria of integrity, stamina, self-image, ability to deal with stress, and dexterity can be evaluated through objective testing. Such testing has been successfully used in astronaut selection and should be applied to the screening medical school applicants.

James Cottrell (New York) described a recent survey (1976) of training programs in neuroanesthesia. In 52 of the 109 responding institutions, the average annual neurosurgical case load was 957. There were 234 intracranial operations. One hundred and fifty-seven were spine and spinal cord surgery, and 77 represented shunt procedures. In 12 of the 52 responding institutions, one or more anesthesiologists spent full time in neuroanesthesia. Thirty programs had organized neuroanesthesia rotations averaging 1 month. Twenty-nine had neurosurgical ICU's. A second survey in 14 institutions with large neurosurgery practices evaluated resident neurosurgical case experience. The residents averaged 60 neurosurgical procedures per year, of which 28 were intracranial. Maurice Albin described the Neuroanesthesia Fellowship Program at the University of Pittsburgh. This is a one-year program in which six months are spent in clinical neuroanesthesia; two months in neurology; one month in neuropathology; one month in neuroradiology; and two months in elective rotations. In a summary statement, James Harp (Philadelphia) noted that additional fellowship programs are needed for those wishing to subspecialize in neuroanesthesiology. Neuroanesthesiologists should aspire to equal stature with their surgical colleagues which will require ad-

vanced training in the neurosciences. Training beyond basic specialty requirements is likely to be associated with high professional achievement.

The Work in Progress session was chaired by Brian Marshall (Toronto) and W. A. Tweed (Winnipeg). G. D. Silverberg (Stanford) presented his experience on Intracranial Pressure Monitoring Using an Implanted Epidural Capacitance Transducer and Telemetry. In acute *in vivo* experiments this system showed good correlation between transducer and CSF pressures in the lateral ventricle and cisterna magna.

In a study of Causes of the Low-flow State Following Cerebral Ischemia, W. A. Tweed and co-workers (Winnipeg) measured aortic root pressure following total cerebral ischemia in rats. They suggested that hypotension and low cerebral perfusion pressure were major factors in causing the post-ischemic low-flow state. R. Uhl (San Diego) presented data on the clinical use of Further Development of EEG Spectral Analysis Monitoring in Anesthesia. Jai Chang (Pittsburgh) and co-workers evaluated Early Physiologic Responses in Experimental Subarachnoid Hemorrhage. They found no difference

when equivolume autologous blood was compared with mock CSF injected weekly for three weeks into the cisterna magna. In an Investigation of Nipride as a Cerebral Vasodilator, Javier Verdura (Mexico City) noted the spasmolytic effect of topically applied nitroprusside (duration four hours) compared with intravascular administration (20 minutes). Mohammad Keykhah (Philadelphia) related work of his group investigating the question, Does Sodium Bicarbonate Infusion Protect Brain Tissue during Hypoxia, and found no improvement in brain tissue tolerance to hypoxia when arterial oxygen content was increased from 2.5 to 3.6 vol per cent by bicarbonate infusion.

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