An Alternative to Purging an Anesthetic Machine for Patients in Whom Malignant Hyperthermia is a Possibility

To the Editor:—We were recently asked to anesthetize a child with a history of hyperpyrexia after a previous anesthetic at a time when a "clean machine" was not available. Rather than cancel the case or purge a machine, we combined a N₂O/O₂ blender (Low Flow Nitrous Oxide Blender No. 2903; Bird Products Corp., Palm Springs, CA) (previously described) with a Bain circuit (Curity 2491) and anesthetized the patient using drugs that do not precipitate malignant hyperthermia. We have since used this system for a newborn with presumed myotonia congenita and several children with questionable histories of malignant hyperthermia susceptibility. The system is used with a pulse oximeter and a mass spectrometer, and has performed adequately in every instance.

The system connects to the OR high pressure gas tubing and is mounted on an IV pole (Fig. 1). Overflow from the system can be scavenged. It is very light and portable, and we have used it as a standby system when women with known familial malignant hyperthermia have been in labor.

We would recommend this system as a safe, economical alternative to a dedicated clean machine for patients felt to be malignant hyperthermia susceptible.

Patrick J. Donahue, Major, U.S.A.F., M.C.
Staff Anesthesiologist

Jimmy Schulz
Biomedical Technician

Wilford Hall USAF Medical Center
Department of Anesthesiology/SGHSA
Lackland AFB, Texas 78236-5300

REFERENCES


(Accepted for publication August 9, 1988.)

Anesthesia in a Child with Moyamoya Disease

To the Editor:—Lund1 has emphasized the importance of pre-existing undiagnosed neurologic disease as a precipitating factor of major neurologic complications following spinal anesthesia. We report a case of a child in whom moyamoya disease was diagnosed after neurologic sequelae followed spinal anesthesia.

A 5-yr-old, 22-kg, healthy boy was scheduled for surgery to correct phimosis. Past medical history was negative except for mumps 10 days earlier. Following premedication, a 24-gauge spinal needle was introduced at the L₄₅ interspace and 1.1 ml of 0.5% hyperbaric tetracaine with phenylephrine was injected. A T₁₅ sensory level to pin prick was

1023
then obtained. Two hours following the 20-min operation, he suddenly had a seizure of the left neck and arm after which the left leg was involved. This left-sided seizure recurred throughout the next 4 h after which he regained consciousness but with residual left hemiparesis. During the seizures, vital signs, body temperature, serum electrolytes, analysis of arterial blood gases, blood sugar, and analysis of cerebrospinal fluid were normal. His left hemiparesis subsided over the following 10 days. After this episode, his mother described left leg weakness lasting several minutes following a hot bath 10 days preoperatively. On the EEG, low voltage was seen on the right side. Computed tomography performed following the seizure was normal. However, 8 months later a low density area appeared in the right temporoparietal region. Repeated temporary weakness of the left leg had also occurred. Internal carotid angiography revealed stenosis and obstruction of major cerebral vessels and vascular network at the base of the brain that was interpreted as moyamoya disease, bilaterally. Cerebral blood flow measured with the 133Xe clearance method was 55.2 ± 10.4 ml·100 g⁻¹·min⁻¹ on the right and 72.5 ± 20.3 ml·100 g⁻¹·min⁻¹ on the left (normal value is 106.4 ± 33.5 ml·100 g⁻¹·min⁻¹ in children 3–11 yr of age). We cannot identify the precise precipitating cause of the postoperative convulsion. However, the preoperative episode of temporary leg weakness following a hot bath suggests that he had an already compromised cerebral circulation. Brown et al.² have emphasized that, postoperatively, patients with moyamoya disease are prone to development of seizures and that it is important to maintain normothermia and normocapnia to minimize changes in CBF when managing patients during general anesthesia. Transient ischemic attacks (TIA) manifested by limb weakness are the most common initial manifestations in children with moyamoya disease.³ Kurokawa et al.⁴ listed change of body temperature (such as after a hot bath), elevation of body temperature, or subsidence of fever as precipitating factors of TIA in children with moyamoya disease. In summary, we recommend that moyamoya disease be considered as one of a number of pre-existing neurologic diseases when signs of cerebral ischemia occur in children following spinal anesthesia.

MASAKO YASUKAWA, M.D.
Staff Anesthesiologist

Anesthesiology
69:1024–1025, 1988

Fentanyl and Alfentanil Versus Morphine for Epidural Analgesia

To the Editor:—In their recent article, Chrubasik et al.³ conclude that fentanyl and alfentanil are preferable to morphine for postoperative continuous epidural analgesia. We disagree with this conclusion, based on their own findings.

Nine of the 20 patients receiving fentanyl and seven of 20 patients receiving alfentanil had postoperative "sedation" (not defined in their article). None of the 20 patients who received morphine were sedated. They judged this "sedative effect of the lipophilic opiates (as) desirable." We disagree. Sedation interferes with pulmonary toilet, placing the patients at risk for atelectasis and pneumonia. Similarly, sedation interferes with early mobilization, thus increasing the risk of deep venous thrombosis and pulmonary embolization. Self-care and social interaction are also decreased in sedated patients. We believe that one of the clear benefits of epidural administration of opiates over conventional im or iv routes is greater analgesia with less sedation. This position is supported by the study of Rawal et al.,⁴ which showed reduced postoperative complications and time to discharge from hospital in patients receiving epidural morphine. We know of no studies that show improved outcome associated with postoperative sedation.

In the study of Chrubasik et al.,³ morphine use was entirely uncomplicated by pruritus, pain on administration, or postoperative sedation, whereas both fentanyl and alfentanil had a significant incidence of each of these side effects. It was argued that the more rapid onset of analgesia with fentanyl and alfentanil make them more desirable than morphine for early postoperative analgesia. If initial doses of epidural opiates are given well before the conclusion of surgery, patients will have full benefit of the analgesia when pain is first perceived. Moreover, the continuous technique that was described provides sustained analgesia. It makes rapid onset a less important factor when determining the preferred drug.

STEPHEN W. BLEDSOE, M.D., Ph.D.
L. BRIAN READY, M.D., E.R.C.P. (C.)
Acute Pain Service, University Hospital
Department of Anesthesiology, RN-10
University of Washington
Seattle, Washington 98195