

This Month in

ANESTHESIOLOGY

■ Intrathecal Sufentanil Versus Epidural Bupivacaine

Using a randomized double-blind design, D'Angelo *et al.* (page 1209) compare analgesic efficacy and side effects of intrathecal sufentanil and epidural bupivacaine during the first stage of labor. Fifty ASA physical status 1 and 2 parturients, in active labor with cervical dilatation less than 7 cm, first received an intravenous bolus of at least 250 ml of lactated Ringer's solution. Patients in the sufentanil group received an intrathecal injection of 10 μ g sufentanil diluted in 2 ml of preservative-free normal saline and an epidural injection of 12 ml of preservative-free saline. Patients in the bupivacaine group received a 2-ml intrathecal injection of preservative-free saline and 12 ml 0.25% bupivacaine (30 mg) epidurally. Mean duration of analgesia was 123 min for patients receiving intrathecal sufentanil compared with 68 min for patients receiving epidural bupivacaine. In the first 30 min after administration, sufentanil produced lower visual analog scores for pain. Beyond 30 min, however, visual analog scores were similar between the two groups, and hypotension was observed with equal frequency in the two groups. An indication for caution after intrathecal sufentanil injection is the rapid spread of sensory level to upper thoracic dermatomes, suggesting rapid cephalad distribution in cerebral spinal fluid.

■ Dexmedetomidine as Anesthetic Adjuvant

Dexmedetomidine is a more specific and selective α_2 -adrenergic receptor agonist and has a shorter elimination half-life than clonidine. Administered as a pre-anesthetic medication, dexmedetomidine reduces dose requirements for the intravenous induction agent thiopental and for opioids. Using the electroencephalogram as a pharmacologic measure of drug effect on the central nervous system (CNS) and by applying pharmacokinetic-pharmacodynamic modeling, Bührer *et al.* (page 1216) examine thiopental dose requirements after administration of dexmedetomidine and its pharmacokinetic mechanisms. Fourteen male patients (ASA physical status 1), scheduled for elective otolaryngologic or orthopedic surgery, were randomly assigned to the dexmedetomidine or control group. Dexmedetomidine reduced thiopental dose requirement for electroencephalographic burst suppression by 30%.

The dose-sparing effect of dexmedetomidine is due to the pharmacokinetic rather than pharmacodynamic nature of its interaction with thiopental.

■ Detecting Susceptibility to Malignant Hyperthermia

Using current (1987) North American Malignant Hyperthermia Group protocol, O'Flynn *et al.* (page 1228) evaluate the coincidence of masseter muscle rigidity (MMR) with malignant hyperthermia susceptibility (MHS). Based on evidence of MMR following succinylcholine, pediatric patients (aged 2–15 yr) were referred for muscle biopsy (caffeine-halothane muscle contracture testing) between 1986 and 1991. Forty-one of the 70 patients (59%) in the study were diagnosed as MHS by muscle biopsy. Because of the greater than 50% concordance between MMR and MHS, the most conservative course of action is to discontinue the anesthetic and observe the patient for signs of clinical malignant hyperthermia. This was the action taken with 68% (48/70) of patients included in the study. In another 11% (8/70) of patients with MMR, anesthesia was continued with nontriggering agents for malignant hyperthermia with appropriate monitoring, an acceptable alternative depending upon the urgency of the surgery.

■ Infection and Intrathecal Catheters

Do intrathecal catheters necessarily provide microbial access to the central nervous system, causing serious infection? To test the validity of this "conventional wisdom," Bevacqua *et al.* (page 1234) cultured the tips from indwelling intrathecal catheters from 139 postoperative patients who had undergone a variety of surgical procedures, including aortic reconstruction with or without lower extremity bypass grafting and axillary-femoral artery bypass graft. All patients received prophylactic antibiotics immediately before intrathecal catheter insertion. When cultured, a substantial number of the intrathecal catheter tips (mean indwelling duration 66.1 h) yielded evidence of bacterial growth. Applying semiquantitative culture methods, the team established that the majority of positive cultures occurred as the catheters were being removed. Intrathecal catheter indwelling duration of less than 96 h rarely was associated with significant bacterial

growth. Colony counts of more than 10 may help define a population at higher risk for infectious complications.

■ Averting Acute Respiratory Distress Syndrome

In recent years, it has been shown that mechanical ventilation may contribute to high morbidity and mortality in patients with acute respiratory distress syndrome (ARDS). Inhaled nitric oxide is a new technique proposed to limit oxygen toxicity and potential barotrauma from high-pressure ventilation. Puybasset *et al.* (page 1254) conducted a prospective study of 11 critically ill patients who had severe ARDS characterized by extensive alveolar damage involving at least 40% of lung parenchyma. Inhaled nitric oxide at a concentration of 2 ppm reversed the increase in pulmonary vascular resistance index induced by acute hypercapnia, partially reduced the acute permissive hypercapnia-induced pulmonary hypertension, and improved arterial oxygenation.

■ Postcesarean Patient-controlled Analgesia Routes Compared

Is there a difference in quality of analgesia, side effects, dose requirement, or plasma concentration when meperidine is administered epidurally or intravenously using patient-controlled analgesia (PCA) after cesarean section? Paech *et al.* (page 1268) conducted a 24-h randomized, double-blind crossover study of 45 women who had undergone cesarean section under epidural analgesia. Group 1 patients commenced patient-controlled epidural analgesia (PCEA) for an initial 12-h

period, followed by patient-controlled intravenous analgesia (PCIA) for 12 h more. Group 2 patients began with PCIA, crossing over to PCEA after 12 h. Almost 90% of participants preferred PCEA, and opioid-dose requirements were reduced by up to half compared to PCIA. Further study is necessary, however, to determine whether continued postoperative meperidine administration beyond 24 h affects breast-feeding and/or poses a risk of neonatal normeperidine toxicity.

■ Avoiding Surgery for Epidural Abscess

Although rare, epidural abscess associated with an indwelling epidural catheter can produce serious complications that usually are treated with surgical laminectomy and antibiotic therapy. Tabo *et al.* (page 1393) report two cases in which patients with epidural abscess were treated successfully with percutaneous drainage using an epidural needle and catheter. Magnetic resonance imaging (MRI) revealed an epidural abscess in the left posterolateral epidural space at T12–L2 in a 72-yr-old male patient and at L3–L4 in a 65-yr-old male patient. Percutaneous drainage was attempted as a preliminary measure in both cases, because the abscesses were well shown by MRI and were located in the easily accessible posterolateral epidural space. Percutaneous drainage, provided it is performed under fluoroscopic control and with careful attention to the possibility of subsequent failure, extended abscess, or meningitis, can be considered if an acute epidural abscess is located in the posterior epidural space and is well shown by MRI.

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