

## ANESTHESIOLOGY

■ A 6-Year Follow-up of Anaphylactic Reactions to Anesthesia. Harboe *et al.* (page 897)

From January 1996 through December 2001, Harboe *et al.* conducted standardized allergy follow-up examinations of 83 patients who had experienced perianesthesia anaphylactic reactions, and had been referred to their allergy center in Western Norway. The mean time interval to follow-up was 8.5 months. The investigators' standardized diagnostic protocol included recording of each patient's medical history; skin prick tests (consisting of a histamine chloride negative control, suxamethonium, rocuronium, vecuronium, pancuronium, atracurium, fentanyl, pentothal, propofol, and latex); total and specific immunoglobulin E (IgE) serum samples; serum tryptase; and a histamine release test.

The severity of patients' anaphylactic reactions was rated on a four-degree scale (skin reactions; systemic non-life-threatening reactions; life-threatening reactions; cardiopulmonary arrest). Depending on the outcome of the skin prick test, serum IgE, and histamine release test results, pathogenic mechanisms for their reactions were defined as IgE-mediated or non-IgE-mediated reactions. The resulting analysis showed that 61.4% of the referred patients had a previous history of some form of allergic disease, and 25.3% reported previous adverse reactions to nonanesthetic drugs. The majority of patients (86.7%) had experienced clinical signs of anaphylaxis within 5 min of induction of general anesthesia. The most frequently reported clinical sign was bronchospasm in 65 patients; hypoxemia was reported in 41 patients.

The investigators found that 71.1% of the examined anaphylactic reactions were IgE-mediated, and that neuromuscular blocking agents (primarily suxamethonium) accounted for 93.2% of these reactions. The high proportion of allergic reactions to neuromuscular blocking agents could be explained by referral bias and diagnostic challenges, including uncertainties about the specificity of skin prick tests for these agents. To compensate for the latter challenge, the investigators adopted a system of graded causality, and do caution that their data should not be used to estimate the incidence of allergy to neuromuscular blocking agents in the Norwegian population at large. They urge investigators to form networks for standardized reporting and diagnostic protocols to produce data more suitable for epidemiological research in this area.

■ Fiberoptic Orotracheal Intubation Studied. Johnson *et al.* (page 910)

A variety of recommendations, airway equipment, and endotracheal tube types have been suggested to manage situations in which an endotracheal tube does not advance into the trachea during fiberoptic intubation. To identify possible mechanisms for this common clinical situation, Johnson *et al.* recruited 45 patients to undergo a clinically indicated awake fiberoptic oro-tracheal intubation. Most of the patients were set to have neurosurgery of the cervical spine to correct instability caused by ankylosing spondylitis or other spinal conditions. All patients were kept awake with conscious sedation during intubation because of cervical spine instability or a difficult airway (in three morbidly obese patients). After administering topical anesthesia and/or nerve block, investigators attempted an awake fiberoptic oro-tracheal intubation on each patient. Placement of the flexible bronchoscope and advancement of the endotracheal tube over it were videotaped *via* a second, nasally inserted, flexible bronchoscope. The videotaped data were later reviewed and analyzed by an otolaryngologist.

In approximately half the patients, the right arytenoids inhibited advancement of the endotracheal tube over the flexible bronchoscope. When investigators withdrew the endotracheal tubes and rotated them 90 degrees counterclockwise, intubation was successful on the 2nd, 3rd, and 4th attempts in 26.6%, 20%, and 0.7% of patients, respectively. To reduce the failure of the endotracheal tube to advance, the authors recommend that clinicians position the flexible bronchoscope in the center of the larynx between the arytenoids, and rotate the endotracheal tube so that the bevel faces posteriorly in the larynx. This technique may also help to prevent laryngeal injury during intubation.

■ Are Systemic Opioids Effective during Active Labor? Nelson and Eisenach (page 1008)

Nelson *et al.* tested whether a  $\kappa$ -agonist might be more effective than a  $\mu$ -agonist to treat labor pain and whether it is ethical to offer systemic opioids to women requesting analgesia during labor. Healthy women requesting analgesia during active labor were randomized to receive 50 mg meperidine, 1 mg butorphanol, or a combination of the two. In addition to the standard 0-10 numerical analog pain assessment scale, the authors used a vali-

dated ratiometric descriptive scale to measure affective magnitude of pain. Before they were given their assigned drugs (prepared by an anesthesiologist not involved with the patients or study measures), patients were asked to rate their pain intensity and their pain magnitude. They again rated their pain intensity and magnitude between the 6th and 7th uterine contraction after administration of the study drug. Continuous fetal heart rate and uterine contraction monitoring were in place during the entire study period.

Before drug treatment, pain intensity was  $7.5 \pm 0.3$ . Assessed approximately 14–15 min after drug treatment, pain intensity was reduced in all three study groups by an average of 25–35%. The pain affective magnitude was  $15 \pm 1.0$  before drug treatment, corresponding to descriptors between “dreadful” and “horrible.” Meperidine and the combination of butorphanol and meperidine significantly reduced pain affective magnitude to  $7.4 \pm 1.2$ , corresponding to descriptors between “distressing” and “oppressive.” Butorphanol alone did not significantly reduce pain magnitude. Sedation increased after all drug treatments to a similar degree. Neonates appeared normal, and all had Apgar scores greater than 7 at 5 min postdelivery.

Using the definition of clinically meaningful pain relief as a 35% reduction in pain intensity score, 27% of women receiving butorphanol, 33% of women receiving meperidine, and 53% of women receiving the combination of the two achieved this target. Although the authors maintain that it is ethically appropriate to administer systemic opioids to women requesting analgesia for labor pain, the drugs at these doses may not be ideal for treatment of labor pain.

### ■ A Place for Acupuncture in the Anesthesia Setting? Chernyak and Sessler (page 1031)

In this issue, Chernyak and Sessler present an overview of current understanding about the potential mecha-

nisms for acupuncture-mediated pain relief. The tenets of Chinese medicine theory—namely, that disease is a function of energy imbalance—are outlined, and the types of acupuncture—invasive and noninvasive—are described.

Research about acupuncture has been conducted since the 1960s, and more recent work using functional magnetic resonance imaging has demonstrated that specific areas of the brain become activated when acupoints are stimulated—and that these observations correlate with ancient acupuncture literature. The authors note that the potential analgesic mechanisms of acupuncture include release of endogenous opioids from central nervous system stores, and perhaps modulation of the hypothalamic–limbic system.

Perioperative acupuncture has been advocated to reduce intraoperative opioid use, and to decrease postoperative pain, nausea, and vomiting. The authors summarize studies of preoperative acupuncture, which have shown that the technique can produce relaxation and sedation in patients. Some studies have shown that when used in combination with conventional anesthetic techniques, acupuncture can reduce the required dose of opioids, whereas other studies of the use of acupuncture in conjunction with dental and oral surgery have demonstrated conflicting results. The authors also discuss conclusions from studies of transcutaneous electrical nerve stimulation and electroacupuncture. Current available data do not support using acupuncture for laryngospasm or to treat cardiovascular disease in humans. Some small trials, however, have demonstrated that acupuncture treatment may promote postoperative recovery of impaired intestinal function after abdominal surgery. The issue of acupuncture to treat postoperative pain remains controversial. The authors then summarize some general principles to guide clinicians when considering inclusion of acupuncture analgesia with the allopathic regimen.

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