Intermittent Epidural Beats Continuous Infusion

Programmed epidural boluses decreased total anesthesia use and variability in response.

BY MIRIAM E. TUCKER
FROM THE ANNUAL MEETING OF THE SOCIETY FOR OBSTETRIC ANESTHESIA AND PERINATOLOGY

SAN ANTONIO — Providing epidural anesthesia in programmed bolus doses is associated with lower use of epidural anesthetics per patient, according to new data presented at the annual meeting of the Society for Obstetric Anesthesia and Perinatology.

In a previous study, Dr. Wong and her colleagues reported that the currently available pumps used for patient-controlled epidural anesthesia (PCEA) also can be programmed to automatically deliver boluses at regular intervals, and that this “programmed intermittent epidural bolus” (PIEB) resulted in similar analgesia but with a smaller bupivacaine dose and better patient satisfaction, compared with continuous epidural infusion (CEI) for maintenance of epidural labor analgesia (Anesth. Analg. 2006;102:904-9).

As a follow-up, the current study investigated the effect of specific combinations of bolus volumes and time intervals to determine which is optimal. The subjects were healthy nulliparous women randomised for a condition of cervical dilation 2-5 cm. All received combined spinal epidural anesthesia comprising intrathecal bupivacaine 1.25 mg/fentanyl 15 mcg and a test dose of epidural lidocaine 45 mg/epinephrine 15 mcg.

The maintenance epidural solution consisted of bupivacaine 0.0625% with fentanyl 2 mcg/mL. Breakthrough pain was treated with PCEA and if needed, a manual bolus dose by the anesthesiologist.

The maintenance epidural technique was initiated 15 minutes after the intrathecal injection. Patients were randomised to one of three groups: 66 received 2.5 mL by the pump every 15 minutes (2.5/15), 60 received 5 mL every 30 minutes (5/30), and 54 got 10 mL every 60 minutes (10/60). Thus, all patients received the same total volume of drug but it was distributed differently, Dr. Wong noted.

All of the women had successful analgesia, and there were no differences in maximum oxytocin dose or mode of delivery among the groups.

The primary outcome, total bupivacaine consumption per hour of analgesia, was significantly lower in the 10/60 group compared with the other two, with a mean of 10.3 mg/hr versus 11.3 mg/hr for the 2.5/15 patients and 11.1 mg/hr with 5/30. There was also less variability in dosing from hour to hour in the 10/60 group, she noted.

There were no significant differences in any secondary variable, including Visual Analog Pain score, motor block (Bromage greater than 0), number of PCEA requests, time to first request for manual bolus, number of subjects requiring manual bolus, patient satisfaction score, or extent of sensory blockade, as measured by both cold stimuli and von Frey hair threshold tests.

The mechanism isn’t entirely clear. All studies of PIEB have shown that the technique provides equal or better analgesia than does CEI with a lower dose of drug. But, if as hypothesized, the reason is that boluses provides better spread in the epidural space, then it is “interesting,” Dr. Wong said. The study found no difference in the extent of sensory blockade among the three groups. Indeed, data on the extent of sensory blockade in other studies of PIEB have been inconsistent, she said.

Other variables, such as differences in catheter design or patient demographics, might also contribute to the variability in extent of analgesia, she added.

In response to a question from the audience about whether these findings have changed her clinical practice, Dr. Wong noted that there is currently no commercially available pump that delivers both PCEA and PIEB.

However, her institution has “considerably backed off using continuous infusion rate” and now relies more on patient-controlled bolusing, resulting in a lower manual bolus rate.

“There’s very solid evidence that giving the drug as a bolus, by whatever means—by the patient, the machine, or the anesthesiologist—is a more efficient technique,” she said.

Combined Spinal-Epidural Anesthesia Beats Epidural Alone

BY MIRIAM E. TUCKER
FROM THE ANNUAL MEETING OF THE SOCIETY FOR OBSTETRIC ANESTHESIA AND PERINATOLOGY

SAN ANTONIO — Combined spinal-epidural anesthesia was superior to traditional epidural for first-stage anesthesia but there were no differences in second stage or in delivery pain in a randomized, controlled comparison of the two methods among 800 women.

The Epidural Analgesia and Spinal-Epidural Analgesia (EASE) study also showed that concerns about epidurals failing with combined spinal-epidural (SE) because of the inability to provide a test dose are unfounded, Dr. David R. Gambling reported.

Previous studies comparing the techniques had mixed results. A Cochrane review showed that CSE had less rescue analgesia and less urinary retention than epidural with or without a test dose (Cochrane Database Syst. Rev. 2007 [doi:10.1002/14651858.CD003401.pub2]). Compared with low-dose epidural anesthesia (EA), combined SE had faster-onset analgesia, more pruritis, and lower umbilical artery pH, but there was no mention of progress of cervix, fetal heart rate decelerations within 30 minutes of analgesic induction were more common in the SE group (8.5% vs. 4.5%), but none required emergency c-section.

In EASE, 398 women received EA, consisting of 10 mL 0.125% bupivacaine with 2 mcg/mL fentanyl in two 5-mL doses via epidural needle, prior to epidural catheter insertion. In each group (2% EA and 1.2% SE) required replacement of the epidural catheter, suggesting that there should not be concern about epidurals failing with SE because of inability to provide a test dose, he commented.

Fetal heart rate decelerations within 30 minutes of analgesic induction were more common in the SE group (8.5% vs. 4.5%), but none required emergency c-section.

The proportions with Apgar scores below 7 at 1 and 5 minutes were less than 5% and less than 0.5%, respectively, and there were no differences in the incidence of neonatal resuscitation.

Patient satisfaction with their mode of analgesia did not differ between the two groups.

Dr. Gambling