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Caudal Anesthesia with Ropivacaine in an Awake 1,090-g Baby

To the Editor:—Caudal anesthesia with ropivacaine as an adjunct to general anesthesia recently has been shown to provide duration of pain relief and sensory and motor effects similar to bupivacaine.^{1,2} We report the time course of the blockade after caudal epidural injection of ropivacaine in a 1,090-g awake, preterm infant.

A 26-day-old, 1,090-g male infant was scheduled for partial amputation of toes 1–4 of the left foot because of peripheral necrosis with suspected superinfection; the lesions were probably of embolic origin after umbilical artery catheterization. Medical history was significant for premature birth at 26⁴/₇ weeks of gestation, with a birth weight of 800 g. He had mild hyaline membrane disease and underwent mechanical ventilation for 4 days, followed by 48 h of nasopharyngeal continuous positive airway pressure. At the time of surgery, he was breathing room air, and he was being administered oral theophylline for apnea because of prematurity. He was fully enterally fed with fortified breast milk by continuous gavage feeding. Enteral feedings were discontinued 30 min before the scheduled operating room time. The infant was placed in the prone position on a convective warming mattress, and the monitoring equipment was applied. The caudal puncture was achieved on the second attempt with use of a 25-gauge butterfly needle, and, after careful aspiration, 1.5 ml plain ropivacaine, 0.2%, (2.75 mg/kg) was injected over 60 s. During its onset, the blockade was evaluated using tactile stimuli every 2 to 3 min. After completion of surgery, the drapes were removed, and the response to 30 mA transcutaneous tetanic stimulation was used to evaluate the sensory block. Motor power was considered to be normal when forceful leg lift was regained. The time course of the blockade is presented in table 1. During 18 min of uneventful surgery, the infant remained comfortable, and rectal temperature was maintained at 36.1°C. Acceptable postoperative pain relief (as well as could be evaluated) was achieved by a single dose of oral acetaminophen (15 mg/kg). No increase in the frequency of apnea was observed during the first postoperative days.

Experience with regional techniques in very low-birth-weight infants is limited. Successful caudal anesthesia has been reported in awake infants as small as 2,200 g with use of bupivacaine³ and as small as 1,440 g with use of chloroprocaine.⁴ Up to 3.25 mg/kg bupivacaine was necessary for successful blockade³; however, bupivacaine 3 mg/kg has been associated with central nervous system toxicity in infants, and therefore it has been recommended that its dose be limited to 2 mg/kg.^{1–5} Because of the potential for reduced toxicity, we used ropivacaine in our patient, at a dose considered to be equivalent to 2 mg/kg bupivacaine.

The most surprising finding was the short duration of the blockade after caudal epidural injection of the long-acting local anesthetic ropivacaine. It seems unlikely that single-shot caudal anesthesia using reasonable doses of local anesthetics is a suitable technique for more extensive surgery, such as inguinal hernia repair, in very small infants.

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Table 1. Time Course of the Blockade after Caudal Epidural Injection of 2.75 mg/kg Ropivacaine

Minutes after Caudal Injection	Observation
10	First signs of motor blockade
18	Complete motor blockade
33	Start of surgery
52	First movements of the toes
55	End of surgery and drapes removed
58	Full motor power (sensory level T12*)
63	Full motor power (sensory level L4*)

* Using 30-mA transcutaneous tetanic stimulation.

In summary, we report a successful caudal block with ropivacaine in an awake 1,090-g infant.

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