

The Use of Caudal Morphine for Pediatric Liver Transplantation

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Introduction: Coagulopathy is a major complication of end-stage liver disease. However, there are children with liver disease and normal clotting function, who may benefit from supplemental regional anesthesia. Therefore, we would like to report the use of caudal anesthesia in a pediatric liver transplant operation.

Case Report

A 3-yr-old male patient presented for pediatric liver transplantation. The child's medical history and physical examination was only significant for those findings related to his underlying medical condition. The child's coagulation profile included a protime of 15 seconds with an INR of 1.2, an activated partial thromboplastin time of 39 seconds and a platelet count of 109,000.

The child was brought to the operating room and a modified rapid sequence induction with cricoid pressure was conducted with standard ASA monitors. After the airway was secured, a caudal block was performed using a 22G B-bevel needle. 0.6 mg of Duramorph™ diluted in a total volume of 10 mL of preservative free normal saline was injected without difficulty. Initially, the 14.9 kg child received 100 µg of fentanyl in divided doses prior to surgical start. One additional dose of 10 µg of fentanyl was administered two hours later. The child was maintained on air-O₂ and Isoflurane, which ranged from 1.0% to 0.5%. Near the end of the case, the skin incisions were infiltrated with 20 mL of 0.125% bupivacaine. The child was easily aroused and extubated. The case lasted approximately 6 hours.

The patient was transferred to the pediatric intensive care unit. The child remained hemodynamically stable and a neurologic examination revealed no abnormalities. The child was weaned within 12 hours to room air with a resting saturation of greater than 95%. The respiratory rate ranged in the mid 20s, without observation of splinting, use of accessory muscles or apnea. The first dose of morphine was 0.75 mg and was given six hours postoperatively. The total PCA morphine use in the first 7 hours was 1.0 mg and over the next 12 hours was 8.1 mg. Overall, the child continued to do well and was able to sit in a chair by the 15th hour.

Discussion

Although adult studies have shown a reduction in the need for postoperative narcotics, little is known of pain requirements for pediatric liver transplant recipients. The potential benefits of well managed postoperative pain include enhanced liver perfusion by early extubation, a reduction in the risk of vascular thrombosis, and a greater safety margin by exposing the newly transplanted liver to fewer medications. (1, 2) More importantly, children may benefit from a regional technique, because they are not as capable of describing or characterizing their pain and/or discomfort.

We report the first use of a regional anesthetic technique for pediatric liver transplantation. The use of caudal morphine without a local anesthetic was based on a concern for intraoperative hypotension. In addition, the placement of a catheter was rejected, because patients are allowed to remain coagulopathic postoperatively to decrease the risk of vascular thrombosis. Also, the presence of a hyperdynamic vasodilated state may increase the chances of an epidural hematoma from damage to an engorged epidural vein. Therefore, the caudal needle was inserted less than a 0.5 cm and repeated aspiration was performed during the block. The child did extremely well and was discharged from the hospital on the fifth postoperative day.

Refs:

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2. Barash PG, Cullen BF, Stoelting RK. Clinical Anesthesia. In: Ellis JE, Roizen MF, Mantha S, eds. Anesthesia for vascular surgery. Philadelphia: Lippincott Williams & Wilkins, 2001: 929-967.