[2006 CR47]

Case Report: Local anesthetic infiltration of the wound for supplemental postoperative pain management in a pediatric liver transplant patient

Author(s): TW Kim, CC Chan
Affiliation(s): Baylor College of Medicine, Houston, TX

Introduction: We previously reported a case using caudal morphine for pediatric liver transplantation. A 3-yr-old, 14.9 kg child received a caudal injection of 0.6 mg of preservative free morphine sulfate as well as 110 mcg of intravenous fentanyl. Also, the surgical incisions were infiltrated with 20 ml of 0.125% bupivacaine[1]. However, a question arose as to the impact of the local anesthetic on the patient's postoperative course and narcotic requirements. Therefore, we report the use of local anesthetic infiltration of the wound for supplemental postoperative pain management and compare this experience to the previously reported case in terms of postoperative pain, narcotic requirements, and potential patient benefits.

Preoperative: A 7 year old, 27.5 kg male was admitted for orthotopic liver transplantation secondary to biliary atresia. The patient had previously undergone a Kasai procedure at 5 weeks of age without complication. There was no other significant medical history. On admission, the child's coagulation profile included an INR of 1.1, a PT of 13.9, a PTT of 40.1, and a platelet count of 82,000.

Intraoperative: Standard ASA monitors were placed, the child preoxygenated, and a modified rapid sequence induction with cricoid pressure performed using propofol and high dose pancuronium. Anesthesia was maintained with an isoflurane-air-oxygen mixture. The patient also received a total of 325 mcg of fentanyl within the first two hours of the operation. Muscle relaxation was maintained with pancuronium. Following wound closure, the skin incision was infiltrated with 25 mL of 0.125% bupivacaine. The case lasted approximately 7 hours. The patient was extubated at the operation's conclusion and transferred to the pediatric intensive care unit.

Postoperative: The patient was in the intensive care unit for a total of 1.5 days. Initial assessment of the patient's pain was noted to be a 2 on a scale of 10. In the third hour, the patient was given the first dose of 1.5 mg of morphine for a pain score of 6. He received two more 1.5 mg doses in the first 8 hours for pain scores of 8 with relief to a pain score of 4 each time. In total he received 4.5 mg of morphine in the first 8 hours and 6 mg of morphine in the subsequent 12 hours. The patient was weaned off supplemental oxygen over the next 24 hours and maintained oxygen saturations greater than 98% on room air. Overall, he continued to do well and was discharged on the fifth postoperative day.

Discussion: In this report, the child received the first dose of narcotic for postoperative pain 3 hours following the conclusion of surgery. Both patients were cared for by the same surgeon and received anesthesia care from the same anesthesiologist using isoflurane, air, oxygen, and fentanyl. The entire dose of fentanyl was administered within the first two hours of the operation for both patients (11.81 mcg/kg for the patient receiving local infiltration only, 7.38 mcg/kg for the patient receiving caudal morphine). Closer comparison revealed that the patient receiving only a supplemental local anesthetic received more morphine on a mg/kg basis during the first 8 hours and less morphine during the next 12 hours. The total dose for the patient receiving supplemental local anesthesia only for the aggregate 20 hour period was less, than the patient who received caudal morphine, 0.38 mg/kg versus 0.61 mg/kg, respectively. Both patients did well overall and exhibited early mobilization by being able to get out of bed to sit in a chair within 15 hours postoperatively (8 hours for the patient receiving local anesthetic only, and 15 hours for the patient receiving caudal morphine).

Conclusion: The patient with only a supplemental local anesthetic received more morphine in the immediate postoperative period, but less overall. Although only two cases are reviewed, we feel that local infiltration of the wound may provide a significant benefit, may be underutilized in this patient population and have greater applicability than a caudal block. It has been observed that there is a decreased need for

postoperative narcotics in liver transplant patients in adults presumably because of denervation of the transplanted liver[2], thus the abdominal incision may represent a significant component of postoperative pain. Supplemental pain control techniques such as these may help to reduce the overall narcotic requirement to optimize conditions for early extubation as well as facilitate early mobilization and graft perfusion, and may improve the overall success of the operation[3].

References:

1. Kim TW, Harbott M. The use of caudal morphine for pediatric liver transplantation. *Anesth Analg* 2004;99:373-4
2. Moretti EW, Robertson KM, Tuttle-Newhall JE, et al. Orthotopic liver transplant patients require less postoperative morphine than do patients undergoing hepatic resection. *J Clin Anesth* 2002;14:416-20
3. Ulukaya S, Arickan C, Aydogdu S, et al. Immediate tracheal extubation of pediatric liver transplant recipients in the operating room. *Pediatr Transplant* 2203; 7(5):381-4