Perioperative Analgesia for a Left Hepatectomy in a Child: A Bilateral Thoracic Paravertebral Approach

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Introduction

- We describe the management of perioperative pain for a 2-year-old 8 kilogram boy who underwent a left hepatectomy for hepatoblastoma.
- Our Acute Pain service was consulted prior to emergence to assist with postoperative analgesia.
- Patient’s incision was a large subcostal incision extending from the right anterior axillary line to left anterior axillary line.
- Patient had an estimated blood loss one-third total blood volume, and had received 180ml of packed red blood cells.

Materials & Methods

Bilateral ultrasound assisted thoracic paravertebral catheters were placed with the patient in the lateral decubitus position. Ultrasound was used to locate the lateral edge of the transverse process of T6 and to measure the depth from skin to the transverse processes and from transverse process to lungs bilaterally. Using a two inch Tuohy needle a loss of resistance to air was achieved at a depth of 2 and 2.5 cm bilaterally. A nerve stimulator was utilized and an intercostal muscle twitch was noted via stimulation through the insulated Tuohy needle. Each stimulating catheter (TeleflexTM) was advanced 3 centimeters beyond the needle tip, and a lack of intravascular placement was confirmed with a test dose consisting of 3 mL of lidocaine 1.5% with 1:200,000 epinephrine. Approximately 5 minutes after the test dose, and a 1.5 ml bolus of Ropivacaine 0.5% into each catheter the patient’s respiratory rate was noted to decrease from mid 30’s to the mid 20’s as the patient was emerging from anesthesia. A maintenance analgesic dose of 2 ml/hr of Ropivacaine 0.2% was infused into each catheter.

Results

Our patient experienced excellent postoperative analgesia and required minimal narcotics during the immediate postoperative period. A total of 3 mg of intravenous morphine over the first 24 hour period was given for pain related to the Foley catheter. On rounds post operative day 1, patient was breathing comfortably with little discomfort. Parents confirmed that IV morphine was utilized for sedation and to decrease discomfort from IV, arterial, and Foley catheters. On POD 3, leaking was noticed around catheter site concurrent with increased patient discomfort in patient’s abdomen. There was an increase in frequency of administration of morphine as compared to POD 1. On POD 3, catheters were removed on morning rounds. It was noted that upon removal both catheters had migrated back approximately 2 centimeters.

Conclusions

This case highlights some challenging issues in the management of severe perioperative pain in a child. The patient had undergone a large left lobe hepatectomy, and it is unclear what the postoperative course of their coagulation status would take. The placement of an epidural catheter may place the patient at risk for an epidural hematoma. Therefore, the decision was made to place bilateral thoracic paravertebral catheters to avoid this potentially catastrophic complication. Lönnqvist first described the use of continuous paravertebral catheters in children. However in his work he only looked at its use with unilateral surgeries. Little literature exists in the use of bilateral paravertebral catheters for the perioperative pain management for open abdominal surgery in the pediatric population.

References