Regional Anesthesia for Sacrococcygeal Teratoma Resection in Newborns? Use of Single Dose Epidural as a Perioperative Anesthesia

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ABSTRACT BODY: *Introduction:* Sacrococcygeal teratomas (SCTs) are the most common tumors of the newborn, occurring in 1:35,000 to 1:40,000 live births. SCTs may be accurately diagnosed during a prenatal ultrasound as early as 13 weeks gestation and appear as an intra-abdominal or caudal mass. Large masses can be the size of the patient, can be associated with hemodynamic instability and may have to be resected urgently. Smaller masses are resected electively, but typically in the neonatal period. Depending on size and location of the mass, this may require a perineal, abdominal, or combined approach. Because of their association with vertebral anomalies and potential intraoperative epidural opening, epidural analgesia may be debatable for these patients. We present single dose epidural injection as a useful analgesic adjunct allowing extubation and safe postoperative analgesia in a patient undergoing perineal resection of a SCT.

Case Report: A 5-day-old full term 3.2 kg female was scheduled for resection of a class IV presacral SCT measuring 5.8cm x 3.6cm x 3.6cm and extending perineally. She was otherwise healthy. In the operating room, monitors where placed, she had a mask induction with sevoflurane, nitrous oxide and oxygen and was intubated. At the surgeons' request, muscle relaxants were avoided to allow intraoperative identification of pelvic floor muscles. In left lateral position and under sterile conditions, the epidural space was identified at L3 with a loss of resistance to saline through a 2 inch 18 gauge Tuohy needle. 2.5 ml of 0.25% bupivacaine with 200 micrograms of preservative free (ps) morphine were slowly injected. She was positioned prone for the operation and had a total body prep anteriorly and posteriorly. Anesthesia was maintained on less than 1 MAC of isoflurane with 2.5µg fentanyl. Tumor resection was completed from perineally and a second lumbar epidural injection of 1.5 ml of 0.25% bupivacaine was performed 6 hours after the initial injection. She was extubated and transferred to the NICU. She was comfortable overnight without need for intravenous narcotics. She was feeding the next day, pain control was adequate with acetaminophen, and she was discharged home on postoperative day 4.

Discussion: Following neonatal surgery, epidural analgesia is appealing if it allows to minimize the use of systemic narcotics with their associated risk of respiratory depression in neonates. Epidural catheters are controversial, when surgery or pathology affect the spine, the spinal canal, spinal cord or epidural space, even though they have been used for postoperative analgesia following spinal fusion, and in selected patients with congenital anomalies of the sacrum and lower lumbar spine for surgery above the affected level [1]. For perineal resection of a SCT, a caudal or lumbar epidural catheter would be required. In SCT, there may be associated vertebral anomalies [2], infiltration into the spinal canal [3] and tumor extension into the caudal area. The obligatory resection of the coccyx and possibly the distal sacrum may result in opening of the epidural space at that level. The surgical prep area includes the back of the patient as high as low to mid thoracic. Caudal injections and caudal or lumbar epidural catheters are therefore not suitable for perineal resection of SCT, unless epidural catheters are prepped into the surgical field, higher catheters are placed and directed caudally, or catheters are placed at the end of the surgery.

As an alternative approach, we therefore chose single lumbar epidural injection of ps morphine and repeat injections of local anesthetic. This allowed us adequate acute coverage of the perineal surgery with local anesthetic intra- and immediately postoperative as well as prolonged postoperative analgesia

with epidural narcotic. It allowed comfortable extubation of the patient and good postoperative pain control until the patient was maintained on oral acetaminophen the following day. The chosen dose of 60 µg/kg preservative free morphine was not associated with any respiratory depression but provided excellent analgesia for 24 hours. If the SCT resection had required a laparotomy as well, a low thoracic epidural catheter would have been placed for postop analgesia at the end of the surgery.
Conclusion: By choosing single dose epidural injections of ps morphine and local anesthetic, we were able to challenge the anesthesia dogma that epidural anesthesia is always contraindicated when a tumor is located around the spine and epidural space, and we were able to provide stable anesthesia and satisfactory postoperative pain control for a 5-day-old patient having a SCT resection.
References:
[1] Anesthesiology 1991; 75: 370 [2] J Pediatr Orthop 1991; 11: 603 [3] J Pediatr Surg 1993; 28: 770