

[NM-132] The use of dexmedetomidine as additive adjunct in caudal block to improve post-operative pain in a patient status post bilateral ureteral stent placement and bilateral ureteroneocystotomy

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Introduction:

Caudal blockade has been used in urologic procedures to provide effective post-operative analgesia, reduction in intraoperative and post-operative opioid use and its associated side effects. For longer procedures, a catheter can be placed to provide continuous analgesia in post-operative period; however, due to the high infection rates associated with caudal catheters, single caudal blocks are utilized. Alpha-2 agents such as clonidine are often added to improve analgesia and to prolong the duration of the block. Dexmedetomidine, another alpha-2 agent, have been shown to equal to clonidine in improving analgesia and duration of caudal block.

Case:

5-year-old female, full term, 17 kg, with a PMH significant for asthma on albuterol and chronic kidney disease associated with hydronephrosis, echogenic kidneys, and bilateral vesicoureteral reflux, presented for robotic assisted laparoscopic ureteroneocystostomy with cystoscopy and bilateral ureteral stent placement. General anesthesia was induced via mask with 70% nitrous oxide, 30% oxygen and 8% sevoflurane, with placement of PIV, followed by direct laryngoscopy with successful endotracheal intubation. Propofol and remifentanyl infusions were used for maintenance of anesthesia, with intermittent administration of cisatracurium for muscle relaxation and long acting opioids as needed. For post-operative pain control, caudal blocks were performed. Due to the high infection rates associated with caudal catheters, two single shot caudal blocks were performed, with the first block done after intubation prior to incision and the second at the end of the procedure prior to extubation. For the first caudal block, 1 mL/kg of 0.125% bupivacaine with 1:400, 000 epinephrine with 1 mcg/kg of dexmedetomidine was administered with half of the bupivacaine and dexmedetomidine dose administered for second caudal block. Dexmedetomidine, an alpha-2 agonist agent, was added to the local anesthetic solution to help improve analgesic effect and duration of the caudal block. The patient was subsequently extubated and recovered in PACU, after which she was discharged to floor for further management. The patient was seen post-operatively and the patient was noted to be comfortable in PACU and had an uneventful hospital course, with oral pain medications started the following day.

Discussion:

The use of the dexmedetomidine in caudals for children going surgical procedures have been shown to be associated with a number of benefits such as a reduction in surgical stress response as evidenced by a decrease in serum cortisol and blood glucose levels, HR and MAP as well as superior postoperative analgesia. Additional benefits to using dexmedetomidine were a shorter time to extubation, a better quality of sleep and a prolonged duration of arousable sedation with less incidence of emergence agitation following sevoflurane anesthesia compared to caudals in which other adjuvants such as fentanyl were used. Despite the benefits associated with using this adjuvant, the use of dexmedetomidine is currently under utilized by pediatric anesthesiologist and more research is clearly need in this area as this is a viability alternative for intraoperative and postoperative pain control in children.
