An interesting case of opioid-induced hyperalgesia and acute abdomen in the postoperative period

Dear Editor,

Redo laparotomy is an urgent situation wherein the patient's condition including unsettled pain necessitates re-exploration.[1] We present an unusual case of opioid-induced hyperalgesia (OIH) in a child presenting as acute abdomen.

A 5½-year-old female, weighing 12 kg, diagnosed with Wilms' tumor was planned for surgery. Preoperatively, the patient had received chemotherapy and was on tab amlodipine 2.5 mg once a day. General anesthesia with thoracic (T8–9) epidural analgesia (EA) was administered. Intraoperative analgesics included intravenous fentanyl (total of 95 μg) and EA- bupivacaine (0.1%) infusion (3 ml/h). The recovery was uneventful. On postoperative day (POD) 1, the patient had severe pain with tachycardia (heart rate 140–150/min). Following negative epidural anesthetic band, fentanyl-based patient-controlled analgesia (PCA) pump was started along with paracetamol (150 mg) eight hourly. Oral gabapentin 100 mg was added, and in view of high creatinine value post-surgery, nonsteroidal anti-inflammatory drugs (NSAIDs) were withheld (serum creatinine: preoperative 0.28 mg/dl, POD 1: 0.44 mg/dl). As pain remained unsettled, a continuous infusion of fentanyl at 10 µg/h (0.85 µg/kg/h) was started in the night through the PCA pump. Next morning, there was abdominal tenderness with one episode of bilious vomiting. The child was taken up for emergency exploration, which was negative with healthy suture lines. In view of deranged coagulation parameters (International Normalized Ratio -INR: 1.64), neuraxial intervention was deferred and subcostal transversus

abdominis plane (TAP) catheter were inserted bilaterally under ultrasound guidance. The child was extubated and shifted to recovery. Pain was managed with eight-hourly paracetamol and 6 ml of 0.2% levo bupivacaine given through each TAP catheter and oral gabapentin 50 mg OD. Based on the thromboelastogram report, the epidural catheter was removed. In the intensive care unit (ICU), dexmedetomidine infusion (0.5 μg/kg/min) was started to augment pain management. Rest of the course was uneventful; TAP catheters were removed by POD 4 and the patient was discharged on POD 7.

Though EA is the standard of care for pain post-laparotomy, parent- or nurse-held PCA with opioids is a suitable option in children.[2] Multimodal pain management to reduce the opioid requirement is essential.[3] Due to persistent pain issues, fentanyl was started as an infusion, along with paracetamol and gabapentin. The increased severity of pain the next morning with abdominal tenderness made us suspect an acute abdomen warranting urgent exploration.

Evidence suggests that OIH can occur in children who are on opioids for considerable time.[3,4] In this case, we had short-term use of high doses of opioids. In the absence of any obvious cause for acute abdomen, our diagnosis in hindsight seems clinically probable. Improvement of patient following the use of regional catheters and dexmedetomidine supports the diagnosis of OIH. Ketamine has a role in OIH;[4] however, in view of tachycardia, it was avoided in this case. Dexmedetomidine causes increased firing of inhibitory neurons, thus facilitating opioid detoxification.[4]

In conclusion, children are vulnerable to OIH in the postoperative period. In cases of unsettled pain despite opioid use, the nonopioid path should be strengthened and OIH must be ruled out.

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Conflicts of interest
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