CORRESPONDENCE

Initial experience with dexmedetomidine for acute pain crises

Sivendiran Mahalingam, MD · Reva Ramlogan, MD, FRCPC ·

Naveen Eipe, MD · Susan Madden, BScN, MEd · John Penning, MD, FRCPC

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To the Editor,

Dexmedetomidine is a centrally acting alpha-2 adrenergic agonist approved for procedural sedation and for sedation in intensive care unit (ICU) patients for up to 24 hr. We report the use of dexmedetomidine for managing acute postoperative pain in two patients.

A 35-yr-old man was admitted to a Level 1 trauma centre following a traffic accident with a compound crush injury to his right leg. Initial presentation was complicated by wound infection, sepsis, and rhabdomyolysis that required surgical management, eventually leading to above-knee amputation. The Acute Pain Service (APS) was consulted for pain management. As the APS suggested, we initiated intravenous hydromorphone with a patient-controlled analgesia device and an oral multimodal analgesia protocol that included acetaminophen, celecoxib, tramadol, and pregabalin. The patient then underwent five surgeries over ten days. On postoperative day 12, he began to experience recurrent acute pain crises. Despite maximizing the multimodal oral

therapy, escalating parenteral opioids, and adding intravenous ketamine and lidocaine, the pain control was unsatisfactory. Because regional anesthesia was still relatively contraindicated due to his recent sepsis and rhabdomyolysis, a trial of dexmedetomidine was considered. In the fully monitored Trauma Unit, he was given dexmedetomidine ($1 \mu\text{g}\cdot\text{kg}^{-1}$ bolus over 20 min), after which his pain score decreased from 10/10 to 4/10. An infusion of dexmedetomidine was then started ($0.4 \mu\text{g}\cdot\text{kg}^{-1}\cdot\text{hr}^{-1}$) and continued for 48 hr. The next day, oral clonidine was initiated, with the dose gradually increased over the next two days (maximum 0.2 mg *po* q8h) as he was being weaned from the dexmedetomidine. For his next (final) surgery, he had a lumbar epidural which remained in place for four days. After it was discontinued, the recurrent pain crises resumed, and he was unable to tolerate any dressing or position changes. Dexmedetomidine was restarted and continued for another three days with continuous monitoring (range $0.1\text{--}0.4 \mu\text{g}\cdot\text{kg}^{-1}\cdot\text{hr}^{-1}$). Pain scores and opioid requirements gradually decreased. The dexmedetomidine infusion was titrated down and discontinued as the pain control stabilized. He was discharged to a rehabilitation institution with multimodal oral analgesics.

The second patient was a 70-yr-old woman with chronic pain secondary to severe rheumatoid arthritis who was scheduled to undergo revision occipitocervical fusion. Her baseline pain scores, on average, were 8/10 with an analgesic regimen that included acetaminophen, meloxicam, tramadol, oxycodone, pregabalin, memantine, methadone, and subcutaneous fentanyl infusion via a continuous ambulatory pump. Immediately after the spine surgery, she was transferred to the ICU (intubated and sedated) for postoperative ventilation and pain control. The APS orders included infusions of ketamine ($20 \text{ mg}\cdot\text{hr}^{-1}$)

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S. Mahalingam, MD
Department of Anesthesiology, University of Ottawa, Ottawa, Canada

R. Ramlogan, MD, FRCPC · N. Eipe, MD ( ) ·
J. Penning, MD, FRCPC
Department of Anesthesiology and Pain Medicine, The Ottawa Hospital, Ottawa, ON, Canada
e-mail: neipe@toh.ca

S. Madden, BScN, MEd
Acute Pain Service, The Ottawa Hospital, Ottawa, ON, Canada

and fentanyl ($100 \mu\text{g}\cdot\text{hr}^{-1}$). On the first postoperative day, after decreasing the sedation, she was being prepared for extubation when she became sufficiently agitated to require propofol sedation. The APS suggested adding an intravenous infusion of dexmedetomidine at $0.2 \mu\text{g}\cdot\text{kg}^{-1}\cdot\text{hr}^{-1}$. The patient was reassessed later the same afternoon and appeared more comfortable. On the second postoperative day, she remained comfortable and was successfully extubated, still on the dexmedetomidine infusion, which was continued for another day. She then remained stable and comfortable in the ICU. Oral multimodal analgesia, including clonidine, was initiated and continued following her discharge a week after surgery.

These two cases were our first APS experiences using dexmedetomidine infusions to manage postoperative pain. Emerging evidence supports its use for reducing pain and opioid consumption, prolonging nerve blocks, and preventing shivering and emergence delirium. It provides opioid-free anesthesia and can be used to treat opioid-induced hyperalgesia.¹⁻⁵

Despite having a busy APS with more than 50 admissions each week, we have used dexmedetomidine only in these two patients since it became available in Canada in 2010. Both patients presented with severe pain that was poorly controlled with conventional strategies. Despite maximizing other anti-nociceptive and anti-pronociceptive therapies, their response to intravenous dexmedetomidine was marked. As described here and by others, this off-label use of dexmedetomidine as an analgesic adjuvant is limited to the monitored ICU setting, especially for managing trauma and postoperative

pain.^{1,3,5} It is likely that the opioid-sparing, anti-pronociceptive role of dexmedetomidine will be useful in patients with opioid tolerance, severe injuries, acute hyperalgesia, and other situations involving difficult-to-treat, acute postoperative pain. As the scope of dexmedetomidine usage expands, careful further clinical investigation is clearly warranted.

Conflicts of interest None declared.

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