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Multimodal Analgesia Technique in an Opioid-Dependent Chronic Pain Patient
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Introduction
Perioperative pain management in chronic pain patients can present a challenge, especially if they are treated with long term opioids. This case describes the use of multimodal analgesia perioperatively in an opioid-dependent chronic pain patient.

Case Description
A 57-year-old male with a history of chronic pain and long term daily opioid use presented for a sternal hardware removal, open reduction and internal fixation and cadaveric bone graft for a nonunion of prior sternotomy. A multimodal approach was used for perioperative pain management with a combination of medications to address multiple different pain receptors and pathways. Patient received high dose fentanyl, dexmedetomidine, ketamine, intravenous acetaminophen, and continuous intercostal nerve blockade with local anesthetics via surgically placed On-Q pump. The perioperative course was uneventful and patient was comfortable in the postoperative period.

Multimodal Mechanism of Pain
- Peripheral pain receptors: Sensitive to capsaicin, moderate thermal stimuli, acid pH, adenosine, and other related phosphates
- Ion channels: Voltage-gated sodium channels, voltage-gated calcium channels
- Inflammatory Mediators: Substance P, bradykinin, cytokines, prostaglandins
- Peripheral sensitization
- Central sensitization

Discussion
Chronic pain is a complex disease that can lead to dysregulation of one or more of the pain receptors within the pain pathway. These changes can cause increased spontaneous activity as well as hyperresponsiveness to noxious and non-noxious stimuli. Pain management in these patients can be a challenge and may lead to inadequate pain control. Multimodal analgesia can be useful in managing patient pain by addressing multiple receptors involved in the pain pathway.

In addition, the use of pre-emptive analgesia by administering medication prior to incision to cause an imitation of the activation of the nociceptive pathways and central sensitization can be useful in managing pain in opioid-dependent chronic pain patients. However, at this time, clinical data does not show a benefit of preemptive analgesia compared to post-incisional administration of analgesic medications.

Conclusion
The patient’s perioperative pain was effectively managed with opiates, dexmedetomidine, ketamine, intravenous acetaminophen and continuous intercostal nerve blockade. The use of multimodal analgesia is a way to provide pain management in a chronic pain patient.

References