Dexmedetomidine for Treatment of Preoperative Anxiety in Adults

Olivia Lantz, BSN

Dept. of Nurse Anesthesia, Moffett & Sanders School of Nursing, Samford University

Structured Abstract

Background
Dexmedetomidine has been proven to be a useful treatment for preoperative anxiety in the pediatric population. Dexmedetomidine could be an ideal treatment for the adult surgical patient and could specifically have an impact on elderly patients experiencing preoperative anxiety.

A 67-year-old female presented for an anterior cervical discectomy and fusion (ACDF) of C5-6 and C6-7. No preoperative medication was administered for anxiolysis prior to the patient's arrival in the preoperative surgical area. Once the patient was transported to the operating room, the patient became noticeably anxious. Vital signs displayed a notable increase from preoperative blood pressure and heart rate. The case continued without issues. The patient received a total of fentanyl 50 mcg IV and complained of mild pain from the surgical incision, rating it 4/10. Postoperative anxiety levels were not evaluated in this case.

Clinical Question
Does administering dexmedetomidine decrease preoperative anxiety levels, intraoperative opioid requirements, and postoperative respiratory complications in the adult population?

Evidence Based Discussion
Preoperative anxiety can impact the body in many ways, including affecting hemodynamics, perception of pain, morbidity, and the occurrence of postoperative complications. Elevated cortisol levels can suppress the immune system and increase the patient's susceptibility to infection. Untreated anxiety can lead to difficult induction, increased postoperative pain, and emergence agitation. As healthcare providers, it is crucial to recognize and treat anxiety prior to arriving in the operating room.

Historically, research displays that many patients experience anxiety prior to surgery. Research indicates a positive correlation between preoperative anxiety and postoperative pain scores. Elderly patients with preoperative anxiety are at increased risk of experiencing postoperative delirium and are often not treated at all for their preoperative anxiety. This is commonly documented to be due to the risk of respiratory depression and delayed recovery from anesthesia seen in elderly patients receiving midazolam, a benzodiazepine.

Dexmedetomidine is a highly selective alpha 2 adrenergic agonist. It has analgesic, sedative, and anxiolytic effects, with the benefit of minimal respiratory depression when compared to midazolam.

Studies have shown that dexmedetomidine decreases intraoperative analgesic and anesthetic requirements and reduces postoperative pain. Dexmedetomidine has the potential to cause dose-dependent decreases in a patient's blood pressure and heart rate. More research is necessary on the pre-anesthetic dosing regimens to determine the overall effects on hemodynamics in the adult population. Dexmedetomidine has a higher price relative to midazolam, however, this price could be offset due to less use of intraoperative and postoperative analgesics.

Evidence-based research has demonstrated that dexmedetomidine is a useful medication for decreasing preoperative anxiety among the pediatric population. This research indicates that dexmedetomidine decreases anxiety due to parental separation, decreases postoperative agitation, and provides adequate analgesia. Theoretically, dexmedetomidine should elicit similar effects on preoperative anxiety in the adult population.

Translation to Practice

Preoperative anxiety is an uncomfortable emotion of fear and worry that affects many patients prior to surgery and has the potential to make a significant impact on their surgical experience and recovery. Dexmedetomidine has the potential to decrease preoperative anxiety, reduce intraoperative analgesic and anesthetic requirements and minimize postoperative pain. Therefore, dexmedetomidine may be beneficial for the adult surgical patient population.

A preoperative anxiety screening tool and an anxiety treatment algorithm and protocol are proposed to identify patients who should receive treatment for anxiety. All perioperative personnel will be educated on the use of the preoperative anxiety screening tool and implementation of the anxiety treatment algorithm. A patient will be evaluated for the use of dexmedetomidine based on their medical history and preoperative hemodynamics.

In the proposed study, one outcome that will be evaluated includes the cost of different anxiety treatments. A cost-benefit analysis should be conducted on the use of dexmedetomidine for preoperative anxiety, as some providers avoid its use due to the high cost of the medication. Other outcomes to be evaluated are the adverse effects of different anxiety medications, including respiratory and cardiovascular complications and increased postoperative pain.

Anesthesia providers need to generate more research to answer the question of whether a reverse correlation of evidence from the pediatric surgical population and the use of dexmedetomidine for preoperative anxiety can be made to the adult surgical population, specifically the elderly surgical patient, to improve postoperative outcomes.

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Team Leader: Nancy Westbrook, DNP, CRNA

Team Member: Maria Ledbetter, DNAP, CRNA