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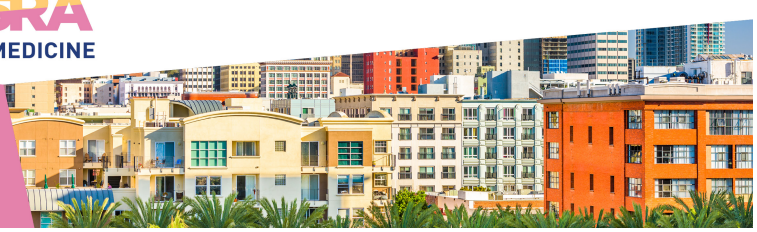

Abstract: 5172

Medically Challenging Cases

Surgical Paravertebral Blocks Combined with Low Dose Spinal in a Patient with Acute on Chronic Respiratory Failure: A Case Report

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Introduction

Paravertebral block is the technique of injecting local anesthetic lateral to the vertebral body adjacent to the site where the spinal nerves exit the intervertebral foramina.1 This space contains dorsal and ventral rami and the sympathetic chain; thus local infiltration results in unilateral sensory, motor, and sympathetic blockade in contiguous dermatomes above and below the site of injection.2 First described in the early 1900s, it has gained popularity in the last two decades concurrently with the increased practice of ultrasound-guided nerve blocks.1 Thoracic paravertebral blocks are commonly performed to provide analgesia for surgeries involving the breast and axilla and have also been used to relieve acute chest wall pain from rib fractures, herpes zoster, and postthoracotomy pain.2 Additionally, there has been increased interest in the use of paravertebral blocks as a primary anesthetic. We report a patient with tenuous respiratory status who received paravertebral anesthesia combined with a low dose spinal for axillary and chest skin grafts.

Materials and Methods

A literature review was performed investigating the use of paravertebral blocks as a primary anesthetic. At the time of surgery, the patient gave verbal consent to write this case report to the attending anesthesiologist and acute pain fellow. The patient's chart was thoroughly reviewed, and her course is reported here. This case report does not contain any patient identifiable information; therefore, it is exempt from IRB review as per Colorado Multiple Institutional Review Board (COMIRB) policy.

Results/Case Report

A 71-year-old 60-kilogram female with past medical history significant for chronic obstructive pulmonary disease (COPD) on 3L of oxygen at home, hypertension, anemia, and type 2 diabetes was admitted to the burn intensive care unit (BICU) after a 9% total body surface area full-thickness burn to the chest and neck. She underwent multiple excision and debridement procedures without complication. However, after her last procedure the patient developed an increased oxygen requirement up to 50L/60% high-flow nasal cannula secondary to pulmonary edema and hospital-acquired pneumonia. The patient was scheduled for a final skin graft procedure, and the primary team consulted the Acute Pain Service for assistance with an anesthetic plan to avoid intubation as they were concerned

the patient would not be easily extubated. The surgical site was the right axilla and flank with plan to harvest the skin graft from the right thigh. After a multidisciplinary discussion, the plan was to proceed with surgical paravertebral blocks to cover the burn sites and a low dose spinal to cover the site of the skin graft with minimal sedation to avoid respiratory depression. A total of 15 mL of 0.5% bupivacaine and 10 mL 2% lidocaine was used for ultrasound-guided paravertebral blocks at two levels and 1.5 mL 0.75% hyperbaric bupivacaine was used for the spinal. The patient received 16 mcg of dexmedetomidine for the blocks and tolerated the procedure well. She was transported back to the BICU at the completion of the case and there were no perioperative complications. One week after the procedure her pulmonary status continued to worsen, and the patient elected to pursue comfort measures only, ultimately passing on postoperative day 9.

Discussion

Much of the literature concerning paravertebral anesthesia has focused on elective breast and inguinal hernia surgery.2,3 In a retrospective analysis of 145 patients, Coveney et al. reported that 85% of breast procedures were successfully completed using paravertebral block while 91% were completed with paravertebral block supplemented with local anesthetic.2 Thavaneswaran et al. performed a systematic review of peer reviewed literature showing that the failure rate of paravertebral anesthesia was not >13% and patients were more satisfied with paravertebral anesthesia compared to general anesthesia.3 While the data from the above studies were encouraging, all the patients received intraoperative sedation in addition to the paravertebral blockade, something we aimed to avoid in our case.

Our patient's clinical status provided many complicating factors for providing a safe anesthetic. Given her wish to not be intubated and the likelihood that sedation would lead to further respiratory compromise, our options were limited to regional and/or neuraxial anesthesia. A spinal or epidural alone could have worked to cover the three surgical sites; however, to cover the axillary burn there was a risk of affecting the accessory respiratory muscles in the process. We could have used regional anesthesia exclusively; however, given the patient’s weight (60 kg) we were limited by local anesthetic volume which could have led to inadequate blockade. After consulting with colleagues, we believed our best option was to pursue a combination of spinal anesthesia with surgical paravertebral blocks.

Our chosen anesthetic plan was not without risk. As mentioned above, the failure rate for paravertebral anesthesia is estimated to be as high as 13%. Had our blocks failed during the procedure, the patient may have needed to be heavily sedated or intubated to complete the graft. Additionally, a known complication of paravertebral blocks is pneumothorax which could have been quite detrimental in this patient. Finally, while we were cautious with our local anesthetic dosing there is always a risk of local anesthetic systemic toxicity, especially when using a combination of local anesthetics at multiple sites.

Overall, the success of this case expands upon the previously documented advantages of paravertebral anesthesia in the literature. Our case demonstrates that paravertebral blocks with minimal sedation can be an alternative to general anesthesia in a patient with acute on chronic respiratory failure motivated to avoid intubation.

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Disclosures

No

Tables / Images