CASE REPORT

HSR Proceedings in Intensive Care and Cardiovascular Anesthesia 2012; 4(3): 179-181

Combined high thoracic and lumbar epidural block for a patient with severe peripheral vascular disease undergoing axillo bifemoral bypass surgery

J. Ali[1], R. Kumar Chand[2], R. Juneja[3], Y. Mehta[3], N. Trehan[4]

[1]Prince Sultan Cardiac Center, Al Qassim, Kingdom of Saudi Arabia; [2]Department of Cardiac Anesthesia, Medanta The Medicity, Gurgaon, Haryana, India; [3]Department of Cardiac Anesthesia and Critical Care, Medanta The Medicity, Gurgaon, Haryana, India; [4]Department of Cardiac Surgery, Medanta The Medicity, Gurgaon, Haryana, India

HSR Proceedings in Intensive Care and Cardiovascular Anesthesia 2012; 4(3): 179-181

ABSTRACT

A 63 years old patient with severely impaired pulmonary function presented with bilateral lower limb vascular blockade and was operated for emergency aortobifemoral bypass. The patient was considered to be at very high risk for general anesthesia but doing the case under regional anesthesia was also challenging because of the multiple dermatomal levels needed to be anesthetized and because of the potential of adverse effects with such extensive block. There are only a few reported cases of using combination of central neuraxial blocks. The procedure was successfully performed using combined high thoracic and lumbar epidural blockade with two different local anesthetics to minimizing toxicity and observing no adverse effects related to anesthesia technique.

Keywords: *high thoracic, lumbar, epidurals, monitored anesthesia care.*

INTRODUCTION

Epidural anesthesia is advantageous in different types of surgeries (1). Thoracic epidural anesthesia (TEA) is becoming popular in cardiothoracic and vascular surgery since patients have less post operative pain (2) and a better post operative pulmonary function (3) as compared to patients who do not receive epidurals. It has been used as an adjunct with general anesthesia as well as a indipendent technique, especially in patients with comorbidities. Even if combining thoracic epidural anesthesia with another block seems to be a logical corollary in selected patients, we reviewed the literature and we found only two case reports. Two coronary artery bypass grafting (CABG) procedures were performed under a combined thoracic and lumbar epidural block (4) using a thoracic epidural and femoral 3:1 block (5). We hereby present a case of chronic obstructive pulmonary disease (COPD) patient with multiple comorbidities scheduled for peripheral vascular surgery that we considered at too high risk for general anesthesia.

Corresponding author:
Jamshid Ali MD, FNB
Consultant in Cardiac Anesthesia,
Prince Sultan Cardiac Center, Al Qassim, Pin 51412
Kingdom of Saudi Arabia
e-mail: alijamshidali@gmail.com

CASE REPORT

A 63 years old man presented with pain in the calf muscles and numbness in the right leg since three months. His angiography revealed an infrarenal aortic occlusion with bilateral extension up to the profunda femoral vessels. He had multiple comorbidities being a chronic smoker, diabetic (type II), hypertensive and a known case of COPD.

His transthoracic echocardiogram was normal and he was scheduled for axillo-bifemoral bypass surgery. The preanesthetic assessment revealed respiratory distress at rest, diminished breath sounds and diffuse wheezing all over the lung fields. Arterial blood gas on room air showed PH of 7.5, PO2 55 mmHg and PCO2 39 mmHg. His pulmonary function test revealed a severe obstructive ventilation defect; FEV1 of 0.64 liters (23 % of predicted value) and FEVI/FVC of 58 % (46 % of the predicted value). X ray revealed hyperinflated lung fields and prominent bronchovascular markings. A high resolution chest computed tomography (CT) scan revealed diffuse centriacinar emphysema along with patchy areas of fibrosis in bilateral lower lobes. His sputum gram stain demonstrated gram positive cocci. His total leukocyte count was 3600 cells/cubic millimeters and his liver function parameters were deranged, bilirubin 1.03 mg/dl, albumin 2.5 gm/dl, globulin 3.2 g/dl, serum glutamate oxalacetate transaminase 208U/l, serum glutamate pyruvate transaminase 202U/l, his random blood sugar was 213 mg/dl and glycosylated hemoglobin was 8.8 %. Coagulation profile was normal. The patient was given 1 mg lorazepam and 40 mg pantoprazole sodium overnight. Electrocardiogram and pulse oxymetry were monitored in the operating room together with invasive arterial blood gas analysis. Epidurals were conducted in the sitting position (18 G Braun Tuhoy needles with 20 G catheters) and using cervical 7- thoracic 1 and lumbar 4- lumbar 5 interspaces. The loss of resistance technique was used to identify the epidural spaces and the epidural catheters were threaded in the thoracic and lumbar epidural space up to 5 centimeters. After administering a 3 ml test dose (2 ml 2 % lignocaine plus 40 micrograms of adrenaline in 1 ml 0.9 % saline) in each catheter at an interval of 15 minutes, the patient was positioned for surgery. Ten minutes after the administration of test doses, 100 mg of lignocaine 2 % (in 10 ml of 0.9 % saline) and 50 mg of bupivacaine 0.5 % (in 20 ml of 0.9 % saline) was administered through the thoracic and lumbar epidural catheters respectively. Pinpricks were used to determine sensory block levels and autonomic block levels determined by ice packs. When dense sensory blocks of T1 and L5 were achieved, exposure of the right axillary artery was started. Supplemental oxygen was administered via a venturi mask (FiO2 0.4). Patient was sedated using intravenous infusion of propofol 65 mg/hr (1 mg/kg/hr) and fentanyl 100 mcg/hr was added 2 hours after the start of surgery to supplement patchy cervical block. The goal was to maintain a moderate level of sedation.

An infusion of bupivacaine (0.5 %) was started through the lumbar epidural catheter at the rate 5 ml/hr (25 mg/hr). The surgical procedure lasted for six hours and the patient was shifted to high dependency unit for monitoring. The intraoperative as well as the postoperative period remained uneventful. The patient was monitored in the cardiac surgical intensive care unit for twelve hours (electrocardiogram, invasive blood pressure, pulse oximetry and arterial blood gas were monitored) and then shifted to a high dependency unit. Serial blood gas measurements were done and PCO2 levels up to 50 mmHg and PO2 levels of 55-60 mmHg were considered acceptable. The patient was discharged in stable condition

on third postoperative day with acceptable blood gas reports.

DISCUSSION

The issue of local anesthetic toxicity seems logical when two epidural blocks are performed in a patient; we therefore tried to minimize this complication by using two different drugs, lignocaine for cervical epidural and bupivacaine in the thoracic epidural.

Our patient did not develop any major toxicity attributed to local anesthetics overdose during or after the procedure. Our other concern was that in patients with severe respiratory depression, the accessory muscles of respiration might get blocked with high epidural anesthesia, leading to further respiratory depression. In fact, in COPD, use of thoracic epidural anesthesia has raised concerns about motor insufficiency due to motor blockade and the risk of bronchial constriction due to sympathetic blockade (6).

However our patient maintained a SpO2 of 92-96% throughout the procedure and at no point of time did we assist the breathing of the patient. The low dose of fentanyl and propofol infusions probably contributed to the respiratory stability (without adverse effects), besides providing supplemental analgesia and amnesia, which is essential for successful performance of a surgical procedure. Association of loco-regional techniques such as deep and superficial cervical block, lumbar epidural and/or peripheral blocks and conscious sedation with hypnotic drugs and/or opiates is actually the gold standard for vascular surgery (7). Another advantage achieved using two blocks was that an overlap of the two block territories was achieved and there were no unanaesthetised sensory segments between the upper and the lower level of the epidural block (after the axillary dissection and proximal anastomosis, tunneling and distal anastomosis of the graft was performed without any patient discomfort).

We, thus, conclude that in patients with severe respiratory compromise and with multiple comorbidities, performing vascular surgeries that are time consuming (like axillo bifemoral bypass) under combined thoracic and lumbar epidural block (under monitored anesthetic care) may be a safe and effective alternative to general anesthesia.

REFERENCES

1. Liu S, Carpenter RL, Neal JM. Epidural anesthesia and analgesia. Their role in postoperative outcome. Anesthesiology. 1995; 82: 1474-506.
2. Suvanchinda V, Suksompong S, Prakanrattana U, Udompunthurak S. Epidural anesthesia for pain relief after thoracic surgery. J Med Assoc Thai. 2000; 83: 358-63.
3. Hemmerling TM, Prieto I, Choinière JL, et al. Ultra-fast-track anesthesia in off-pump coronary artery bypass grafting: a prospective audit comparing opioid-based anesthesia vs thoracic epidural-based anesthesia. Can J Anaesth. 2004; 51: 163-8.
4. Al Khudhairi D, Sallam MA. CABG under thoracic and lumbar epidural block in a conscious patient-a case report. Middle East J Anesthesiol. 2005; 18: 197-204.
5. Hemmerling TM, Noiseux N, Basile F, et al. Awake cardiac surgery using a novel anesthetic technique. Can J Anaesth. 2005; 52: 1088-92.
6. Groben H. Epidural anesthesia and pulmonary function. J Anesth. 2006; 20: 290-9.
7. Savoia G, Loreto M, Gravino E, et al. Monitored anesthesia care and loco-regional anesthesia. Vascular surgery use. Minerva Anestesiol. 2005; 71: 539-42.

Cite this article as: Ali J, Kumar Chand R, Juneja R, Mehta Y, Trehan N. Combined high thoracic and lumbar epidural block for a patient with severe peripheral vascular disease undergoing axillo bifemoral bypass surgery. HSR Proceedings in Intensive Care and Cardiovascular Anesthesia 2012; 4(3): 179-181

Source of Support: Nil. **Conflict of interest:** None declared.