Single Level Thoracic Paravertebral Block for Analgesia in Modified Radical Mastectomy in a Comorbid Female

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ABSTRACT

We report a case of 50 years old female diagnosed with carcinoma of breast posted for modified radical mastectomy (MRM). Her comorbidities included diabetes mellitus (DM), hypertension, ischemic heart disease (IHD) and chronic obstructive pulmonary disease (COPD). She was also anxious about postoperative analgesia. The surgery was successfully completed under general anesthesia (GA) with single level thoracic paravertebral block (PVB) using peripheral nerve stimulator (PNS). Regional techniques like PVB are preferred modalities for perioperative analgesia. It provides good intraoperative conditions with adequate postoperative analgesia with least hemodynamic alterations in high risk cases specially IHD.

Keywords: Carcinoma breast, Paravertebral block, Postoperative analgesia.

INTRODUCTION

Optimum treatment for postoperative pain has been of fundamental importance in surgical patient care. Among the analgesic techniques aimed at patients undergoing breast surgeries, thoracic paravertebral block (PVB) combined with general anesthesia (GA) stands out for the good results and favorable risk–benefit ratio. Benefits include reduced postoperative nausea/vomiting and prolonged postoperative pain relief and increased potential for ambulatory discharge.

Thoracic PVB involves injection of local anesthetic (LA) solution at the site where spinal nerves emerges from intervertebral foramen. The PVB space contains dorsal and ventral rami and sympathetic chain, hence, infiltration of this space results in unilateral sensory, motor and sympathetic blockage.

Paravertebral block with GA when compared to GA alone offer pain relief superior to general anesthesia alone and provide better hemodynamic status.

CASE REPORT

We report a case of 50 years old diabetic, hypertensive female with invasive ductal carcinoma of right breast scheduled for modified radical mastectomy (MRM). Her comorbidity included chronic obstructive pulmonary disease (COPD), ischemic heart disease (IHD) with dyspnea grade-III New York Heart Association (NYHA) classification with inferolateral wall ischemia on electrocardiogram (ECG). Her two-dimensional echocardiogram revealed ejection fraction 45% and grade I diastolic dysfunction and minimal pericardial effusion. Her physical score was assessed to be ASA-III.

In view of her cardiac status, thoracic PVB with GA was planned for the proposed surgery. Anesthetic procedure was explained and written informed consent was taken. Nil per oral hours were confirmed and monitors were connected to the patient.

Intravenous access was established with 18 gauze intravenous (IV) cannula and in the sitting position, anatomical landmarks were marked. The spinous process of T3 vertebra identified and marked (Fig. 1). Local infiltration of 2% lignocaine given at 2.0 to 2.5 cm lateral to midpoint of T3 spinous process. Five centimeter
needle of peripheral nerve stimulator (PNS) inserted perpendicular to the skin and the transverse process of the thoracic vertebra was contacted (4.5 and 4.0 cm distance). Initial setting of nerve stimulator was 2.5 mA current, 100 ms pulse width and 2 Hz frequency. The needle was withdrawn and redirected cephalic above the transverse process not more than 1 to 1.5 cm deeper than the initial insertion and motor stimulation of intercostal muscles was noticed. Muscle contraction also associated with sensory stimulation or paresthesia in the respective area. The needle repositioned till the best stimulation was achieved with minimum current strength, e.g. 0.5 to 0.8 mA.5,6 After careful aspiration, 0.3 ml/kg of 0.25 levobupivacaine with 25 mcg fentanyl and 1:40000 adrenaline injected in paravertebral space in small aliquots with repeated aspiration tests. After injecting the drug, the sensations tested by pinprick.

After confirming sensory block following paravertebral injection, GA was induced with IV etomidate 0.3 mg/kg, IV succinylcholine 1.5 mg/kg was given to facilitate tracheal intubation. After intubation, patient was maintained with sevoflurane on 1% end tidal concentration with nitrous oxide and oxygen. Neuromuscular blockade achieved using vecuronium 0.04 mg/kg. Standard monitoring was done with her pulse 88 per minute regular and BP 130/90 mm Hg. Hemodynamic parameters were maintained throughout the surgery. There was no ST segment depression from base line in V4 and V5 leads during intraoperative and postoperative period. There was smooth emergence with stable hemodynamic status and good respiratory effort due to better analgesia.

The surgery lasted for 2 hours and VAS score was recorded every 4 hours after operation and it was less than 3 up to 36 hours. Rescue analgesia IV diclofenac 75 mg was given postoperatively when VAS score reached > 3 in at 36 hours so total duration of analgesia was 36 hours with no incidence of postoperative nausea and vomiting (PONV) with good recovery in postoperative period without any complication specially concerning coronary artery disease due to better pain control and less sympathetic stimulation. Patient was discharged on third postoperative day.


