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CASE SERIES **REGIONAL ANESTHESIA**

Different regional anesthesia techniques for modified radical mastectomy; a case series

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ABSTRACT

General anesthesia (GA) is the most common form of anesthesia provided to patients who need radical mastectomy, because surgery in this area is painful and most of the patients demand complete sleep during the surgical procedure. Significant interventions have been made in the recent years, especially in the regional anesthetic techniques using the ultrasonogram. Hence, most of these surgeries, nowadays, are being performed by combined GA and regional techniques. However, some patients might pose greater risks for GA thereby making the anesthesiologists think of regional techniques as a sole mode of anesthesia. Here, we present a case series of three patients with major co-morbidities who successfully underwent radical mastectomies under regional anesthesia. We used combined thoracic spinal/epidural for two patients while one patient had pectoral nerve block II (PECS II) with additional subcutaneous infiltrations. Only a few studies or case reports are available in the literature using regional techniques as surgical anesthesia for radical mastectomies while we used different combinations which have not been described in the literature.

Key words: Modified radical mastectomy, regional techniques, combined thoracic spinal epidural, PECS blocks.

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1. INTRODUCTION

Carcinoma of the breast is one of the common cancers affecting women the world over. The surgical interventions for this condition vary from simple palliative procedures like simple excision to modified radical mastectomy (MRM) with axillary clearance with or without flap cover/prosthetic implant at later stage. General Anesthesia (GA) is most commonly preferred technique of anesthesia, but it has its own limitations in certain individuals. Hence, various regional anesthetic techniques such as thoracic epidural/ paravertebral/spinal, have been described in literatures as an alternative to GA.[1-3] Recently, the introduction of ultrasound in regional anesthesia has revolutionized the approach of pain relief with the advent of many regional techniques, such as pectoralis blocks (PECS), erector spinae plane block (ESPB), etc. Pectoral nerve block II (PECS II), serratus plane block, and ESPB reduce postoperative opioid consumption following mastectomy.[4,5] Only a few studies are available in the literature advocating combination of regional techniques as sole anesthesia for MRM.[6,7] Here, we describe a case

series of three patients for whom we used two different regional techniques: a. Combined thoracic epidural/spinal. b. PECS II blocks plus subcutaneous infiltration. To the best of our knowledge, no literature is available using these combinations of regional techniques as surgical anesthesia for MRM.

2. CASE DESCRIPTION

2.1. Case Report 1

A 62 years old, obese (156 cm height, 114 kg weight, and BMI 46.8 kg/m^2) woman was posted for right MRM with axillary node clearance. She was a known case of COPD and obstructive sleep apnea since 20 y, taking levo-salbutamol plus budesonide inhalation. She was also hypertensive, on oral amlodipine 5 mg once daily for 10 y and had diabetes mellitus on tab metformin 500 BD for 5 y. Her ECG showed left ventricular strain pattern and left ventricular hypertrophy (LVH), without any ischemic changes. Echocardiography showed concentric LVH, diastolic dysfunction, mild mitral regurgitation (MR), tricuspid regurgitation (TR), no pulmonary arterial hypertension (PAHT), and EF 55%. Her airway parameters were Mallampatti Class III, limited neck extension, and thyromental distance < 6 cm, all suggestive of difficult airway. Patient was accepted for the proposed surgery under ASA III.

In the sitting position, under aseptic precautions, T6−T7 space was identified by loss of resistance technique using an 18G Tuohy epidural needle, and an epidural catheter was inserted. At T5−T6 level, 1.5 ml of 0.5% isobaric levo-bupivacaine with 10 µg of dexmedetomidine was injected into subarachnoid space by using a 27 G Whitacre spinal needle. Sensory loss of T1 to T7 was achieved. Intra operative period was uneventful except a transient period of hypotension, which was corrected with a bolus of 250 ml of crystalloids and 50 µg of phenylephrine. Duration of the procedure was one hour and forty minutes. Postoperative pain relief was provided with infusion of paracetamol 1 gm 8 hourly in addition to epidural analgesia with 8 hourly 0.2% ropivacaine 4 ml plus fentanyl 25 µg boluses for 48 h.

2.2. Case Report 2

A 60-y old lady with type 2 diabetes, coronary artery disease was posted for left MRM with axillary node clearance. Her ejection fraction was 40%. She was taking insulin for the control of diabetes and tab clopidogrel and tab aspirin for her heart disease. Tab clopidogrel was stopped 7 days prior to surgery and bridge therapy with low molecular weight heparin was initiated, but withheld 12 h before surgery. Anesthetic technique of combined thoracic spinal/epidural was similar to the Case #1. Intra operative period was uneventful and the surgery lasted for one hour and 25 min. Postoperative pain relief was provided with paracetamol 1 gm infusion 8 hourly in addition to epidural analgesia with blouses of 0.2% ropivacaine 4 ml plus fentanyl 25 µg 8 hourly for 48 h. Epidural catheter was removed after 8 h of the administration of low molecular weight heparin.

2.3. Case Report 3

A 60 years-old lady with hypertension, chronic obstructive pulmonary disease was posted for right MRM with axillary node clearance. She was on tab amlodipine 10 mg and inhalational bronchodilators and steroids. She gave history of hospitalization for COPD. PECS II block was provided under ultrasound guidance. The patient was positioned supine with the arm abducted to 90 degrees, using the linear probe with in-plane technique; the needle was placed between the pectoralis major and pectoralis minor muscles with thoraco-acromial artery pulsation as a confirmation. Levo-bupivacaine 0.25% 10 ml was injected. The probe was then moved laterally until the pectoralis minor and serratus anterior were identified and 20 ml of 0.25% levo-bupivacaine were injected between these two muscles. In addition, subcutaneous infiltration of 8 ml of 0.25% levo-bupivacaine was done at parasternal region as well as at 3 cm below clavicle perpendicular to the line joining the nipple with 3 ml. Intra-operative period was uneventful and the surgery lasted for one hour and 20 min with no postoperative complications.

3. DISCUSSION

Most of the surgeries involving head and neck or thoracic region are done under GA. Thoracic spinal anesthesia is an effective technique either as a sole anesthetic or combined with GA in terms of patient safety, better outcome, lesser hemodynamic instability and shorter duration of hospital stay with lesser incidence of postoperative pulmonary complications.[9] In our first two cases, we added thoracic epidural catheter technique to thoracic spinal anesthesia, to extend the postoperative analgesia. However, the main drawback with thoracic epidural anesthesia is the increased possibility of accidental dural puncture due to more anterior positioning of spinal cord in this mid thoracic to lower thoracic region, the intra thecal space is wider than epidural space. Also, there are some concerns in patients receiving anti coagulants such as antiplatelet drugs.

The introduction of ultrasound has helped understanding and reviewing the anatomy so ultrasound-guided regional techniques have gained popularity. Because of the complexities of the nerve supply of the breast and axilla,[10] the interfascial plane blocks such PECS, serratus plane block, ESPB would not provide complete surgical anesthesia if used alone. Hence, a combination including

other blocks such as brachial plexus block, supraclavicular nerve blocks are required. In case # 3, we provided subcutaneous infiltration of local anesthetic at two places as these areas are not covered by PECS II block; one at parasternal area for sensory coverage of medial aspect of the breast, and another for superior pole of the breast supplied by the supraclavicular nerve.[11,12]

Only a few studies were published regarding the usage of combination of regional techniques for surgical anesthesia for MRM.[6,7] Sundarathiti et al. used a combination of thoracic epidural and interscalene brachial plexus block for MRM as a sole anesthetic in one group and compared it with GA. They concluded that the combination of regional anesthesia technique was superior to GA because of quicker recovery, better postoperative pain relief, and greater patient satisfaction.[6] A recently published randomized controlled study showed that a combination of supraclavicular nerve block, intercostal nerve blocks at T1 to T7 level, and interscalene brachial plexus block was better than GA, because the requirement of postoperative analgesics and the adverse effects were less in regional anesthesia group.[7] Few case reports also used a combination of regional techniques for MRM.[13,14] We provided different combinations of regional techniques when compared to those previously published reports.[6,7,13,14]

4. CONCLUSION

Regional techniques can be considered as an alternative to general anesthesia in poor risk patients, with minimal usage of opioids, avoiding endotracheal intubation and artificial ventilation, shorter duration of motor blockade, excellent anesthesia for surgical procedures, better postoperative pain relief, and early ambulation without any postoperative pulmonary complications.

5. Conflict of interest

None declared by the authors. No external or industry funding was involved in this study.

7. Authors' contribution

All authors took part in the conduction of the study work and manuscript editing

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