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Case Report

Cervical Epidural Anesthesia as a Sole Technique in Breast Cancer with Multiple Comorbidities

Anuradha Patel*

Department of Onco-Anaesthesia and Palliative Medicine, Dr. BRA IRCH, AIIMS, Delhi

ABSTRACT

Malti Devi, 62 years female, case of breast cancer was posted for right sided Modified radical mastectomy (MRM). She was diabetic with chronic kidney disease (CKD) stage 3. CEA (Cervical epidural anaesthesia) was planned at C7-T1 midline space. Loss was resistance was achieved at 4.5 cm and the catheter was fixed at 12 cm. 10 ml of 0.375% ropivacaine was given through the catheter. After 10 minutes, further 5 ml of 0.375% of ropivacaine was given. For sedation, 50 mcg of fentanyl and 1 mg midazolam were administered. Sensory block was achieved from C7-T6. Surgery was conducted smoothly under CEA with good analgesia. She was administered 1 mg of epidural morphine for postoperative analgesia. Her average NRS was 3/10. Her satisfaction score was 80%. CEA provides stable cardiorespiratory status and thus, it can be used as a sole anaesthetic technique in patients with CKD and ASA 3 or 4 Patients.

Keywords: Cervical epidural anaesthesia; Breast surgery; Carcinoma breast

INTRODUCTION

Surgery is the mainstay of treatment for breast cancer. The traditional and the most common anesthetic management for breast surgery has been general anesthesia. CEA provides stable cardiorespiratory status and can be used as a sole anaesthetic technique in patients with a poor respiratory reserve, very low ejection fraction, CKD, and ASA 3 or 4 patients. We have managed a case of carcinoma breast with Diabetes and CKD stage 3 posted for MRM. MRM was done under CEA and the epidural catheter was used to provide postoperative analgesia.

CASE REPORT

Malti Devi, 62 years female, case of breast cancer was posted for right sided Modified Radical Mastectomy (MRM). She was a known diabetic since 15 years, controlled on Insulin. She was diagnosed case of Chronic kidney disease (CKD) stage 3. She never underwent dialysis. Her urine output was adequate. Her ultrasound KUB and echocardiography were normal. She was anaemic. She had history of 4 units of blood transfusion. She had hypoalbuminemia. She had dyselectrolytemia (hyponatremia, hypocalcemia and hyperkalemia). Electrolytes abnormalities were corrected before taking the patient for surgery. She was accepted for anaesthesia under ASA 3. Her Chest X ray and ECG was normal.

Preoperatively

She was kept fasting for 6 hrs for solid and 2 hrs for liquid. Her morning fasting blood sugar was 114 mg/dL and urine sugar and ketones were negative. Serum electrolytes were normal on the day of surgery. We discussed the possibility of cervical epidural anaesthesia (CEA) with the surgical team and patients' attendants. The patient was counseled for the procedure and an informed consent was obtained.

Intraoperatively

She was shifted to OT. Basic monitors-HR, NIBP, ECG and SPO2 were attached. 20 G peripheral line was secured in the forearm on the nonoperative side. Sitting position was made. After cleaning, draping and local infiltration, 18 G Tuohy needle was introduced at C7-T1 midline space (Figure 1).

Correspondence to: Dr. Anuradha Patel, Department of Onco-Anaesthesia and Palliative Medicine, Dr. BRA IRCH, AIIMS, Delhi; E-mail: patelanuradha20@gmail.com

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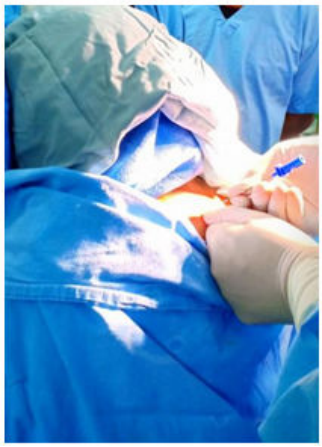

Figure 1: Depicting insertion of Tuohy needle at C7-T1 interspace

Loss was resistance was achieved at 4.5 cm and the catheter was fixed at 12 cm. 10 ml of 0.375% ropivacaine was given through the catheter and patient was made supine. Apart from routine monitoring, consciousness and breathing pattern were also observed. 1 gm iv paracetamol was administered.

After 10 minutes, further 5 ml of 0.375% of ropivacaine was given. For sedation, 50 mcg of fentanyl and 1 mg midazolam were administered. Sensory block was achieved from C7-T6. Nasal prongs were attached and ETCO2 was monitored. Total anaesthesia time was 25 minutes. After 20 minutes of giving the block, incision was made. The surgery lasted for 100 minutes. Surgery was conducted smoothly under CEA with good analgesia. The patient tolerated the procedure well. Intraoperative blood loss was 200 ml. The patient received 700 ml of lactated Ringer's solution. Intraoperative variation in hemodynamics and RR were not significant. Patient did not complain of any pain. Patient was shifted to recovery room.

Postoperatively

Patient complained of pain with NRS of 5/10 after 2.5 hours of giving the drug. She was administered 1 mg of epidural morphine for postoperative analgesia and the epidural catheter was removed. Postoperative, RBS was 137 mg/dL. Her NRS was 2 /10 before shifting to the ward. She had good sleep on POD 1. Patient was started on liquid diet and ambulated 24 hours after the surgery. She was given 1 gm of IV paracetamol thrice a day on POD0 and Tablet crocin 500 mg TDS on POD2. Her average NRS was 3/10. Her satisfaction score was 80%. She was discharged on POD2.

DISCUSSION

Breast cancer is the most common cancer in female in India with 27% prevalence. Acute postoperative pain occurs in 40% of women and 25%-60% develops chronic postsurgical pain. The traditional and the most common anesthetic management for breast surgery has been general anesthesia and the postoperative analgesia is being provided by acetaminophen and nonsteroidal anti-inflammatory drugs with opioids as rescue drug. Regional analgesia has long been used as a supplement to general anesthesia for radical breast surgeries to reduce the adverse effects of general anesthesia and high doses of systemic opioids. CEA provides stable cardiorespiratory status and avoids airway instrumentation [1-3]. Thus, it has the advantage of reducing perioperative morbidity in high-risk patients.

Cervical epidural analgesia (CEA) involves blocking of cervical nerve roots by injecting local anaesthetics (LA) into the cervical epidural space. In 1933, this technique was first published by Dogliotti for surgeries involving upper thorax using a single dose of lignocaine. C6-T1 epidural space has been used to provide cervical epidural anaesthesia for breast cancer surgery as the pectoralis muscle is innervated from the brachial plexus (C5-C8) [4]. Cervical epidural anesthesia provides sensory blockade from C3 to T8 with local anesthetics and thus axillary dissection can be done without general anaesthesia. The epidural space is very low in cervical region (3-4 mm) as compared to thoracic (4-5 mm) or lumbar (5-6 mm) region providing lower safety margin [5].

CEA have a favorable effect on hemodynamic variables by blocking sympathetic innervations of the heart. CEA decreases heart rate, cardiac output and myocardial contractility due to sympathetic block. Heart rate decreases due to the blockade of cardio-acceleratory fibres, and decreased venous return [6]. Hypotension and bradycardia occurs in 20–30% of patients which can be managed with atropine and mephentermine [7].

Blockade of cervical segments C3-C5 involves phrenic nerve, intercostal nerves and accessory muscles of respiration. Thus, CEA can lead to decreased tidal volume (TV), vital capacity (VC), forced vital capacity (FVC) and forced expiratory volume in the 1st second (FEV1) [8,9]. There is an increase in SpO2, PaCO2 and RR with decrease in PaO2 [10].

There can be bilateral sensory and motor block of the upper extremities. Nakamura et al observed a decrease in blood sugar concentrations due to increased insulin secretion [11]. Other complications of CEA includes the possibility of local anaesthetic administeration into the subarachnoid space, bleeding with epidural hematoma formation and infection (epidural abscess). In a retrospective study involving 394 patients by Bonnet et al, dural puncture was noted in 2 (0.5%), paralysis of respiratory muscles in 3 (1.4%) and epidural venous plexus puncture in 6 (1.5%) patients [12] enumerate the various advantages and limitations of CEA (Table 1).

Advantages	Limitations
Avoid the need of GA drugs and its complications	Uncooperative patient
Decreased perioperative morbidity and mortality	Hypotension and bradycardia (20-30%)
Catheter can be used for postoperative analgesia	Neurological complications
Less intraoperative surgical stress response	Dural puncture (0.5%)
Positive impact on cardiovascular and respiratory complications	Inadequate or patchy block (high failure rate of 32%)

Less intraoperative blood loss	Phrenic nerve palsy
Reduced insulin resistance and PONV	Urinary retention
Early postoperative recovery	Pruritus
Early oral intake and early ambulation	Expertise and training required
Cost effective	Risk of epidural hematoma
Decreased air pollution	Risk of respiratory muscle paralysis
Potential of preventing cancer recurrence	

Table 1: Advantages and limitations of CEA

CONCLUSION

CEA is a safe alternative to GA in breast cancer surgeries. CEA maintains hemodynamics, decreases blood loss, provides both intraoperative and postoperative analgesia leading to early recovery. However, this technique requires training, expertise and skills to avoid inadvertent complications. It may improve postoperative outcome with reduction in respiratory complications and other adverse effects of general anesthesia. Its role in preventing chronic post-surgical pain needs to be studied.

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