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Case Report

Pectoralis Block in Geriatric Patients with Breast Cancer Undergoing Modified Radical Dextra Mastectomy

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ABSTRACT

Regional anesthesia has the advantage of minimal use of drugs capable of depressing cardiovascular or pulmonary function, especially in geriatric patients. The pectoral nerve block represents a regional procedure associated with fewer adverse effects compared to alternative regional anesthetic approaches. A 74-year-old woman with a weight of 35 kg and a height of 145 cm, was diagnosed with breast cancer. The patient complained of a lump in the right breast since the last 1 year, the lump felt hard and didn't feel painful. We conducted PECS I and PECS II blocks as part of the surgical protocol for dextra Modified Radical Mastectomy (MRM), with the primary goal of minimizing the requirement for opioids and anesthetic agents in the context of geriatric patients. In the PECS I block, we introduced a needle into the anatomical plane situated between the pectoralis major and pectoralis minor muscles, followed by the injection of 10 mL of 0.5% ropivacaine. In the case of the PECS II block, we administered a 20 mL dosage of ropivacaine at the third rib level above the serratus anterior muscle to ensure a wide distribution of the local anesthetic within the axillary region. The complete PECS block procedure typically spans a duration of approximately 30 minutes. The block was smooth and did not show complications, during the duration of the opioid, fentany 25 mcg was added during the axillary lymph node dissection. VAS scores at first 12 and 24 hours, 1 and 1. Thus, the PECS block can be used as an analgesic either during or postoperatively. The use of PECS 1 and 2 blocks in radical mastectomy may reduce the need for opioids for intraoperative and postoperative pain.

Key words: Modified Radical Mastectomy (MRM), PECS Block, Breast Cancer, Geriatrics.

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INTRODUCTION

The increasing frequency of breast surgeries has underscored the necessity for safer and more comfortable anesthetic methods, with a focus on minimizing complications.[1,2] In the context of thoracic surgery, the acute postoperative pain arising from muscle and nerve damage represents a consistent risk factor for the development of chronic pain, proportionate to its intensity.[3,4] In a comprehensive study spanning 7 years and involving 2033 patients, it was revealed that more than one year following breast cancer surgery, approximately 28.2% of patients experienced chronic pain subsequent to mastectomy.[5,6] Some of these patients primarily reported pain localized in the same-side chest wall, followed by the same-side armpits, same-side forearms, and other regions. Notably, numbness was the predominant pain type, accounting for 77.3% of cases. All patients reported experiencing intermittent pain, with the onset occurring anywhere from days to weeks.[5] Effectively managing acute postoperative pain is paramount to achieving improved outcomes and enhancing patient satisfaction.[7–9] Regional techniques are widely regarded as the optimal approach for mitigating acute postoperative pain and reducing the incidence of chronic pain following thoracic surgery.[10]

CASE

A female patient, aged 74, with a weight of 35 kg and a height of 145 cm, was diagnosed with breast cancer. The patient reported the presence of a lump in her right breast since the last 1 year, the lump felt hard and didn't feel painful. The patient underwent FNAB on 04/07/2022 with results highly suggestive of a malignant right breast. The patient had undergone chemotherapy last August 2022. History of previous surgery in 2015 with general anesthesia for MRM (Modified Radical Mastectomy) left breast. There were no first postoperative complaints. There are no obstacles to daily physical activity, the patient can still clean and tidy up the house. History of hypertension and diabetes was denied. Never done chemotherapy or radiotherapy. The physical and laboratory examination of the patient was within normal limits. The patient was diagnosed by the American Society of Anesthesiology (ASA) 2 with geriatrics and malignancy.

Pectoralis Nerve Block (PECS) I and II were performed before induction of general anesthesia. The patient was previously sedated with 2 mg midazolam. The PECS block was conducted with the aid of ultrasound guidance, and a total volume of 30 ml of 0.5% ropivacaine was employed as the local anesthetic. The infraclavicular and right axillary regions were thoroughly cleansed with povidone iodine. Utilizing an oblique positioning of the ultrasound probe between the third and fourth ribs just below the lateral third of the clavicle, the relevant anatomical structures were identified. Skin puncture sites were prepped with 2% lidocaine. The block was executed through a medial, in-plane approach using a 100 stimuplex needle. For the PECS I block, the needle was introduced into the tissue plane situated between the pectoralis major and pectoralis minor muscles, followed by the injection of 10 mL of 0.5% ropivacaine (as depicted in Figure 1). In the case of

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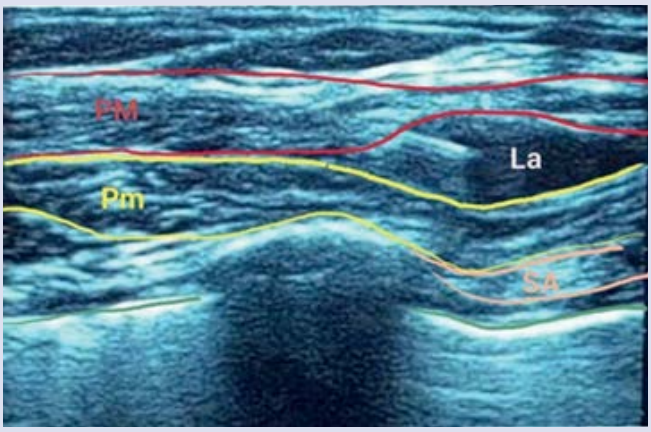

Figure 1: PM: Pectoralis Mayor, Pm: Pectoralis Minor, SA: Seratus Anterior, LA: Local Anestesi.

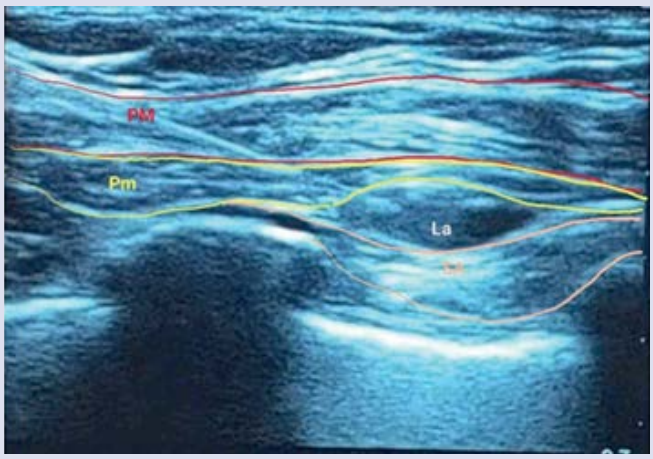

Figure 2: PM: Pectoralis Mayor, Pm: Pectoralis Minor, SA: Seratus Anterior, LA: Local Anestesi.

the PECS II block, a 20 mL volume was administered at the level of the third rib, positioned just above the serratus anterior muscle, with the aim of evenly dispersing the local anesthetic throughout the axillary region (as shown in Figure 2). The complete PECS block procedure typically required approximately 30 minutes. Adequate analgesia for the surgical procedure was achieved within 30 minutes following the injections.

The patient was then given general anesthesia. Induction was carried out with Fentanyl 50 mcg, propofol 100 mg and atracurium 30 mg, using endotracheal tube with a size 7 mm, maintenance of the operation using sevolfurane inhalation agent. At the time of the incision, which was made 90 minutes after the block was done, no increase in hemodynamics was found[11], the patient's pulse tended to be stable around 68-87x/minute. There was a pulse increase of more than 20% from baseline during axillary lymph node dissection. Evaluation during the operation was carried out with the addition of an opioid,[12] fentanyl 25 mcg, during axillary lymph node dissection. The operation was carried out for 3 hours. In the Post-Anesthesia Care Unit (PACU), the patient exhibited stable vital signs, and the Visual Analogue Scale (VAS) score for pain was recorded at 1. Postoperative nausea and vomiting (PONV) did not manifest. The analgesic effect of the PECS block became evident within 24 hours, and nonsteroidal anti-inflammatory drugs (NSAIDs) were administered 48 hours post-surgery.

DISCUSSION

Numerous regional anesthetic techniques offer distinct advantages for postoperative pain management by reducing opioid usage and minimizing associated side effects in patients undergoing breast surgery.[10,13] The PECS block, recognized as a peripheral nerve block, is regarded as a secure and efficient procedure.[14–16] Increasingly, anesthesiologists are opting for this PECS block over thoracic epidural analgesia. PECS blocks have several advantages, including the elimination of the sympathectomy risks normally associated with epidural blocks. Additionally, PECS blocks have the advantage of being safer than spinal area anesthesia in patients on anticoagulants. In a recent study concerning postoperative analgesia in revision radical mastectomy, the PECS block group exhibited reduced postoperative morphine consumption in the first 24 hours and lower pain levels in the first 12 hours compared to the thoracic paravertebral block (TPVB) group, indicating a favorable outcome. Most PECS block cases are performed under general anesthesia for postoperative pain control. A two-arm randomized clinical trial comparing general anesthesia alone and general anesthesia combined with the PECS block demonstrated significantly lower Visual Analogue Scale (VAS) scores, reduced postoperative morphine consumption, and decreased intraoperative fentanyl usage in the PECS group.[2]

The PECS block is divided into two categories, namely PECS I and PECS II. PECS I is a straightforward and dependable surface block designed to target the lateral and medial thoracic nerves at the juncture between the pectoralis major and pectoralis minor muscles. While it finds common use in various chest surgeries, potential applications also encompass chest trauma, therapeutic dissection of pectoral muscles, pacemaker placements, and chest drainage procedures. In cases of Modified Radical Mastectomy (MRM), where dissection along the anterior serrated muscle is necessary, PECS I alone may prove insufficient to provide comprehensive coverage of the entire surgical area. Hence, consideration should be given to complementing it with the PECS II block. PECS II, on the other hand, acts on the long thoracic nerve, the thoracic intercostal nerve spanning from T2 to T6, and the thoracic nerve. It encompasses the lateral branches of the intercostal nerve that emerge along the mid-axillary line and innervate the mammary and skin glands from T2 to T6.[17] The recommended dosage typically involves 0.2 mL/kg of either bupivacaine 0.25% or ropivacaine 0.5%.[18,19] The injection depth typically ranges from 1 to 3 cm for the pectoralis major and pectoralis major connection planes, and 3 to 6 cm for the pectoralis major and anterior serratus muscle connections. When administering local anesthetics for mass formation, it is advisable to deliver them in 5 cc increments while aspirating 5 cc at a time to prevent inadvertent intravascular injection.[20]

CONCLUSION

The use of PECS 1 and 2 blocks in radical mastectomy may reduce the need for opioids for intraoperative and postoperative pain. The patient's VAS scores while in the PACU and on return to the ward were well controlled. While in the patient room, the operator was still given an NSAID pain reliever for 2 days, only a 12-24-36-24 hour VAS controlled on a scale of less than 2. Painkiller use Postoperative opioid unresponsive. Thus, PECS 1 and 2 blocks can be performed in breast cancer surgery as long as there are no contraindications.

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DISCLOSURE

The authors declare no conflict of interest in this work.

ETHICS APPROVAL

The study was approved by Dr. Soetomo General Hospital, Surabaya, Indonesia.

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