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Description of anaesthesia nursing care in patient's tumour mammae sinistra, mastectomy surgery with general anaesthesia – laryngeal mask airway (lma) and neutrophilia: a case report

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Abstract. Breast tumours in women are one of the leading causes of cancer incidence. Signs and symptoms that are often found include breast lumps, nipple abnormalities, and inflammation. Treatment by removing the entire breast tissue and surrounding lymph nodes is called mastectomy and is one of the operative treatments that can be performed in cases of breast cancer. Health problems that arise in the perioperative period require comprehensive treatment. This study provides an overview of the management and nursing care peri anaesthesia in mastectomy. The method used in this research is a case study with data collection through observation and interview techniques. The population studied was female patients with a diagnosis of sinistra mammary tumour who underwent mastectomy. The results and conclusions of this study refer to collaboration in considering the use of induction drugs (propofol, fentanyl, and sevoflurane) which have the effect of reducing tumour symptoms and improving the patient's quality of life. Interventions related to anaesthesia health problems were carried out by providing anaesthesia nursing care during perioperative, which showed good results and without complications.

1 Introduction

Breast tumours or breast cancer in women is one of the leading causes of cancer incidence in 2020. The incidence of breast cancer in the world is at an average age of 47.8 with a distribution of incidence >2 million cases and deaths >600 thousand cases (1). Asia's age-

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standardized breast cancer incidence rate is 29.1 per 100,000, with a mortality ratio of 0.35, which is higher than that of the United States at 0.21, and Europe at 0.23 (2).

Risk factors for breast cancer include age, which shows a strong association with increased incidence of the disease. About 25% of breast cancer cases are linked to family history, so it is considered a major risk factor. In addition, reproductive factors such as early onset of puberty, late menopause, and older age at first childbirth can also increase the risk of developing breast cancer (3). Breast lumps, nipple abnormalities, and inflammation are the most common signs and symptoms in breast tumour cases. Supported by research from Bohsas et al. (2023), various signs and symptoms of breast cancer include pain, redness, and a lump in the breast area. In this patient, the most prominent signs and symptoms were lumps and inflammation in the breast (3). A comprehensive assessment needs to consider psychological symptoms in the form of anxiety, individual coping and social support from both husband and closest family to support the patient's quality of life.

Common treatments for breast cancer include surgical or operative treatment, systemic treatment (hormonal therapy and chemotherapy), and radiotherapy. Removal of the entire breast tissue as well as the surrounding lymph nodes is called a mastectomy and is one of the operative treatments that can be done in breast cancer cases (4). Mastectomy surgery is often chosen for early-stage breast cancer cases. Indications for this procedure include patients with advanced disease, tumours larger than 5 cm (T2), chest wall involvement, and inflammatory breast cancer (5). All responsibilities related to anaesthesiology therapy and patient safety management fall under the anaesthesiologist. Collaboration with anaesthesiologists will support comprehensive patient care in the perioperative period, contributing to better patient recovery. Continuous monitoring and implementation of care will be multidisciplinary, involving various professions, including surgeons, instrument nurses, circulating nurses, radiologists, laboratory experts, dietitians, and others. Multidisciplinary collaboration also facilitates communication and education between healthcare professionals, patients, and their families, which can improve the quality and safety of care, as well as increase the satisfaction and compliance of all parties involved (6). The purpose of this report is to describe anaesthesia nursing care related to patients with medical diagnoses of breast tumours undergoing mastectomy with general anaesthesia using laryngeal mask airway.

2 Methods

This research applies the case study method, which aims to discuss and analyse in depth the phenomenon of one individual. With this approach, researchers can explore and understand the problem in more detail. The population studied was a 44-year-old female patient diagnosed with a sinistra mammary tumour with high neutrophil levels. The research instruments used were AMPLE (Allergic, Medication, Past Illness, Last Meal, Environment) and 6B (Breathing, Blood, Brain, Bladder, Bowel, Bone) assessments, as well as determining the patient's ASA status.

The data obtained included subjective and objective data resulting from history taking and observation during the perioperative period. Other supporting data, such as the results of laboratory examinations and radiologic imaging, were taken from the patient's medical records. Data collection was conducted on July 14, 2024, through observation and interview techniques. This research methodology was supported by ethical approval issued by Harapan Bangsa University with code No. BLPPM-UHB-231/02/2024. Data analysis was performed by describing the results of observations and interpreting the data to evaluate the results obtained by patients from the interventions provided during perioperative care.

3 Case History

A 44-year-old female with a body weight of 55 kg came with complaints of sores and pain in the left breast for about 1 week. The patient also said that 1 month ago a boil appeared on her left breast which was then given herbal medicines and warm ash which caused the skin around her breast to turn black, 1 week ago the boil on her breast burst. The results of pain assessment using the Numeric Rating Scale (NRS) were 0-2.

In the Allergic Medication Past Illness and Environment (AMPLE) study, the patient was within normal limits and was classified as American Society of Anaesthesiologists (ASA) I. Operative plan of mastectomy with General Anaesthesia (GA) Laryngeal Mask Airway (LMA) size no.3. Physical examination and 6B assessment (Breathing, Blood, Brain, Bladder, Bowel, Bone) within normal limits.

Pre-surgical evaluation showed high hemodynamic results of systole and diastole blood pressure 135/85 mmHg and pulse 110x/min. Laboratory investigations showed low haemoglobin, haematocrit, lymphocytes and high neutrophils from reference values (Haemoglobin 11.6 g/dL, reference values 11.7-15.5; Haematocrit 33.8%, reference values 35-47; Neutrophils 73%, reference values 50-70; Lymphocytes 20%, reference values 25-40) [Tabel 1]. Vital signs were monitored, and an Intravenous (IV) line was placed in the right hand using an 18G IV Cath with Ringer Lactate 500 ml 20 drops per minute fluid therapy.

Table 1. Laboratory Examination Results

Examination	Result
Haemoglobin	11.6 g/dL
Haematocrit	33.8%
Neutrophils	73%
Lymphocytes	20%

Ondansetron 4 mg and midazolam 2 mg IV were given as premedication interventions. After conducting a pre-surgical assessment, Anaesthesia Health Problems (AHP) were found in the form of anxiety conditions in patients and the risk of anaesthesia injury. To overcome the problem of anxiety, interventions were given including monitoring vital signs, creating a therapeutic atmosphere, assessing the patient's readiness before surgery, checking the completeness of informed consent, and educating the patient and the patient's family about the mastectomy surgical procedure and anaesthesia procedures that will be undergone.

At the intra operative stage an assessment was carried out, the value of Tidal Volume (VT) 352 ml, Respiratory Rate (RR) 20. Assessment of Restriction, Obstruction / Obesity, Disrupted or Distorted anatomy and Short thyromental distance (RODS) within normal limits, anaesthesia considerations using GA with LMA no.3. Induction of analgesic and sedation by administering Fentanyl 50 mcg and Propofol 100 mg. Tranexamic Acid 500 mg was given 2 ampules as bleeding control. Maintenance anaesthesia was given Sevoflurane volatile agent with MAC 2%, N2O and O2 2L/min. During the intraoperative phase, several Anaesthetic Health Problems (AHP) were found, namely the risk of impaired respiratory function and the risk of bleeding, airway management interventions with the triple manoeuvre technique, crystalloid fluid therapy Ringer Lactate 500 ml 30 drops per minute, and administration of 2 ampoules of Tranexamic Acid 500 mg intravenously (IV).

Operative action lasted for 1 hour 30 minutes with a duration of anaesthesia of 1 hour 40 minutes until extubating of LMA. Then the patient was attached to the Oropharyngeal Airway (OPA) with spontaneous breathing, analgetic ibuprofen 400 mg drip infuse 500 ml 20 drops per minute, and hemodynamic status within normal limits. The Alderete Score assessment received a score of 5, with a lack of level of consciousness and the patient's extremity activity that could not be fully moved. From the results of the assessment of the postoperative phase, several AHP were obtained, including the risk of falling and the risk of delayed recovery of consciousness, the interventions carried out included hemodynamic monitoring, positioning patient's supine without head pads, maintaining a comfortable environment, installing safety bed trails, and providing sound stimuli. Postoperative interventions are performed in the recovery room which includes reassessment of Alderete score, evaluation of level of consciousness, monitoring of vital signs and continuing therapy until all assessments are completed and the patient is ready to be transferred to the ward. The anaesthesiologist's responsibility ends once the patient is discharged from the recovery room and follow-up care will be handed over to the ward nurse.

4 Discussion

This breast tumour or breast cancer occurs with the initial symptom of the appearance of a lump or inflammation which then bursts into an ulcer. The curative action chosen is mastectomy with General anaesthesia Laryngeal Mask Airway. There were several abnormal laboratory examination results, and the focus of this discussion is the patient's neutrophil which exceeds the reference value. Neutrophils are one of the most dominant types of white blood cells, produced daily in the spinal cord, and play an active role in the immune system (7). Neutrophils act as an initial defence in the innate immune system against microorganisms by performing several antimicrobial functions (8). Research by Wu et al. (2020) supports this by stating that neutrophils act as a defence in inflammation and fight invading microorganisms by forming neutrophil extracellular traps (7). High neutrophile values are significantly associated with increased risk of breast cancer and poor patient survival (9).

The researcher as well as the anaesthesiologist in this case has the role and responsibility of providing nursing care to patients during the perioperative period. Anaesthesia health problems that arise during perioperative become a reference for anaesthesiologist in determining interventions and providing nursing care. The selection of induction drugs is in collaboration with the anaesthesiologist by considering the results of the patient's history and diagnosis. During the operation, the anaesthesiologist monitors the patient's condition, vital signs and ensures that the patient's anaesthetic agent needs are well met.

Anxiety and risk of anaesthesia injury are considered problems that arise at the pre-surgical stage. PONV can interfere with the recovery process after surgery and can cause fluid and electrolyte imbalances in the body, leading to dehydration (10). The intervention of giving intravenous ondansetron 4 mg premedication to prevent postoperative nausea and vomiting (11). Anxiety is a negative emotion experienced by patients due to surgery, and it is a major concern for anaesthesiologists as it can increase the risk of complications during the perioperative period (12). Preoperative anxiety is associated with hemodynamic instability and can affect postoperative outcomes, 2 mg midazolam is given by intravenous route to reduce anxiety in patients. Midazolam belongs to the group of benzodiazepines with short duration of action and has hypnotic, anxiolytic, anticonvulsant, muscle relaxant, and anterograde amnestic effects. It is often used as premedication, induction, and maintenance of anaesthesia during surgical procedures (13).

General anaesthesia Laryngeal Mask Airway (LMA) is a non-invasive procedure often used with a supraglottic airway device to maintain airway patency during surgery. RODS assessment can be used to estimate barriers to LMA intubation (14). The advantages of using LMA are to prevent trauma to the vocalis plaque, tracheal mucosa, fewer postoperative complications, and practical procedures. This is supported by research from Zaman et al. (2022) which discusses that the use of LMA is more recommended in adults because it minimizes installation injuries to the trachea, easier and more efficient installation. (15).

There are several considerations in the selection of anaesthetic drugs related to breast tumour patients. The administration of propofol to provide sedation where the effect of propofol in patients with breast tumours is to inhibit tumour cell migration and proliferation, increase tumour apoptosis and anti-inflammatory. Opioids have immunosuppressive effects that affect cellular and humoral immunity. Fentanyl has antitumor effects that work by reducing the levels of proteins involved in cell apoptosis and differentiation mechanisms. This is supported by the research of Ponferrada et al. (2021) (16). Maintenance of anaesthesia using sevoflurane is considered because it has the advantages of rapid induction, less circulation disturbance, rapid absorption and clearance (17). This is reinforced by the research of Karunarathna et al. (2024) which revealed that sevoflurane can serve as an agent to maintain general anaesthesia during surgery (18).

Blood loss is a common complication during surgical procedures, which can lead to unstable hemodynamic, coagulopathy, prolonged duration of surgery and unplanned follow-up interventions. Blood transfusion is commonly used as an intervention for bleeding problems, but with the scarcity of blood products and the side effects or risks that can arise from this process, the administration of bleeding control drugs is considered to overcome these problems. Tranexamic Acid (TXA) is an anti-fibrinolytic agent that works by binding plasminogen to prevent the loss of fibrin clots so that they do not become plasmin, from this mechanism causing the maintenance of fibrin intertwining and reducing bleeding. This is supported by research by Calpin et al. (2023) the use of TXA has benefits in reducing blood loss and the need for blood transfusions during surgery (19).

Pain is one of the problems that arise after surgery that can result in delays in recovery and prolong the patient's stay in the hospital (20). Ibuprofen is a non-steroidal anti-inflammatory drug (NSAID) used for postoperative pain management. There are several indications for the use of this drug such as mild to moderate pain, moderate to severe pain and as an opioid adjuvant in adult patients. In this case, the patient was given Ibuprofen 400 mg drip infuse ringer lactate 500 ml 20 drops per minute to reduce postoperative pain. This is in line with the research of H. Ngo Trung et al. (2024) which states that IV ibuprofen administration is associated with lower postoperative pain scores (21).

5 Conclusion

The role of anaesthesia nursing to provide nursing care to patients with mastectomy cases requires comprehensive handling, both social risk and symptom management complained of by patients, prevention of postoperative infections needs to be recommended in post-mastectomy patients and anatomical pathology examinations to detect the spread of cancer in mammary tissue will complement the role of collaboration to multidisciplinary professions in the clinic. The role of collaboration on bleeding and management of maintaining airway patency is very important for a stylist so that the patient's quality of life can be achieved properly. The implications of treatment in cases of mammary tumours correlate with induction drugs (propofol, fentanyl and sevoflurane) which have the effect of reducing tumour symptoms. So that this treatment will increase the effectiveness simultaneously in

reducing the risk of recurrent cancer events in patients and the quality of life of patients increases. Nursing care and follow-up therapy provided to the patient during perioperative showed satisfactory results and without complications. Postoperative assessment of Alderete score was sufficient and the patient's hemodynamic were within normal limits so that the patient was declared ready for transfer from the recovery room.

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