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Emergency Management of Incarcerated Scrotal Hernia with Hypertension under General Anesthesia

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Abstract. An incarcerated scrotal hernia is a surgical emergency. An incarcerated scrotal hernia is a hernia whose contents enter the scrotum and are pinched in the hernia sac, if not treated immediately, it will cause tissue death which leads to infection and can threaten the patient's life. Emergency measures are a challenge for medical personnel, especially for anesthesiologists. This study aims to obtain an overview and understand emergency management in patients with incarcerated scrotal hernia and hypertension under general anesthesia. The research method used in this study is a case study. This study uses a descriptive design with a single case study. Participants in this study were one case of incarcerated scrotal hernia and hypertension with general anesthesia. Data collection in this study is through interviews, observations and physical examinations, documents. The data validity test is intended for valid data, carried out with additional sources of information using triangulation from three main data sources, namely patients, nurses and patients' families. Results: based on the results of the assessment and data analysis, it was found that anesthesia for emergency cases is more difficult for anesthesiologists who have to prepare and deal with existing problems because these patients are not prepared in advance and are not in an ideal state**,** such as there is a risk of aspiration and in addition patients with hypertension require close monitoring of vital signs and strict monitoring of fluids during surgery. Conclusions: Emergency management in patients with incarcerated scrotal hernia and hypertension under general anesthesia requires special management to reduce the patient's risk because the patient is not well prepared for surgery and has additional hypertension that requires special management to prevent complications.

1 Introduction

Hernia surgery is a common surgical procedure performed in Indonesia. A hernia itself is a condition where the contents of the stomach come out and protrude through a weak muscle section in the wall that is experiencing a hernia [1]. Incarcerated hernia is a complication of a hernia where the stomach or intestinal tissue is trapped or pinched in the hernia sac, requiring emergency surgery. Treatment of hernias can be done from herniorrhaphy to laparotomy, laparotomy is done by making a large incision in the abdomen to be able to access and examine the inside of the abdomen. Laparotomy is performed under general anesthesia [2].

Data analysis conducted [3] around the world, there were 32.53 million hernia prevalence and 13.02 million cases of hernia incidence in 2019. An incarcerated scrotal hernia in which the hernia is pinched, defined as the inability to restore the contents of the hernia, is a common surgical emergency, accounting for 5-15% of abdominal hernias [4].

Hernia surgery with hypertension can increase the risk of complications during surgery. Hypertension can cause damage to blood vessels, heart, kidneys. This disease is associated with many deaths worldwide. Severe perioperative hypertension can result in excessive bleeding during surgery, myocardial infarction, congestive heart failure (CHF) and acute pulmonary edema (APE). Therefore, it is important for anesthesiologists to know about the care of patients with hypertension [5].

Perioperative anesthetic management includes procedures required during surgery. Perioperative anesthetic management consists of pre-anesthetic, intra-anesthetic, and post-anesthetic. Anesthesia management requires special monitoring in patients with emergency surgery so that the surgery goes well and obtains optimal surgical results [6]. The purpose of this study is to obtain an overview and understand emergency management in patients with incarcerated scrotal hernia and hypertension with general anesthesia and to examine these patients and find out what the risks of emergency cases are.

2 Method

The research design used in this study is a case study, which is a study that explores a phenomenon problem with detailed limitations, data collection by medical records and structured interviews, in-depth data collection and stating various sources of information. This case study is to explore emergency management in patients with incarcerated scrotal hernia and hypertension under general anesthesia. Data collection in this study was through interviews, observations and physical examinations, documentation studies (results from diagnostic examinations and other relevant data).

The data validity test is intended to test the quality of data or information obtained in the study so as to produce valid data, carried out by extending the observation time and additional sources of information using triangulation from three main data sources, namely patients, nurses and patients' families related to the problem being studied. Data analysis is carried out since the researcher is in the field, during data collection until all data is collected. Data analysis techniques are used by observation by the researcher and documentation studies which are then interpreted by the researcher and compared with existing theories. Instrument in this research physical examination method B6. B1 (breathing) is an assessment of the

respiratory organs. B2 (blood) is an assessment of organs related to blood circulation, namely the heart and blood vessels. B3 (brain) is a physical assessment of consciousness and sensory perception function. B4 (bladder) is an assessment of the urological system. B5 (bowel) is an assessment of the digestive system. B6 (bone) is an assessment of the musculoskeletal and integumentary systems. The ethical principles in this study are informed consent (consent to be a respondent), anonymity (anonymity), confidentiality (confidentiality provided by the respondent is guaranteed), beneficence (actions taken by the researcher for the good and benefit of the respondent), non-maleficence (not causing harm or physical injury).

3 Case history

A 78-year-old man came to the Emergency Department (IGD) with a complaint of a lump in the right scrotum, the lump appeared 4 days ago and could not be pushed back. The patient also complained of abdominal pain, other complaints felt were nausea, vomiting and could not defecate for three days. Based on anamnesis, clinical examination and radiological examination results, the patient was diagnosed with incaserata scrotal hernia, the patient was planned to undergo herniorrhaphy to emergency laparotomy with general anesthesia. During pre-anesthesia, an allergy, drug, previous illness, last meal, environment (AMPLE) examination was carried out, the results of the examination showed that the patient had no drug or food allergies, had a history of hypertension and routinely consumed amlodipine, previously there was no family history of disease, no history of previous surgery, last ate and drank 4 hours ago, bad habits were denied.

On physical examination, compos mentis consciousness was found, on examination B1 (Breathing) facial expression slightly grimaced in pain, both cheeks were sunken, evaluation of the patient's thyromental distance opened his mouth ≥ 3 fingers, thyromental distance ≥ 3 fingers, hyoid-thyroid distance ≥ 2 fingers, Mallampati score I, B2 (Blood) conjunctiva was not anemic, skin was not pale, there was bleeding in the stomach coming out of the NGT, the fluid was cloudy brownish, the amount of bleeding was approximately 10 cc, B3 (Brain) there were no abnormalities, B4 (Bladder) there was a lump on the right testicle, urine production was normal, B5 (Intestine) nausea and vomiting 1 time, stomach felt tense, lower right abdominal pain, on examination B6 (Bone) there were no abnormalities.

Supporting examinations in this patient are laboratory examinations, the results of which are hemoglobin 13.9 g/dL, leukocytes 14.82 10^3/µL, hematocrit 44.3%, platelets 260 10^3/µL, erythrocytes 7.08 10^6/µL, and radiological examinations, the abdominal X-ray shows a picture of small intestine obstruction, no pneumoperitoneum (Figure 1).

Fig. 3-position abdominal X-ray

Emergency surgery patients fasted for less than 6 hours and were given 10 mg metoclopramide premedication. In pre-anesthesia, the patient complained of mild pain, blood pressure 150/98, pulse rate 89x/min, SpO2 99% with an American Society of Anesthesiologists (ASA) II E score, with hypertension comorbidities, regularly taking amlodipine, given the antibiotic ceftriaxone 2 grams. The patient had a Nasogastric Tube (NGT) attached and a brownish cloudy liquid was discharged approximately 5 cc. In intra-anesthesia, general anesthesia is carried out endotracheal tube technique (ETT) using midazolam 2 mg, ketorolac 30 mg, tramadol 100 mg, propofol 100 mg, rocuronium 30 mg, intubation with the Sellick maneuver technique, during surgery blood pressure monitoring and fluid monitoring is carried out strictly so as not to be excessive and more intensive monitoring of respiratory status is carried out during surgery, anesthesia is maintained with sevoflurane (2 vol %), oxygen 2 liters and N2O 2 liters with a ratio of 50:50, infusion of lactate ringer. Intra-anesthesia TD 135/90 mmHg, Pulse 78x/min. SpO2 98%. The operation lasted for 1 hour. The patient was finally operated on herniorrhaphy without laparotomy. The patient is extubated inside, after the extubating is waited for the patient to have a reflex to wake up and swallow and then be transferred to the recovery room. Postoperatively, the patient was closely monitored for 30 minutes in the recovery room blood pressure 131/78 mmHg, pulse 85x/min, respiration rate 20x/min, temperature 36 degrees Celsius, SpO2 99%. Patients with falling rickshaws, postoperative instructions to monitor vital signs, ketorolac injection 30 mg, and tramadol 100 mg/8 hours starting at 16.00 pm, ceftriaxone injection 2x1 grams. maintain NGT 24 hours and drain, rinse the stomach in the morning and evening, fast the patient 24 hours, complete blood check. Aldrete scores 8 patients plan to move to the ICU for strict monitoring of the patient's condition for 24 hours after surgery. In the ICU, the general condition is moderate, the patient is composed of mentions, blood pressure 145/88 mmHg, pulse 83x/min, RR 20x/min, SpO2 96%, postoperative wound, clean dressing, cut wound, groin area, NGT flowed, fasting patient, gastric rinse in the morning with aqua, no further complaints monitor vital signs.

4 Result and discussion

A hernia is an abnormal protrusion of the contents of the abdominal cavity through a defect or weak part of the damaged wall. Incarcerated scrotal hernia is a complication that occurs in hernias, which is a condition when the intestines are trapped at a weak point in the abdominal cavity and cannot be returned to their place, causing the intestines to become blocked, resulting in obstruction that can cause a life-threatening emergency [7]. One of the factors causing hernias is age [8]. Incarcerated scrotal hernia, with surgical procedures ranging from herniorrhaphy to laparotomy, are mostly performed under general anesthesia [9]. General anesthesia is an action to eliminate pain accompanied by loss of consciousness due to the administration of anesthetic drugs. Various drugs are given to cause unconsciousness, amnesia, analgesia, muscle relaxation, and loss of autonomic reflexes [10].

Patients who require anesthesia for emergency cases will find it more difficult for the anesthesiologist who has to prepare and deal with the problem at hand because these patients are not prepared in advance and are not in ideal circumstances. Usually, the more severe the patient's condition, the more serious the risk will be, so general anesthesia is chosen. Patients with emergency surgery usually have a full stomach and are at risk of aspiration, so prevention is needed. It is also recommended to install a nasogastric tube (NGT). At the end of the anesthesia, remember to protect the patient's lungs against the risk of aspiration by means of deep extubating.

Anesthesia assessment is performed to assess risk through history, examination, and testing. Patients with emergency surgery that affects monitoring, and peri-anesthetic management. Anesthesia management focuses on securing a rapid airway, minimizing the risk of pulmonary aspiration, hemodynamic stability during the pre, intra, post anesthetic period, optimal fluid volume, and post-anesthetic considerations [11].

Preoperative patient assessment in emergency surgery patients is certainly important, in patients undergoing emergency surgery, of course, surgical preparation is still lacking so that assessment and treatment are needed so that the operation runs smoothly. Surgery in elderly patients is increasing; elderly patient care often requires assessment and treatment to optimize surgical procedures [12]. Preoperative evaluation is needed to identify patients at risk of aspiration. Pre-anesthetic evaluation should include age, gender, ASA status, airway difficulties, comorbidities, and the importance of preoperative fasting [13].

In pre-anesthesia there are several aspects of assessment and preparation in emergency patients to assess the risks and their management so that the operation runs smoothly. Risk assessment is important in the management of patients who will undergo emergency laparotomy. Risk assessment before and after surgery is recommended for anesthesia management and to facilitate discussion between the team and the patient's family. One of the assessments is by identifying the patient's comorbidities, comorbidities in patients who will undergo surgery are risk factors for morbidity and mortality, therefore an evaluation of the patient's condition before anesthesia is needed because it affects the results of anesthesia. Uncontrolled hypertension is at higher risk of complications during general anesthesia [14]. During pre-anesthesia, risk factors for infection are also taken into account, so patients are also given the antibiotic ceftriaxone, an antibiotic given before surgery to help reduce post-operative infections and prevent the spread of bacteria at the surgical site [15].

Emergency surgery makes the patient's surgical preparation less, one of which is the lack of fasting, preoperative fasting is a routine practice to minimize pulmonary aspiration. Preoperative fasting is defined as a certain period of time before the procedure where the patient is not allowed to consume liquids or solid foods orally [16]. Perioperative pulmonary aspiration is defined as aspiration of gastric contents that occurs after induction of anesthesia, so in patients with insufficient fasting, prevention is needed to prevent aspiration. The use of pharmacological agents can reduce the risk of pulmonary aspiration, one of which is by using a group of gastrointestinal stimulants such as metoclopramide. Research shows that patients given metoclopramide accelerate gastric emptying within 30 minutes and reduce inadvertent reflux [17].

In intra anesthesia using general anesthesia, Endotracheal Tube (ETT) installation during intubation is done using the Sellick maneuver method to avoid aspiration of gastric contents. Cricoid pressure has been shown to reduce the incidence of aspiration, this pressure is indicated in patients who are not fasting, nauseous and have just vomited, increased abdominal pressure, hiatus hernia [18]. In addition, the use of this endotracheal tube also maintains airway patency and prevents aspiration. During intra anesthesia, monitoring of the patient's respiratory status is also required because of complications caused by general anesthesia in the form of respiratory depression. The patient's ability to maintain airway patency decreases as the patient becomes more anesthetized. Respiratory monitoring is required during anesthesia. Guidelines for monitoring respiratory function such as oxygenation must be continuously monitored with oximetry, ventilation must be continuously monitored, is the minimum standard for monitoring patients undergoing anesthesia or sedation under the care of an anesthetist [19].

In addition to monitoring respiratory status, patients with a history of hypertension also need close monitoring during intra-anesthesia. The responsibility of the anesthesiologist is to

ensure safe blood pressure during surgery. This can be achieved with anesthesia, analgesics, and antihypertensive agents. Hypertension can increase surgical risk. However, hypertension with a diastolic blood pressure of less than 110 mmHg usually does not appear to increase risk. It is generally recommended that oral antihypertensive drugs be continued before and after surgery. Perioperative risk is divided into two categories according to the stage of hypertension. One is severe hypertension where systolic/diastolic blood pressure is more than 180/110 mmHg, so it is recommended to postpone surgery. Conversely, in studies, mild to moderate hypertension where systolic/diastolic blood pressure is below 180/110 mmHg does not increase surgical risk, so it is safe to perform surgery but still be monitored carefully during and after surgery [20].

Patients with comorbid hypertension are patients at risk in the perioperative period, their treatment during the perioperative period is carried out by conducting intensive blood pressure monitoring and fluid monitoring so that it is not excessive. The most common cause of hypertension in the perioperative period is uncontrolled hypertension and the second is due to excessive fluid therapy. Fluid therapy in hypertensive patients should not be excessive because it can increase complications including significant increases in blood pressure [21].

Post-anesthesia patients are at risk of falling, falls are more common in the less expected postoperative period and increase in elderly patients, fall prevention is needed by installing bed guards and being accompanied. Post-anesthesia in the recovery room, the patient's blood pressure is also closely monitored. After surgery, the patient is transferred to the ICU to monitor post-operative development. Studies show that emergency laparotomy is associated with a high risk of complications, so close monitoring is needed [22]. Patients undergoing emergency operations require post-operative care in the critical care unit [23]. Post-operative complications increase the risk of death. Elderly patients undergoing surgery are at risk of post-operative complications, and have the same mortality rate as critically ill patients. Therefore, post-operative care is needed to reduce post-operative complications and death [24]. After the operation, the patient was moved to the Recovery Room, after the surgery the patient was closely monitored for 30 minutes, the patient's Aldrete score was 8, the patient's condition was stable, the patient planned to move to the ICU for strict monitoring of the patient's condition for 24 hours after surgery. In the ICU, the general condition is moderate, the patient is composed, and there are no complaints.

Results of this study based on data analysis, it was found that anesthesia for emergency cases is more difficult for anesthesiologists who have to prepare and deal with existing problems because these patients are not prepared in advance and are not in an ideal state, such as there is a risk of aspiration and in addition patients with hypertension require close monitoring of vital signs and strict monitoring of fluids during surgery.

5 Conclusion

After the operation, the patient was moved to the Recovery Room, after the surgery the patient was closely monitored for 30 minutes, the patient's aldrete score was 8, the patient's condition was stable, the patient planned to move to the ICU for strict monitoring of the patient's condition for 24 hours after surgery. In the ICU, the general condition is moderate, the patient is composed, there are no complaints and the patient has begun to recover.

Emergency management in patients with incarcerated scrotal hernia and hypertension under general anesthesia requires special management to reduce the patient's risk because the patient is not well prepared for surgery and has additional hypertension that requires special management to prevent complications. In order for the operation to run smoothly, pre-

anesthesia, intra-anesthesia and post-anesthesia management are needed to handle obstacles and overcome problems that occur. Management of emergency surgery is certainly different from elective surgery, special assessment and handling are needed in emergency surgery. Evaluation is needed to assess the risks that may occur. In pre-anesthesia, evaluation is in the form of surgical preparation, both from fasting, complete physical assessment, and identifying comorbidities. Patients with emergency surgery are at risk of aspiration so special handling is needed to prevent it. Careful anesthesia management and monitoring are essential to address the risks during emergency surgery.

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