International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2020): 7.803

Considerations in Perioperative and Anesthetic Management for Geriatric Patient with Esophageal Tumor Resection, at Buleleng General Hospital, Bali, Indonesia: A Case Report

Kadek Anggie Wigundwipayana[1], I Gede Nova Wirahjasa[2]

Abstract: ***Introduction****: Geriatric populations in general experience anatomical and physiological changes in several systems of their body and very sensitive to anesthetic drugs.* ***Case Report****: A 75-year-old male with esophageal tumor was sent for esophagectomy. Patient was assessed with ASA III physical status, proceeding with General Anesthesia-Oral Tracheal Tube (GA-OTT). During the procedure, patient'shemodynamic was observed closely. The patient was transported to post operative surgical Intensive Care Unit (ICU) for mechanical ventilator.* ***Conclusion****: Consideration in perioperative management and the use of anesthetic agents are absolutely necessary especially in geriatric patients. Clinical evaluation should be highly considered individually. Esophagectomy is one of the major surgical prosedure that needs special attention in anesthesia management to avoid morbidity and mortality.*

Keywords: Anesthesia, Perioperative Management, Geriatric, Esophagectomy

1. Introduction

Geriatric populations in general experience anatomical and physiological changes in several systems of their the body, including the respiratory, digestive, cardiovascular, metabolism, endocrine, nervous and musculoskeletal system. Geriatric patientsare very sensitive to anesthetic drugs and requires the proper use of drugs to achieve the anesthetic effect and avoid possible side effects[1]. Therefore, anesthesiologists need to prepare themselves for new challenges and should be fully aware of possible changes due to physiological changes at related ages and the additional impact of related comorbidities[2]. In this case report, we attempt to outline the management of such cases by merging the previous knowledge and recent experiences.

2. Case Report

A 75-year-old male with esophageal tumor was sent for esophagectomyin Operating Theatre (OT) of Buleleng General Hospital, Bali, Indonesia. The patient was presented with the chief complaint of difficulty to swallow food and water since 2 months before admitted to the hospital. Dysphagia was accompanied with fatigue and significant weight loss. Past medical history and allergy was denied.

From physical examination, patient was concious with GCS of 15, blood pressure was 130/80 mmHg, pulse rate 80 beats per minute (bpm), respiratory rate 16 times per minute, axillary temperature 36, 5ºC, and oxygen saturation was 98%. Anemic conjungtiva, icterc sclera, dry mouth, distended abdomen, and cold extremities were not found. Patient looked skinny, the weight of 50 kg with body mass index (BMI) 16.90 kg/m^2.

Laboratory dan x-ray examinations were done two days prior to surgery to support the diagnose. Esophagography showed filling defect at esophagus pars thoracalis middle third with apple core appearance suspected as malignant esophageal tumor [**Figure.1**]. Chest x-ray showed aorthosclerosis, but the lungs was normal. Kidney function tests remarked increase in blood urea nitrogen (BUN) 148, 2mg/dL (6-20) and serumcreatinine (SC) 3, 10 mg/dL (0, 90-1, 20). Complete blood counts, liver function tests, electrolyte levels, blood glucose level, and coagulation tests were within normal limits. Immunoserology rapid antigen SARS CoV-2 was negative. Electrocardiography showed normal sinus rhytm.

Patient was assessed with ASA III physical status, proceeding with General Anesthesia-Oral Tracheal Tube (GA-OTT). Preoperatively, the patient was given ondansentron 4 mg and midazolam 2 mg intravenously. Fentanyl 75 mcg was given as analgesia 5 minutes before intubation. We induced the patient with propofol 1.5mg/kgBW, ketamine 1 mg/kgBW, and rocuronium 0.8 mg/kgBW was given for muscle relaxation. After intubation, the anesthesia was maintained with sevoflurane 0.6-1.0 vol% with N2O: O_2 (50%: 50%) mixture.

Figure 1: Thoracic Spine Lateral View of Barium Contrast Swallow, Esophagography showed filling defect at

esophagus pars thoracalis middle third with Apple Core Appearance

During the procedure, patient's hemodynamic was observed closely. The average systolic blood pressure 60-120 mmHg, diastolic blood pressure 40-50 mmHg, heart rate 60-80 bpm, oxygen saturation 98-99%. The total blood loss approximately was 1000 ml managed with transfusion of blood product, crystalloids, and colloid. Total urine output was 400 ml. Intraoperative hemodynamic management was maintained with the brief of vasopressor (noradrenaline infusion) to maintain perfusion pressure and renal blood flow, which were eventually tapered-off. Dobutamineinfusion, ephedrine, and sulfa atropine were also given to the patient.

The surgery lasted for 6 hours. The patient was transported to post operative surgical Intensive Care Unit (ICU) for mechanical ventilator. Fentanyl 20 mEq/hour was given as post operative analgesia. The patient was treated in ICU and passed away five days after his surgical procedure.

3. Discussion

WHO categorized geriatricor elderly in the age of 65 years or older, the age range of 65-74 years is classified as early elderly, while the age of 75 years and above is grouped as late elderly. The patient in this case was 75 years old, classified as late elderly patient.

Geriatric are generally have some anatomical and physiological changes related to the aging process. Age is not the contraindication for anesthesia and surgical procedure, but the rate of death and perioperative disease in geriatric tends to be higher compared to young patients. Clinical evaluation in geriatric patients should be highly considered individually. Therefore understanding the anatomical, physiological, and response changes to pharmacological agents in geriatric becomes important for effective perioperative anesthesia management[1, 2].

The patient was presented with the chief complaint of difficulty to swallow food and water since 2 months before admitted to the hospital. Dysphagia was accompanied with fatigue and significant weight loss. Patient BMI was 16.90 kg/m^2. Symptoms of obstruction and particularly dysphagia leads to low oral intake and malnutrition, resulting in higher morbidity and mortality[7].

In the literature, regional anesthesia is recommended as anesthesia techniques in geriatric, unless the surgical action become impossible for regional anesthesia. In this case, general anesthesia techniques are used with oral trachea tube based on the type of surgery performed. Analysis of surgery in these patient were; (1) The procedure will be carried out in the chest and abdomen (2) Manipulation, which in this case requires optimal relaxation of the operating field (3) The duration is long, so that the use of general anesthesia is more considered. In the preparation room patient were given pre-medications intravenously, midazolam 2 mg to relieve anxiety and facilitate induction to reduce the risk of aspiration, and ondancentron 4 mg to prevent Post Operative Nausea and Vomiting (PONV).

As the first step of general anesthesia induction, preoxygenation with a 100% oxygen fraction was given to the patient and fentanyl was given 75 mcg as an analgesia, then propofol 50 mg, ketamine 50 mg, and rocuronium 40 mg as a muscle relaxant. Furthermore, as a maintenance of sedation, the patient are given O2/N2O (50%: 50%) mixture and volatile agent sevoflurane1.5-2.0 vol%. Anesthesia with volatile (singular or combined with N_2O), balance anesthesia with opioids + N_2O + muscle relaxant, or total intravenous anesthesia can be used for anesthesia maintenance[3].

Esophagectomy was performed by manipulation of thoracic and mediastinal structures. The procedure can affect cardiac performance including venous return and cardiac filling and may contribute to the development of dysrhythmias, all of which can compromise cardiac output and hemodynamic status[7]. Hemodynamic monitoring in these patient was done closely, seeing instability, especially in the patient's blood pressure. The surgical procedure was very risky to cause large amounts of blood loss, which is related to intraoperative hemodynamics. Shortly after induction, there was a significant decrease in blood pressure with a reduced dose. This shows an excessive response in geriatric when getting anesthetic drugs. In the case of general anesthesia, it is important to do drug dose titration and it becomes necessary to watch out for the administration of drugs that work quickly[4]. Geriatric patients also experience pharmacokinetic changes in absorption, distribution, metabolism, and excretion of anesthetic drugs. Drugs clearance are decreased due to changes in glomerular filtration rate and tubular function[5]. After the incision, hemodynamic was returned to normal, there was an increased in patient's blood pressure.

In the middle of the procedure, decreased blood pressure was seen on the monitor. Dobutamine infusion was given to the patient to increase his blood pressure and brief of vasopressor (noradrenaline infusion) to maintain perfusion pressure and renal blood flow, which were eventually tapered-off. Ketamine, ephedrin, and sulfa atropine were also given to maintain optimal mean arterial pressure (MAP). Guidelines for the use of inotropic drugs and vasopresors in acute heart failure have been published by European Society of Cardiology (ESC). Adrenoceptoragonists remains the first drug of choice[6].

Fentanyl 20 mEq/hour via syringe pump was administrated as post operative analgesia. Post operative pain management is important to prevent hemodynamic instability, also avoid morbidity and mortality in geriatric patients.

4. Conclusion

Consideration in perioperative management and the use of anesthetic agents are absolutely necessary, especially in geriatric patients. Clinical evaluation in geriatric patients should be highly considered individually, due to anatomical and physiological changes related to the aging process. It is important to do drug dose titration and it becomes necessary to watch out for the administration of drugs that work quickly. Esophagectomy is one of the major surgical procedure that needs special attention in anesthesia

management to avoid morbidity and mortality in geriatric patients

References

[1] Kakkar B. Geriatric Anesthesia. *Anesth Commun.2*017; 1 (1): 1–7.
[2] Butterworth JF, et al. *Morgan & Mikhail's Clinical Anesthesiology*, 5th edition. NewYork: McGraw-Hill.2013.
[3] Putra IMA. Tatalaksana Gagal Jantung Perioperatif. *Jurnal Komplikasi Anestesi.2*014; 1 (1): 64-69.
[4] SchlitzkusL, et al. Perioperative Management of Elderly Patients. Department of Surgery, University of Nebraska Medical Center. *Journal of American Collage of Surgeon*.2015; 99 (2): 391-415.
[5] AlvisBD, Hughes CG. Physiology Considerations in Geriatric Patients'. *HSSPublic Acces.2*015; 33 (3): 447–456
[6] Wiryana M. Manajemen Perioperatif Pada Hipertensi. *JurnalPenyakitDalam*.2008; 9 (2): 145-151
[7] Blank RS, Huffmyer JL, Jaeger JM. Anesthesia for Esophageal Surgery. *Principles and Practice of Anesthesia for Thorasic Surgery*. Springer Science+ Bussines Media; 2011.415-443.