

Management of perianesthesia in benign prostate hyperplasia patients with transvesica prostatectomy and uncontrolled hypertension: a case report

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Abstract. The prevalence of Benign Prostate Hyperplasia (BPH) increases at the age of 40 years to 90 years. Anaesthesia in elderly patients with comorbidities can be difficult for anaesthesiologist. The minimum dose option is used to minimize the occurrence of myocardial depression and other complications. In this paper, we describe the management of anaesthesia for Transvesica Prostatectomy (TVP) surgery for elderly patients with BPH accompanied by uncontrolled hypertension. The method used in this research is a case study with data collection techniques through observation, interviews, and looking at the results of examining related data. The research subject was a male patient with a diagnosis BPH who underwent TVP. The result and conclusion of this study refer to the collaborative use of Subarachnoid Block (SAB) or spinal anesthesia induction drugs (Bupivacaine and Fentanyl) with consideration of the minimum dose due to patient's advanced age and minimizing the occurrence of morbidity and mortality. The intervention given regarding anesthesia health problems which was carried out by providing anesthesia nursing care during the perioperative phase showed good results and without complications that disrupted the patient's future life

1 Introduction

Benign Prostate Hyperplasia (BPH) usually occurs in elderly men. The prevalence of BPH incidence increases at the age of 50 years with a prevalence is over 210 million men [1]. Mortality in BPH patients is exacerbated due to complications. Patients who have undergone medical treatment for urinary tract damage, ranging from moderate to severe, often face challenges in finding a cure, particularly when dealing with urinary tract obstruction [2]. BPH is a urological disease characterized by excessive growth of benign prostate tissue around the urethra, which results in narrowing of the urethral opening. Symptoms of the lower urinary tract (LUTS) are usually characterized by several symptoms including urgency, frequency,

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dysuria, nocturia, difficulty emptying the bladder and difficulty starting urination [3][1]. The examination mainly includes rectal plug, transrectal ultrasound, urodynamics, and other necessary examinations [4]. Treating BPH patients, there are several techniques to treat, such as transurethral prostate resection (TURP), open prostatectomy, and laser vaporization. TURP technique is still the standard of care for BPH, open prostatectomy although an older treatment, is effective for larger prostate volume and limited hospital facilities, and the laser vaporization with the latest technology is highly recommended if the patient's anticoagulant therapy can't be stopped [5]. The aims of this research are to record the use of regional anesthesia, especially SAB or spinal anesthesia in implementation of anesthesiology nursing care in BPH patients with TVP and uncontrolled hypertension. This study intends to increase the medical literature regarding the treatment of similar patients and assess how well the methods used in each problem in perianesthesia.

2 Methods

This research uses a case study method which analyzes in depth cases that occur in one individual, group or institution. It is hoped that this approach will allow researchers to obtain and understand the problem in more detail. The subject studied was a 78-year-old male patient diagnosed with BPH with stage II uncontrolled hypertension who would undergo TVP surgery with spinal anesthesia. The research instrument used in this case is the AMPLE assessment (Allergy, Medication, Past Illness, Last Meal, Environment), then 6B (Respiration, Blood, Brain, Bladder, Bowel, Bones), as well as determining the patient's ASA status, test results laboratory and x-ray results.

The data obtained includes data from the results of anamnesis and observations during the perioperative period. Data collection was carried out on January 23, 2024 through observation techniques, interviews, and studying medical records. This research methodology is supported by ethical approval issued by Harapan Bangsa University with code No.B.LPPM-UHB-225/03/2024. Data analysis is carried out by explaining the results of observations and interpreting the data to produce the results obtained by patients from the interventions provided during perioperative care.

3 Case History

A 78-year-old man with a weight of 50 kg and height 155 cm came to the emergency department with complaints of pain and difficulty urinating that had lasted for 2 weeks. Pain was felt when urinating in the lower abdomen with Numeric Rating Scale (NRS) pain scale 6. He was diagnosed with BPH and had a history of uncontrolled stage II hypertension with category III ASA.

Based on the clinical examination history and radiological findings, patients with BPH due to the natural process of aging exhibit associated endocrine changes and may require Tansvesica Prostatectomy (TVP) surgery. An electrocardiogram (ECG) revealed sinus bradycardia, hypertension (164/81 mmHg), and a heart rate of 56 beats per minute [refer to Figure 1]. Respiratory system examination indicated good and normal results, with oxygen saturation at 98% without the need for a respirator. Laboratory tests revealed low levels of haemoglobin (12.6 g/dL), MCV (81.4 fL), MCH (25.3 pg), and MPV (5.97 μm^3), along with elevated platelet levels (450,000) [refer to Table 1]. Chest X-ray results were unremarkable, while abdominal ultrasound findings indicated prostate enlargement of approximately 68.82 cc [refer to Figure 2].

During treatment in the ward, the patient received Amlodipine 10 mg orally once daily for 3 days and a Ringer Lactate infusion of 500 mL at 20 drops per minute. Upon entering

the Central Surgical Installation room, the patient received nasal oxygen through a cannula at 2 liters per minute and a Ciprofloxacin infusion of 750 mg. For premedication, the patient was administered 4 mg of Ondansetron intravenously and 5 mg of Dexamethasone intravenously. Considering the initial condition of elderly patients, a low-dose subarachnoid block using spinal anesthesia techniques was planned. Spinal anesthesia was administered at levels L3-L4 with a 25G needle using 12.5 mg of Bupivacaine and 25 mcg of Fentanyl, achieving onset in under 5 minutes. Hemodynamic monitoring during surgery includes pulse, blood pressure, mean arterial pressure (MAP), oxygen saturation, and temperature, along with fluid monitoring. No ECG abnormalities were observed. Blood pressure dropped 15 minutes post-spinal anesthesia induction, prompting an Intravenous (IV) injection of 15 mg of Ephedrine. The operation lasted 35 minutes with the patient spending 30 minutes in the recovery room. Post-operative treatment is carried out in the recovery room or RR and bromage assessment is carried out, monitoring vital signs, monitoring pain levels, along with further therapy such as administering post-anesthesia analgesics. The patient is in the RR until he can be moved to a room in a stable condition, and further care is handed over to the inpatient room nurse. The responsibility of the anesthetist ends at this stage. The patients achieving a Bromage score of 2, indicating the ability to lift legs but not bend them, before being transferred to the inpatient ward. Postoperatively, the patient received 100 mg of pethidine in a titrated infusion with fluid administered at 15 drops per minute. The operation on the patient can be said to be successful because the prostate has been successfully removed and there was no massive post-operative bleeding and the patient's blood pressure was in a stable range during the operation with balanced fluid maintenance.

Table 1. Laboratory test results

Test	Result
Leukocytes	45.0 10 ³ uL
Hemoglobin	12.6 g/dL
MCV	81.4 fL
MCH	25.3 pg
MPV	5.97 μm ³

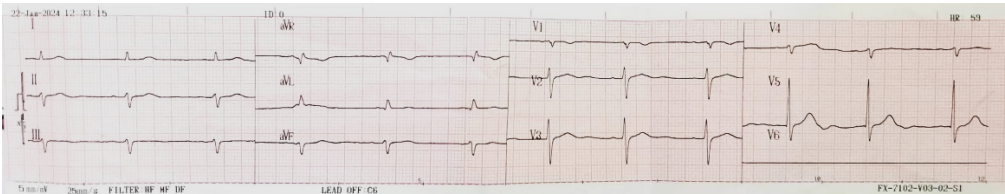


Fig. 1. Electrocardiogram (ECG) results



Fig.2. BPH ultrasound

4 Discussion

Benign prostatic hyperplasia (BPH) occurs as fibro adenomatous nodules progressively grow in the periurethral region of the prostate, leading to urethral narrowing and elongation, resulting in urinary tract obstruction. Factors such as reduced elastic fibers and collagen in the prostate urethra, along with a potential increase in chondroitin sulphate proteoglycans, contribute to prostate enlargement in elderly patients [6]. Obstructed bladder emptying may lead to stasis, increasing the risk of urine stone formation and infections. Prolonged urinary tract obstruction can impair kidney function, causing hydronephrosis, necessitating surgical intervention [4]. TVP aims to alleviate urinary tract obstruction by removing the hypertrophic transition zone of the prostate, particularly effective for large prostates in the long term [7]. The operating doctor in this case chose to use open prostatectomy surgery, apart from the prostate volume of 68,82 cc which could have used the TURP technique but was not carried out due to limited hospital facilities in terms of surgical instruments [8].

The benefits of this case study can be used to improve the quality of service in hospitals in providing anesthesiology nursing management, a source information and insight regarding the use of anesthetic drugs and their interventions, it can be developed with further research using more complex statistics and the number of populations observed in BPH patients.

Spinal anaesthesia, chosen for its suitability in elderly patients with sinus bradycardia and cardiac rhythm irregularities, helps mitigate excess circulating volume due to irrigation solution absorption during surgery. This approach aligns with findings showing no excess volume incidents during paranaesthesia [9]. The other consideration is that the anesthesia used in this patient is spinal anesthesia and not general anesthesia in order to minimize the occurrence of bad effects for elderly patients, as well as the drugs given also use minimal doses [10]. Anaesthesia management focuses on regulating blood pressure throughout the perioperative period in patients with a history of uncontrolled hypertension, classified as ASA 3 physical status [11]. Preoperative administration of Amlodipine 10 mg serves as a Calcium Channel Blocker (CCB), promoting cardiovascular stability by peripheral vasodilation and modulation of Systemic Vascular Resistance (SVR), reducing the risk of pre-anaesthetics reactive hypertension [12]. Controlled blood pressure enables the use of neuraxial anaesthesia subarachnoid block, though it may induce intense sensorimotor and sympathetic blockade, resulting in decreased cardiac output, manageable with favourable cardiovascular conditions [13].

In the pre-anaesthesia phase, the patient received a Ciprofloxacin infusion as a potent antibacterial agent before surgery [14]. Ondansetron IV 4 mg and Dexamethasone 5 mg were administered for premedication to reduce the risk of postoperative vomiting [15]. Elderly patients, with a history of sinus bradycardia, exhibit decreased physiological responses. Intravenous injection of Dexamethasone 5 mg pre-anaesthesia aims to stabilize heart rate during surgery [16]. The interaction of baroreflexes in elderly individuals with sinus bradycardia leads to increased blood pressure and decreased heart rate in order to maintain normal blood pressure levels [17]. Induction with minimal doses of Fentanyl 25 mcg and Bupivacaine 0.5% 2.5 mL at L3-L4 aims to reduce sensitivity to myocardial depression and other complications [18]. Intra-anaesthesia monitoring includes ECG for myocardial activity and non-invasive hemodynamic monitoring. A decrease in blood pressure post-spinal anaesthesia induction is managed with IV Ephedrine 15 mg, promoting vascular vasoconstriction and adjusting blood pressure [19]. Pethidine analgesia administration in a titrated infusion aims to inhibit pain perception in the central nervous system postoperatively and manage shivering. Efficacy in treating shivering is supported by research by M. Farooq et al. in 2022 [20][21]. Pethidine, with a potency one-tenth of Morphine, offers faster onset than Morphine, delivering rapid pain relief with acceptable dosing for elderly patients [22][23].

5 Conclusion

TVP surgery for BPH is common in elderly patients with multiple comorbidities, necessitating anaesthesiologists to administer minimal doses during spinal anaesthesia induction. Monitoring the patient's hemodynamic stability throughout the surgery is crucial to minimize complications and ensure the success of anaesthesia. Post-anaesthesia, opioid analgesics in appropriate doses for elderly patients can help manage pain and prevent post-spinal anaesthesia shivering. The patients are said to have a good recovery when the hemodynamic status is good, the prostate has been removed and there is no massive bleeding after surgery.

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