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Perianesthesia Management in Bipolar Arthroplasty Diagnosis of Collum Femur Fracture With Diabetes Mellitus and Hypertension Using Regional Anesthesia Subarachnoid Block (SAB) : A Case Report

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Abstract. Femur neck fractures are classified into the hip fracture category. The incidence of hip fractures is estimated to increase from 1.66 million in 1990 to 6.26 million in 2050, as life expectancy increases. It is estimated that the largest number of pelvic fractures will be found in Asia by 2050, which is 50% of the total total pelvic fractures in the world. A descriptive observational case study focusing on the perioperative management of a single patient undergoing bipolar arthroplasty. The surgery was performed using regional anesthesia—Subarachnoid Block (SAB) with Bupivacaine (0.5% hyperbaric) at the L3-L4 level. The patient was monitored throughout preoperative, intraoperative, and postoperative phases. Subarachnoid block regional anesthesia has been administered to a 69-year-old man with a diagnosis of femur collum fracture with ASA II physical status who will undergo bipolar arthroplasty surgery with comorbid controled hypertension and diabetes mellitus type 2. The spinal anesthesia technique of subarachnoid block can reduce the risk of perioperative complications and reduce the use of opioids, thereby minimizing the risk of side effects and speeding up the mobilization process

1 Introduction

Femur neck fractures are classified into the hip fracture category. The incidence of hip fractures is estimated to increase from 1.66 million in 1990 to 6.26 million in 2050, as life expectancy increases. It is estimated that the largest number of pelvic fractures will be found in Asia by 2050, which is 50% of the total total pelvic fractures in the world (1).

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Femoral neck fractures occur due to a history of falls, physically characterized by hip pain accompanied by inability to move and shortening of the lower limbs and turning outwards on shifting fractures (2).

The treatment of the femur neck fracture (FNF) consists of non-surgical treatment but the management of non-surgical FNF is rarely indicated due to the very high level of complications, this management has the main goal of pain control and gradual mobilization (3) Surgical management of FNF can be done with hemiarthroplasty, which is femoral head replacement, this technique is recommended in patients with displaced intrascapular FNF, and older patients with low mobility (4). Canullated screw fixation This technique consists of inserting 3 or 4 cannulated screws in an inverted triangle or diamond configuration, this technique is indicated in non-shifting intrascapular FNF (5).

Contraindications to screw fixation constructs are inverse tilt in fractures, trans trochanteric involvement, communicative fracture patterns with large posteromedial fragments, medial calcar unsupported, fracture patterns with subtrochanteric extensions, and in hemiarthroplasty and total hip arthroplasty are contraindicated in patients with active hip infections (4).

In general, anesthesia techniques in bipolar arthroplasty surgery with the diagnosis of fracture neck of femur in adult and elderly patients use general anesthesia and regional anesthesia techniques, in 2014 the anaesthetic sprint audit of practice (ASAP) in England, Wales and Northern Ireland found that about 50.7% of patients used general anesthesia (GA) and 44.2% received spinal anesthesia. Then 3.4% used a combination of GA and spinal anesthesia (6).

The provision of anesthesia nursing care and multidisciplinary collaboration between health professions in hospitals can provide good patient outcomes by minimizing the risk of excessive pain and complications, both complications due to surgery and complications due to anesthesia. In addition, multidisciplinary collaboration provides benefits related to the shorter hospital stay and good postoperative patient recovery, as well as reduced patient care methods (7).

In this case report, we will describe the nursing care of anesthesia in patients with collum femur fractures who have undergone bipolar arthroplasty.

2 Method

A descriptive observational case study focusing on the perioperative management of a single patient undergoing bipolar arthroplasty. The surgery was performed using regional anesthesia—Subarachnoid Block (SAB) with Bupivacaine (0.5% hyperbaric) at the L3-L4 level. The patient was monitored throughout preoperative, intraoperative, and postoperative phases.

3. Result and Discussion

3.1. Results

3.1.1. Case Report

A 69-year-old male patient came to the emergency department (ER) saying he had fallen in the bathroom one day ago. Patients also complained of pain in both legs spreading down and the pain worsened when the left leg was in motion. In the initial physical examination at the emergency room, a pain scale of 5 visual analog scale (VAS)

was obtained, the patient's consciousness was 15 gasglow coma scale (GCS), blood pressure 183/127 mmHg, pulse 84 x per minute, respiration 20x/min, temperature 360, BB 61 kg, height 165 cm, BMI 22.4 kg/M2 (Normal).

The patient's supporting examination was in the form of complete blood with results, hematocrit 39.5%, platelets 140 10^3/ul, lymphocytes 12.7%, eosinophils 0.2%, neutrophils 81.4% with results. In the chemical examination, the glucose result was obtained at 331 mg/dl. (Thrombocytopenia, Polycytemia, Lymphocytopenia, Neutrophilia, Eosinopenia, Hyperglycemia).

Table 1. Laboratory Results

Laboratory Examination Results	Reference Value	Result
Platelet	150.000-440.000	140.000
Hematocrit	35,0-45,0	39,5
Lymphocytes%	25,0-40,0	12,7
Neutrofil %	50-70%	81,4 %
Eusonofil %	2.0-4.0	0,2 %
Glucose During	70-150	331

In the radiology diagnostic examination, the results of Fracture Collu os Femur Sinistra Apogisi an alignment is quite good, no dislocation art coxae sinistra is visible.

While in the inpatient room, the patient was given fluid therapy using ringer lactate 500 ml 20 drops per minute (DPM), and Amlodipine 10 mg oral (tablets), Irbesartan150 mg, and Hydrochlorothiazide 12.5 mg oral (tablets). Then given blood transfusion whole blood 150cc and prophylaxis Ceftriaxone 1 gr Intra Vena (IV) titration with infus 3 hours ago.

In the preoperative evaluation, the patient's condition appeared to be sick with a scale of 5 VAS, consciousness of the mentis composite 15 GCS, blood pressure of 169/100 mmHg with a score of the American Society of Anesthesiologist (ASA) II and in examination of breathing, blood, brain, bladder, bladder, bowel, bone, (B6) in the examination of lemon there was no abnormality, then in the examination of Mallampati score obtained Mallampati grade 3 then there was no anemis in the conjunctiva, examination of the isocular pupils a fracture was obtained in the neck of the femur sinistra and a decrease in muscle strength to lift the left leg. So based on observations during the pre-operative phase, Anesthesia Health Problems (AHP) appeared, pain was then given deep breath relaxation intervention and Collaborate with an anesthesiologist for administration Dexketoprofen 50 mg IV.

In this patient, spinal anesthesia was performed in the lateral surgery position of the sinistra, puncture in the Lumbar(L) 3-Lumbar(L) 4 median LCS (+) clear, blood (-) using spinocan 25 G with the administration of anesthetic Bupivacaine 0.5% Hyperbaric 20 mg. In the intraoperative phase, Patients experience anesthesia health problems in the form of anxiety related to the surgical procedure and the atmosphere of the operating room, then they are given education related to the surgical procedure so that the patient is not anxious and collaborate with the anesthesiologist to administer midazolam 1 mg IV . the patient was given Ringer Lactate 500 ml and the patient is fitted with a catheter with an output of 100 cc. Blood pressure drops to 140/90 mmHg.

The surgery lasted for 1 hour, the hemodynamics had dropped at the 20th minute, the blood pressure was 90/60 mmHg at the time of the placement of the femur implant. collaborating with an anesthesiologist related to a fluid loading intervention was given

using Ringer Lactate 500 ml crystalloid with a quick drop, then Epedhrine 5 mg (IV) was also given and then evaluated for 5 minutes and blood pressure rose again to 160/100 mmHg pulse and saturation within the limit, based on the objective data, AHP of cardiovascular function disorders appeared, The patient had 200 cc bleeding. Patients are given postoperative analgetics by an anesthesiologist Fentanyl 150 mcg and Ketamine 25mg After the completion of the operation, the patient was in a stable state, the general condition was good, the patient was moved to the recovery room, a bromage score of 2 was found and postoperative bipolar arthroplasty so that postoperative nursing problems in this patient were at risk of falling due to the effects of anesthesia and surgical procedures. Then intervention was given to install safety bed trails and education to patients' families regarding the risk of falls, and coordinated with inpatient nurses related to hemodynamic monitoring and postoperative pain control. Post operative patients were treated for 2 days with the collaboration of ketorolac 3x1 30 mg IV pain controller, as well as education on the administration of deep breath relaxation therapy, the patient experienced good development without any serious complications and could be discharged on the 2nd day after post op treatment.

3.2. Discussion

In this patient, there is an increase in neutrophils correlated with an acute infectious process that occurs less than 6 hours which indicates that the inflammatory process occurs, in addition to that it can also be caused by wounds and injuries (6)(7) On the other hand, prophylactic therapy was given in the inpatient room Ceftriaxone 1000 mg (IV) 3 hours before undergoing surgery as a preventive measure against the incidence of postoperative infections which had a positive impact on cheaper treatment costs and faster patient recovery (8).

This patient also had a history of controlled hypertension and was given Amlodipine 10 mg orally, Irbesartan 150 mg and Hydroclortiazide 12.5 mg orally. The administration of a combination of amlodipine, Irbesartan and Hydrochlorthiazide has been proven to be effective in controlling blood pressure in patients with moderate or severe hypertension and also this drug is effective in patients with DM type 2 and elderly patients as evidenced by a decrease in blood pressure in these patients from the original 183/127 mmHg to 144/92 mmHg (9)(10). controlled type 2 diabetes mellitus in this patient is shown by high glucose levels providing a risk of infection and an increase in mortality and mortality of patients as well as an increase in the length of hospital stay which has an impact on the increase in treatment options (11). With these considerations, in the postoperative patient, insulin intervention is given 10 IU through a subcutaneous that will help the effectiveness of postoperative treatment in the management of blood sugar levels whose fluctuations in increase and decrease are still unstable assuming that the energy metabolic needs in the patient will increase coupled with the presence of body stressors due to the surgical process and fasting management.

In addition, there are health problems with pain anesthesia in the preoperative phase due to mechanical distortion of the somatosensory nerve terminals that affect the nerves, bones and muscles, therefore the patient is taught deep breath relaxation therapy to help reduce pain and then collaborate with an anesthesiologist for the administration of Dexketoprofen 50 mg IV preremedication to reduce (12)(13)(14).

In this patient, regional anesthesia techniques were considered using Bupivacaine 0.5% hyperbaric 20 mg injected at L3-L4 using Spinocan 25 g. The use of spinal anesthesia in arthroplasty surgery is more effective than the use of general anesthesia

which is associated with adverse events due to increased side effects and also a slight increase in time in the operating room.(15)(16).

The use of spinal anesthesia techniques also has advantages in diabetic patients, rapid recovery of function, reduced risk of complications and weakening of hyperglycemic response to surgical stimuli in diabetic patients, as well as the advantages of perioperative glucose control (17)(18).

In the middle of the operation, there was a significant decrease probably due to the spinal anesthesia effect that vasodilated the blood vessels, the patient was given RL 500 ml crystaloid therapy and Ephedrine 5 mg to restore blood pressure to normal limits (19).

The collaboration with anesthesiologist to administering Midazolam 1 mg and providing education related to surgical procedures to relieve anxiety and provide a calming effect on patients during surgical procedures and also improve hemodynamic stability, this is in line with the statement in the Zenrici study (20).

Postoperatively, patients were given 150mcg of Fentanyl and 25 mg of Ketamine bolus IV using tutosol 500 ml 14 drops per minute, with the aim of enhancing the effects of fentanyl analgesiC when it was in line with research conducted by Tucker et al (21).

The installation of safety bed trails was carried out to prevent falls in patients during post-operative treatment in the treatment room, collaboration in the administration of ketorolac 3x1 40mg to help relieve postoperative pain while in the inpatient room, then education on deep breath relaxation therapy was given to provide a better quality of life for patients and relieve pain (14).

4. Conclusion

Management of perianesthane in patients with a history of comorbidities, especially diabetes mellitus, requires very careful care to obtain a good final result. Considerations in providing interventions need to be considered more carefully and appropriately and the importance of using anesthesia techniques in elderly patients with comorbidities of systemic diseases. The spinal anesthesia technique of subarachnoid block can reduce the risk of perioperative complications and reduce the use of opioids, thereby minimizing the risk of side effects and speeding up the mobilization process. Adjusting effective anesthesia strategies and post-operative care for patients can improve good clinical outcomes and support more optimal safety and recovery. The disadvantage in this paper is that only 1 sample of the population is used because the response of each individual must give different outcomes, so it is hoped that in the future there will be many studies on cases like this.

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