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Anesthetic Management in Elderly High-Risk Patients with Left Ventricular Outflow Tract Obstruction - A Case Series

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KEYWORDS
Anesthetic management, elderly high-risk patients, Left Ventricular Outflow Tract Obstruction.

ABSTRACT:
Left Ventricular outflow tract Obstruction poses unique challenges in the perioperative period due to its hemodynamic implications, especially in elderly patients who often present with multiple comorbidities and decreased cardiopulmonary reserve. Each case describes the preoperative optimization and perioperative management tailored to the individual patient's condition. Despite varying degrees of Left ventricular Outflow Tract Obstruction and associated comorbidities, all patients underwent fractional spinal anesthesia. Fractional spinal anesthesia was shown to maintain hemodynamic stability and a longer duration of action.

Introduction

Dynamic left ventricular outflow tract obstruction creates an abnormal hemodynamic picture. Clinically significant Left Ventricular Outflow Tract Obstruction is defined based on echocardiography that demonstrates a pressure gradient across the left ventricular outflow tract of > 30 mmHg. Adding to this, the elderly population presents with multiple comorbidities, fragility, poor cardiopulmonary reserve, and poor cognitive reserve all leading to greater risk of perioperative adverse outcomes. Here we present the management of 5 elderly high-risk patients belonging to ASA - 3/4 from Jan 2023 -2024.

CASE DESCRIPTION

Case 1

A 75-year-old female, hypertensive, diabetic on irregular medication, presenting with right supracondylar femur fracture after slip and fall. Upon evaluation, the patient had uncontrolled sugars and, an abnormal coagulation profile (PT-17 sec, INR-1.5). Her Echo showed concentric LVH, turbulence in mid cavity, LVOT at resting gradient is 47mmHg, EF-62%, grade 2 diastolic dysfunction, ECG - sinus rhythm, biphasic T- waves V4, V5, V6. The patient was optimized and posted for open reduction and internal fixation with plate osteosynthesis 1 week later. The patient was managed with Spinal anesthesia and Invasive Blood Pressure Monitoring. The perioperative period was uneventful.

Case 2

A 90-year-old female with a Right subtrochanteric fracture with poor effort tolerance METS -2, breath holding -10 seconds was posted for Open reduction and internal fixation with proximal femoral nailing. Her Echo showed septal hypertrophy, EF -48%, hypokinetic basal inferolateral, basal septal wall segment, sclerotic aortic valve, mild LV systolic dysfunction, and diastolic dysfunction. The patient was managed with Spinal anesthesia and Invasive blood pressure monitoring. The perioperative period was uneventful.

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Case 3

A 76-year-old male diagnosed with Benign Prostatic Hyperplasia with poorly controlled hypertension on irregular treatment. His ECG - LVH, sinus rhythm, and echo showed concentric LVH, normal Left Ventricular systolic function, EF-65%, diastolic dysfunction, and Hypertrophic obstructive cardiomyopathy. The patient's Blood pressure was optimized and posted for Transurethral resection of the prostate. The patient was managed with Spinal anesthesia and Invasive blood pressure monitoring. The perioperative period was uneventful.

Case 4

A 71-year-old male presenting for Right Direct Inguinal Hernia planned for Open Meshplasty with systemic hypertension with type 2 diabetes mellitus with known Atrial Septal Defect not on any medication. The patient has a history of dry cough. On investigations Chest X-ray- showed Bilateral hilar prominence, ECG - PAC+, Incomplete RB, Echo - D shaped septum, No RWMA, EF-59%, Grade 2 diastolic dysfunction, dilated RA/RV sclerotic aortic valve, mild to moderate tricuspid regurgitation, moderate PAH, PASP - 55mmHg, moderate ostium secondum. The patient's pulmonary condition was optimized and preoperatively Injection of Hydrocortisone 100mg IV and Nebulization Formoterol and Nebulization Glycopyrrolate were given. The patient was managed with Spinal anesthesia and Invasive blood pressure monitoring. The perioperative period was uneventful.

Case 5

A 75-year-old female diagnosed with a right neck femur fracture planned for incremented bipolar hemiarthroplasty. The patient is a known case of Systemic hypertension and has now complained of difficulty in breathing for the past 1 month. On examination patient vitals, HR -110/min, BP-110/90mmHg, Spo2 - 95% at room air, on auscultation wheeze and basal creps present in left lower lobe, poor effort tolerance - METs - 3, Echo - concentric LVH, no RWMA, fair systolic function, diastolic dysfunction, moderate Aortic Stenosis, mild MR and TR, pericardial effusion, HRCT showed - focal ground glass opacity in Right Upper Lobe, subpleural consolidation patchy with subpleural atelectasis and mediastinal lymphadenopathy. The patient was optimized with Nebulization Formoterol and Nebulization Glycopyrrolate. The patient was managed with Spinal Anesthesia and Invasive Blood pressure monitoring.

Discussion

Neuraxial blocks produce variable decreases in Blood pressure and Heart Rate. Blocking sympathetic fibers (T5-L1) leads to vasodilation of both venous and arterial vessels causing the pooling of blood in the extremities and a decrease in systemic vascular resistance combined leading to a decrease in cardiac output.

However, such deleterious cardiovascular effects can be minimized by a few techniques. The steps we have taken are co-loading the patient with 10ml/kg of crystalloids as the patients enter the OT complex, adequate optimization of comorbidities carefully and precise fixing of the blockade only up to the desired level, slower injection of the local anesthetic, lower level of intervertebral space preferred, adjuvants added to local anesthetic. Special considerations were taken for patient factors - decreased drug volume due decrease in CSF, a decrease in the number of neuronal cells, and a slowing of the conduction velocity in elderly patients.

Anesthetic goals in patients with Hypertrophic cardiomyopathy are:

- Adequate preload and afterload
- To maintain Systemic Vascular Resistance
- Avoid sympathetic activation
- Reduce force of contractility (thereby decreasing O2 consumption)
- Avoid tachycardia and maintain sinus rhythm

Conclusion

Various techniques as described above were used successfully to perform spinal anesthesia in elderly patients with decreased cardiopulmonary reserve and decreased left ventricular outflow without any perioperative complications.

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References

1. Kaniyil S, Priya PG, Nithinkumar MP, Sneha SR. Fractional spinal anesthesia in high-risk elderly patients for orthopedic surgery - Case series. Indian J Anaesth. 2023 Jul;67(7):651-654. doi: 10.4103/ija.ija_888_22. Epub 2023 Jul 14. PMID: 37601939; PMCID: PMC10436721.
2. Bhalerao, Pradnya M.; Adsule, Pritam B.; Marathe, Radhika M.. Anaesthetic Management of a Patient with Hypertrophic Obstructive Cardiomyopathy Posted for Emergency Lower Segment Caesarean Section. Journal of Obstetric Anaesthesia and Critical Care 7(2):p 103-105, Jul–Dec 2017. | DOI: 10.4103/joacc.JOACC_19_17
3. Olsen F, af Segerstad MH, Dalla K, Ricksten SE, Nellgård B. Fractional spinal anesthesia and systemic hemodynamics in frail elderly hip fracture patients [version 1; peer review.
4. Ibrahim IR, Sharma V. Cardiomyopathy and anesthesia. BJA Education. 2017 Nov 1;17(11):363-9.
5. Hensley N, Dietrich J, Nyhan D, Mitter N, Yee MS, Brady M. Hypertrophic cardiomyopathy: a review. Anesthesia & Analgesia. 2015 Mar 1;120(3):554-69.