

CASE REPORT

Anesthetic Management of Patient with Global Left Ventricular Systolic Dysfunction Posted for Transurethral Resection of Prostate and Bilateral Hernioplasty

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ABSTRACT

Anesthetic management of cardiac patients for noncardiac surgeries can be challenging and can be associated with both intraoperative and postoperative complications. Care of these patients requires identification of risk factors, preoperative evaluation and optimization, medical therapy, monitoring, and the choice of appropriate anesthetic techniques and drugs. A 70-year-old male, with past history of cardiovascular accident (CVA) and no other known comorbidities, had complaints of lower urinary tract symptoms, gradually worsening over the past 20 days and developed urinary retention 4 days back, diagnosed with benign prostatic hypertrophy (BPH), after obtaining a 2D echo [showing global hypokinesia with severe left ventricular (LV) systolic dysfunction, ejection fraction (EF)-30%] with cardiologist opinion posted for transurethral resection of prostate (TURP) and bilateral hernioplasty under regional anesthesia (lumbar epidural anesthesia with subarachnoid block—1.2 mL of 0.5% bupivacaine with 25 µg fentanyl), under moderate cardiac risk. The patient was hemodynamically stable intraoperatively and perioperatively. The patient was continuously monitored perioperatively and cardiac drugs like diuretics, beta-blockers, statins, and angiotensin receptor neprilysin inhibitor (ARNI) were continued after obtaining a cardiologist review. Thus in patients with moderate risk cardiac illness, who are posted for noncardiac surgeries, the more preferable and safer alternative is regional anesthesia as it reduces the sympathetic stress response which is present while performing general anesthesia (during intubation and extubation).

Keywords: Epidural anesthesia, Noncardiac surgeries, Subarachnoid block, Systolic dysfunction.

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INTRODUCTION

Left ventricular (LV) dysfunction is an entity that refers to defective functioning of the heart. It can be either systolic or diastolic. It is a serious complication that can lead to postoperative myocardial infarction and cardiac failure.¹ LV systolic dysfunction can be graded from 0 to 4 (normal to severe) based on left ventricular ejection fraction (LVEF): mild (LVEF 41–45%), moderate (LVEF 36–40%), or severe (LVEF less than 35%). LVEF refers to the amount of blood pumped out at each heartbeat, normally it ranges from 55 to 70%. When the ejection fraction (EF) percentage reduces to less than 35%, it indicates the presence of severe systolic dysfunction. The most common postoperative cardiac events induced mortality in these patients is heart failure, especially in the elderly age-group.² The advantage of neuraxial blockade when compared to general anesthesia, is that it produces a better perioperative outcome in cardiac illness patients undergoing noncardiac illness.³

CASE REPORT

A 70-year-old male, with a history of completely recovered cardiovascular accident (CVA) 8 years back, currently was not on any medication, came with the complaints of lower urinary tract symptoms gradually worsening and more for the past 20 days with the development of urinary retention for 4 days, was diagnosed with benign prostatic hypertrophy posted for transurethral resection of prostate (TURP) and bilateral hernioplasty procedure. The patient had a chronic history of smoking and alcohol intake

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for the past 40 years. No history of any symptoms pertaining to cardiac abnormalities such as palpitation, breathlessness, or chest pain, although the patient gives a history suggestive of poor effort intolerance (METS < 4). On examination, the patient was conscious, oriented, and moderately built and nourished. Preoperatively the pulse rate was 94 beats/minute, blood pressure 130/70 mm Hg, room air saturation is 96%, and cardiovascular and respiratory system examination showed no abnormalities. An airway examination was done. Blood investigations were within normal limits. ECG showed sinus rhythm with T wave inversion in lead I, II, aVL. Chest X-ray showed cardiomegaly. Echo showed global hypokinesia of LV dysfunction, severe LV dysfunction, dilated LV, moderate mitral regurgitation (MR) (Figs 1 and 2). Cardiologist and nephrologist

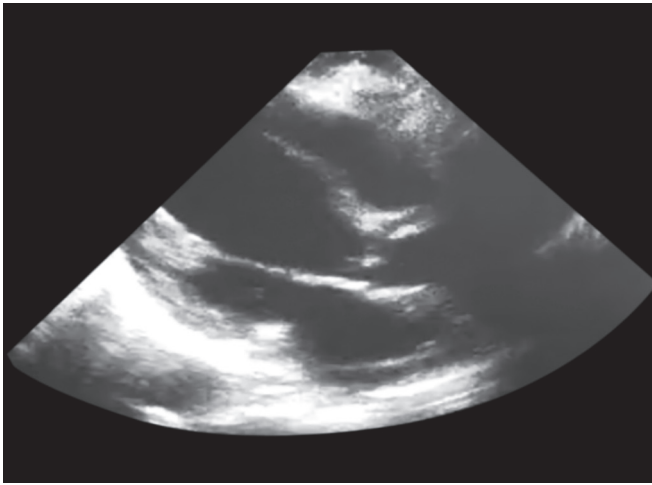


Fig. 1: 2D echo showing global LV dysfunction with dilated LV mild pericardial effusion

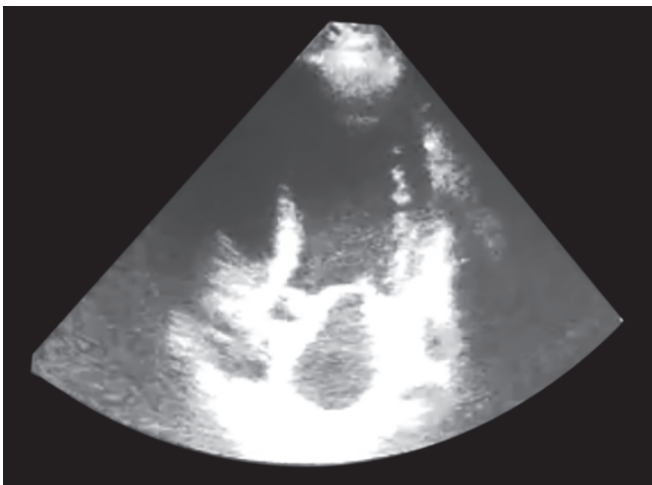


Fig. 2: 2D echo—parasternal short axis view showing hypokinetic LV

opinions were sought regarding ECG and echo changes; patient was started on T. Carvedilol 3.125 mg BD and T. Lasix 20 mg BD.

On the day of surgery, the OT was made ready with the availability of emergency cardiac drugs, warm fluids, and warmers. Anesthetic management of choice for this patient was regional technique, under aseptic precautions, patient in sitting position epidural anesthesia performed at L2–L3 space and placement of catheter and fixation at 10 cm after confirming the space with loss of resistance (LOR) technique (Fig. 3). Followed by subarachnoid block at the level of L3–L4 space with 25G spinal needle—1.2 mL of 0.5% bupivacaine with 25 µg of fentanyl was given, an adequate level of sensory blockade was attained till the level of T12. After the anesthetic procedure, the patient was placed in a lithotomy position, the patient was monitored for any hypotension or cardiac events, and the patient was hemodynamically stable. Adequate fluid (less than 1.5 L/day) was given as per cardiologist and nephrologist orders. Postoperatively continuous monitoring of vitals and intravenous fluid administration was done. A cardiologist review was sought and cardiac drugs such as

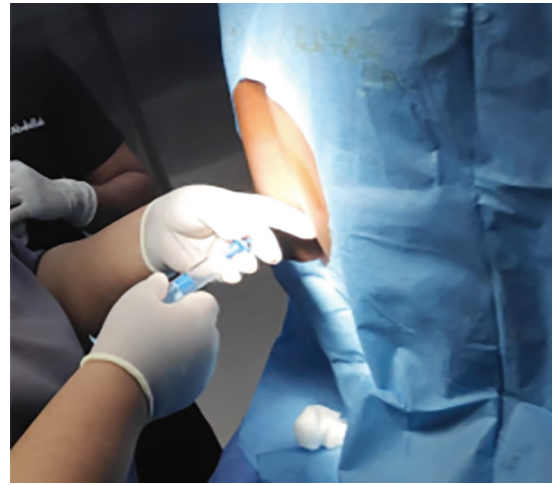


Fig. 3: Performing epidural anesthesia—confirming the space with the LOR technique

diuretics, beta-blockers, and angiotensin receptor neprilysin inhibitor (ARNI) were continued postoperatively.

DISCUSSION

Strategies of Anesthetic Management

Preoperative

Preoperatively adequate history regarding the severity, progression and functional limitations needs to be taken properly, such as decreased exercise intolerance (indicating the cardiac reserve), angina (indicating myocardial ischemia), and other noncardiac chronic comorbidities such as systemic hypertension, cardiovascular accidents, and diabetes mellitus.

The examination includes general and system-specific examinations.

In systemic, the cardiovascular system needs to be examined for the presence of any murmur or abnormal heart sounds. The respiratory system is also to be examined.

Cardiac-specific tests, like ECG and echocardiography, were done to know about the ejection fraction, valvular lesion, any regional wall motion abnormalities, pressure gradients, and LV function. Other investigations are complete blood count (CBC), serum electrolytes, fasting blood sugar (FBS), and chest X-ray.

Medications like beta-blockers, calcium channel blockers, and digitalis are needed to be continued till the day of surgery. The potassium level should be normal as hypokalemia can cause digitalis toxicity. Anticoagulants should be stopped prior to surgery.

Intraoperative

Intraoperatively, preload and adequate contractility of the heart is maintained. Occurrence of regional anesthesia-induced hypotension is monitored carefully and if it occurs, it is managed appropriately with vasopressors or by inotropic supports. Intraoperative cardiac events such as arrhythmias need to be monitored. An adequate level of motor and sensory blockade must be attained to perform the surgery, higher levels of subarachnoid blockade need to be avoided.

Postoperative

The goal of postoperative management is to prevent ischemia and myocardial infarction, which are common occurrences in these patients. Hence the patient was continuously monitored for any postoperative cardiac events and adequate fluid and pain management should be done.

CONCLUSION

Thus in patients with moderate risk cardiac illness, who are posted for noncardiac surgeries, the more preferable and safer alternative is regional anesthesia as it reduces the sympathetic stress response which is present while performing general anesthesia (during intubation and extubation). In this case, the patient was having moderate LV dysfunction posted for noncardiac surgery (TURP and bilateral hernioplasty), the most preferred safe choice of anesthesia is subarachnoid block combined with epidural anesthesia which is also helpful in the management of postoperative analgesia.

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