CASE REPORT

Anesthetic Management of a Patient with Dilated Cardiomyopathy for Inguinal Hernia Repair

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ABSTRACT

Anesthetic management of a patient with dilated cardiomyopathy (DCM) undergoing noncardiac surgery poses a challenge to the anesthesiologist as there is risk of precipitating congestive heart failure or malignant arrhythmias. The anesthesiologist must have the knowledge of its pathophysiology, clinical presentation, diagnostic evaluations, and more so regarding various drugs used during anesthesia. We report a case of DCM with severe left ventricular (LV) dysfunction posted for right inguinal hernia repair managed successfully with epidural anesthesia using ropivacaine.

Keywords: Dilated cardiomyopathy, Epidural anesthesia, Ropivacaine.

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INTRODUCTION

Dilated cardiomyopathy (DCM) is a primary myocardial disease of unknown cause characterized by left ventricular (LV) or biventricular dilation, impaired myocardial contractility, decreased cardiac output, and increased ventricular filling pressures. It may be ischemic or non-ischemic. It is defined by the presence of (1) fractional myocardial shortening less than 25% and/or left ventricular ejection fraction (LVEF) less than 45% and (2) LV end-diastolic diameter greater than 117% excluding any known cause of myocardial disease. The prevalence is 0.92%.

The initial manifestation of DCM is usually with signs and symptoms of heart failure. Chest pain on exertion that mimics angina pectoris occurs in some patients. Ventricular dilation may be so marked that functional mitral and/or tricuspid regurgitation occurs. Systemic embolization is also common as a result of the formation of mural thrombi in dilated and hypokinetic cardiac chambers. Supraventricular and ventricular dysrhythmias, conduction system abnormalities, and sudden death are common.1

All types of general anesthetics have been successfully used in patients with heart failure. However, drug doses may need to be adjusted. Regional anesthesia is acceptable for suitable operations in DCM patients. However, the pros and cons of regional anesthesia must be carefully weighed.

CASE REPORT

A 45-year-old male, weighing 60 kg, with right inguinal hernia, was scheduled for hernioplasty. The patient had complaints of breathlessness on exertion and occasional palpitations. On general physical examination, he had mild pedal edema, but there were no other signs of heart failure, such as raised jugular venous pressure or hepatomegaly. His blood pressure (BP) was 110/70 mm Hg and pulse rate was 88 per minute. On chest auscultation, systolic murmur was present in the mitral area. There were no rhonchi or rales. Chest X-ray showed cardiomegaly. Electrocardiography showed T-wave inversion in V3 to V6 with occasional ventricular ectopic beats. Echocardiography revealed LVEF 25%, LV hypokinesia with mild-to-moderate mitral regurgitation and right ventricular systolic dysfunction. Therefore, he was diagnosed to be having DCM during preanesthetic checkup. For control of symptoms, he was put on digoxin, diuretics, and beta-blockers, which were continued till the day of surgery. All the biochemical and hematological investigations were within the normal limits.

High-risk consent was taken from the patient in view of poor cardiovascular status (American Society of Anesthesiologists III). On arrival in the operating room, intravenous access was established with 20 G cannula. Electrocardiography, pulse oximetry, noninvasive BP, and SpO2 were attached for continuous monitoring. Under strict aseptic precautions, epidural catheter was inserted at L3–L4 interspace in sitting position using 18 G Tuohy’s needle. Correct placement was confirmed by injecting 3 mL of 1.5% lignocaine with adrenaline as a test dose. Later, 8 mL of 0.5% isobaric ropivacaine with 50 µg of fentanyl was injected epidurally. Adequate sensory block was achieved up to T10 level. Oxygen was supplemented...
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During regional anesthesia, modest decrease in systemic vascular resistance secondary to peripheral sympathetic blockade may increase cardiac output. Also, patient remains conscious during surgery, which permits prompt recognition of acute changes in cerebral and cardiovascular function. Therefore, regional technique may be preferred over general anesthesia. However, the decreased systemic vascular resistance produced by spinal anesthesia is not always predictable or easy to control. Precipitous fall in BP may occur after single-shot spinal anesthesia.

Titrated doses of local anesthetics epidurally result in lower risk of hypotension and prolong postoperative analgesia. It also improves myocardial performance by reducing LV afterload without improving contractility, which may be beneficial in a situation of poor ventricular function, where no outflow tract obstruction is present. So epidural was selected over spinal. Injection ropivacaine 0.5% was used as it is less cardiotoxic and produces less motor blockade. Injection fentanyl was preferred as an additive as it has minimal depressing effect on cardiac function and improves quality of analgesia.

Fluid management is also critical and preloading the patient in the preoperative period is not desirable because it may precipitate a congestive heart failure. Central venous pressure-guided fluid should be given in major cases where higher fluid shifts are expected. Vasopressors, such as ephedrine, mephentermine, and phenylephrine, to mitigate against the vasodilating effect of the anesthetics is a rational approach. In our case, 500 mL of Ringer’s lactate was given intraoperatively. Injection Xylocard, amiodarone, and defibrillator should be kept ready to treat arrhythmias.

CONCLUSION

Patients with DCM are a challenge to the anesthesiologist. These patients can be well managed by thorough preoperative assessment, medical management, formulating good anesthetic techniques, prompt diagnosis, and management of complications.

REFERENCES

5. Wanda MP. Heart failure and cardiomyopathies. In: Stoelting RK, Hines RL, Marshall KE, editors. Anaesthesia...


