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CASE REPORT

ANESTHETIC MANAGEMENT OF AN ELDERLY PATIENT WITH DILATED CARDIOMYOPATHY AND HYPOTHYROIDISM FOR INTER-TROCHANTERIC FRACTURE

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ABSTRACT

Dilated cardiomyopathy is a primary myocardial disease characterized by left ventricular or biventricular dilation and impaired contractility. The anesthetic management of a patient with dilated cardiomyopathy undergoing a non-cardiac surgery is always challenging and may be associated with high mortality. Furthermore, perioperative morbidity becomes more frequent in the elderly with steep increases after the age of 75. We are reporting the successful anaesthetic management of a 93 years old patient with severe dilated cardiomyopathy planned for surgical repair of inter-trochanteric fracture under combined spinal anesthesia.

INTRODUCTION

Dilated cardiomyopathy (DCM) is a heart muscle disorder defined by the presence of a dilated and poorly functioning left ventricle in the absence of abnormal loading conditions (hypertension, valve disease) or ischemic heart disease sufficient to cause global systolic impairment.[1] It is characterized by the presence of fractional myocardial shortening less than 25% and/or left ventricular ejection fraction (LVEF) less than 45%; and LV end diastolic diameter greater than 117% excluding any known cause of myocardial disease.[2] In patients undergoing non-cardiac surgery, DCM leads to progressive heart failure and a decline in LV function, arrhythmias, conduction abnormalities, thromboembolism, and sudden or heart failure–related death.[3] Hence, anaesthesiologist must understand the underlying pathology for better management. Here we present a case of DCM with inter-trochanteric fracture planned for surgery.

CASE REPORT

A 93 years old male, weighing 47kg with inter-trochanteric fracture of right femur was posted for surgery after one month of fracture. His history revealed dilated cardiomyopathy for fifteen years

and hypothyroidism for two years. The patient was on Metoprolol 12.5mg once daily, Frusemide 20mg once daily and Thyroxin 12.5 mcg once daily. There were no signs of heart failure with stable blood pressure and heart rate with a pan systolic murmur in mitral area. Spine had normal curvature with narrow intervertebral space. ECG showed left axis deviation. Echocardiography revealed dilated left ventricle, global hypokinesia of left ventricle (EF= 15 to 20%), mild to moderate MR and no clots, vegetation or pericardial effusion. Thyroid function test revealed iatrogenic hyperthyroidism so thyroxin was stopped for one week. As the repeat thyroid function test was normal, thyroxin 12.5mcg was restarted. All the drugs were continued till the morning of the surgery

Combined spinal epidural anesthesia was planned for the surgery. After accessing Intravenous access, ECG, NIBP, pulse oximeter were attached. Arterial line was obtained in right radial artery. The patient's baseline blood pressure was 160/90mmHg, heart rate 52bpm and SPO_2 99%. He was preloaded with 5ml/kg Ringer's Lactate. Epidural catheter was placed at L2-L3 level. Test dose of 3ml 2% lignocaine with 15microgram adrenaline was given. Then spinal anaesthesia was given at L3-L4 level with 1ml of 0.5% hyperbaric bupivacaine. Sensory level of T10 and motor block of grade IV were obtained. The patient was sedated with intravenous midazolam 0.5mg and Fentanyl 50mcg. At one hour, 2ml of 0.5% plain Bupivacaine and 50mcg Fentanyl was topped up via epidural catheter. During 90min operative procedure, the patient was haemodynamically stable and received 750 ml Ringer's Lactate solution. Post operative management was done in ICU with no significant issues. The patient received 0.1% Ropivacaine with 2mcg/ml Fentanyl at the rate of 4ml/hr via epidural infusion for 48hrs for postoperative analgesia. The patient was shifted to ward on the third postoperative day.

DISCUSSION

Idiopathic DCM is a primary myocardial disease of unknown etiology characterized by left ventricular or biventricular dilatation and impaired myocardial contractility.[4] Anaesthetic management of patients with cardiomyopathy, undergoing non-cardiac surgery with reduced systolic function, is challenging and it may be associated with high mortality.[4] Important goals in such cases are to improve systolic function and to prevent sudden death. In such cases patients are initially managed medically with diuretics, beta-blockers, ACE inhibitors or angiotensin receptor blockers. Biventricular pacing, cardioplasty or cardiac transplant may also be required to improve cardiac function.[5] Patients may develop ventricular arrhythmias in the perioperative period, so antiarrhythmic medications should be continued. Preoperative dehydration leading to hypotension during anaesthesia may be an issue as they are taking diuretics however preoperative hydration is not desirable as it may lead to congestive heart failure.[6]

Our patient was receiving beta-blocker and diuretics. The poor predictors in this patient were an ejection fraction of less than 20% on echocardiography, left ventricular end diastolic dilation and hypokinetic left ventricle.[7] Anesthetic goals in such patients consist of maintaining normovolemia, prevention of increase in afterload and avoidance of myocardial depression.[8] Transesophageal echocardiography, cardiac output monitoring, bispectral index and pulmonary artery catheterization have also been found useful in patients with DCM.[9] A combined spinal epidural block was planned in our patient to avoid myocardial depression associated with general anesthesia and dramatic fall in preload and afterload associated with subarachnoid block alone. It also provides predictable and good post-operative analgesia.[10] Though regional block with sedation was another choice for this case, we opted for combined spinal epidural anesthesia as it provides intense block with less dose of local anaesthetic agent and epidural can be used for post operative pain management.

Geriatric patients are more sensitive to anesthetic agents requiring reduced doses. Given volume of epidural anesthetic results in a more cephalic spread, though with a shorter duration of block.[11] We used low dose local anesthetic for subarachnoid block and then topped up through epidural catheter with low dose of local anesthetic and opioid. With this graded anesthesia, ionotropes or vasopressor support was not required.

CONCLUSION

Anesthetic management of patients with DCM poses

a challenge for the anesthesiologist, but meticulous planning, appropriate monitoring, judicious use of pharmacological agents and selection of anesthetic technique according to patient's general condition and surgical requirement can lead to a favorable outcome. Low dose spinal with epidural top op can be used successfully as an anesthetic technique in such cases.

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