



ANAESTHESIA FOR A DILATED CARDIOMYOPATHY PATIENT FOR A NON CARDIAC SURGERY

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Cardiomyopathy is a disorder of the heart muscle in which the myocardium is structurally and functionally abnormal in the absence of coronary artery disease (CAD), hypertension, valvular disease or congenital heart disease [1].

The AHA (American Heart Association) classified cardiomyopathies as primary or secondary.

AETIOLOGY	TYPES OF CARDIOMYOPATHY
PRIMARY GENETIC	<ul style="list-style-type: none"> • HYPERTROPHIC CARDIOMYOPATHY • LEFT VENTRICULAR CONDUCTION ABNORMALITIES • BRUGADA SYNDROME
MIXED	<ul style="list-style-type: none"> • DILATED • RESTRICTIVE
ACQUIRED	<ul style="list-style-type: none"> • INFLAMMATORY VIRAL, BACTERIAL • TAKOTSUBO CARDIOMYOPATHY • PERIPARTUM
SECONDARY	<ul style="list-style-type: none"> • STORAGE: FABRY'S DISEASE, HEMOCHROMATOSIS • INFILTRATIVE: AMYLOIDOSIS GAUCHER'S DISEASE • TOXICITY: ALCOHOL, MERCURY, LEAD CHEMOTHERAPY, RADIO THERAPY • ENDOCRINE: DIABETES MELITTUS, ACROMEGALY, PHEOCHROMOCYTOMA

Dilated cardiomyopathy is a primary myocardial disease which reduces global myocardial contractility, leading to left ventricular (LV) or biventricular dysfunction[2]. DCM presents with decrease in LV ejection fraction (LVEF), congestive heart failure (CHF) and ventricular arrhythmias.

According to frank starling law, The Frank-Starling relationship is an intrinsic property of myocardium by which increased length (or ventricular volume) results in enhanced performance during the subsequent contraction[3].

This relationship appears to be very important in cardiac function because increased venous return and the corresponding increase in end-diastolic volume result in greater stroke volume during the next beat. so the ventricles dilate to increase the stroke volume. In this case report, we present the anaesthetic management for a patient with dilated cardiomyopathy for non cardiac surgery.

Case Details

A 53 year old female with dilated cardiomyopathy posted for tibial plating and fixation for a post traumatic closed tibial fracture. She had a history of systemic hypertension and diagnosed with DCM for 7 years. Patient was under treatment for the same since then.

She had several episodes of exertional dyspnoea (NYHA GRADE 4) which made her to consult the cardiologist for evaluation. ECG and 2D echocardiography was done which showed ejection fraction (EF) of 21% and she was advised to undergo coronary angiography for evaluating the cardiac circulation.

Pre Anaesthetic Consideration

A routine pre operative assessment was done to the patient. She had a history of systemic hypertension and dilated cardiomyopathy for 7 years,

for which patient was prescribed with Tab. spironolactone 25mg once daily, Tab. carvedilol 6.25mg twice daily and Tab. ivabradine 5 mg twice daily by the cardiologist. Patient was thoroughly examined and previous medical records were meticulously checked which showed an echocardiography with EF of 21%. Patient had undergone coronary angiography at 2014 which was uneventful. An echocardiography was taken to know the current cardiac status of the patient which showed LVEF of 40% and global hypokinesia of left ventricle. A complete history seeking and physical examination was done. patient's BMI was 36 following significant details were evaluated.

SIGNS AND SYMPTOMS	FATIGUE INCREASED JVP
RHYTHM	SINUS TACHYCARDIA
CHEST X RAY	ENLARGED CARDIAC SILHOUTTE
ECHOCARDIOGRAPHY	LVEF- 40% GRADE I DIASTOLIC DYSFUNCTION MILD MITRAL REGURGITATION GLOBAL HYPOKINESIA OF LEFT VENTRICLE

Perioperative Management

Patient is started with short acting oral anxiolytic the previous night. Patient was kept in nil per oral according to ASA guidelines. Patient was monitored with pulse oximetry, NIBP, 5 lead ECG recording[4]. Patient was given combined epidural anaesthesia with tip of the catheter at L3 for perioperative analgesia and spinal anaesthesia with 1.5 ml of hyperbaric bupivacaine and 25 mcg of fentanyl intrathecally with level fixed at T8 level. This is followed by left radial arterial line was secured for beat to beat BP monitoring. Emergency trash cart is made ready along with airway equipments was also kept ready as the patient is anticipated with difficult airway. Intraoperative period was uneventful and patient was hemodynamically stable. Further, the patient was shifted to ICU for perioperative cardiac monitoring as the patient is more prone for atrial fibrillation, premature ventricular contractions, arrhythmias.

DISCUSSION

In recent years, an increase in patients with history of heart disease has been on the rise. The challenges faced by the anaesthesiologist is a plenty.

Goals of anaesthesia for DCM patients is to

- Minimise negative inotropic effect of anaesthetic drugs. In this patient, a combined spinal epidural anaesthesia is given to prevent such episodes.
- Maintain preload despite of increased LVEDP
- Prevent increase in afterload
- Maintain perfusion, control arrhythmias, hypotension, tachycardia

These patients were prone for hemodynamic instability by depressant action of anaesthetics, fluid shift, blood loss which add to poor myocardial function. In this patient, combined spinal epidural anaesthesia was planned taking in account of the patient's difficult airway. Spinal anaesthesia with a low volume to prevent excessive fluid shifts by adequately preloading the patient. An epidural anaesthesia is suggested for perioperative analgesia with catheter tip placed at L3[5]. It has an added advantage which predominantly drop in SVR via vasodilation which can improve global and regional ventricular function. Peripheral nerve blocks can be done but

considering the failure rates, combined spinal epidural anaesthesia was given. The epidural space can be confirmed by injecting a dye and performing epidurography. Adequate pain management contributes to hemodynamic stability. Arrhythmias can be managed with lidocaine, amiodarone, diltiazem, cardioversion/defibrillation if required.

CONCLUSION

The optimal anaesthetic management must assess the patient's pathophysiology and clinical status, selecting appropriate method of anaesthesia, perioperative patient monitoring and adequate analgesia are the key to success.

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