

Anaesthetic Management of a Parturient with Dilated Cardiomyopathy

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Date of Submission : 08.01.2019
Date of Acceptance : 15.02.2019

www.banglajol.info/index.php/CMOSHMCJ

Abstract

Dilated Cardiomyopathy (DCM) is a form of cardiomyopathy characterized by left ventricular or biventricular dilatation and impaired ventricular contractility. This results in systolic dysfunction of the heart with decreased left ventricular ejection fraction and progressive cardiac failure. This case report describes the successful anaesthetic management of a parturient with Dilated cardiomyopathy underwent Caesarian section under spinal anaesthesia.

Key words : Cardiomyopathy; Left ventricle; Mitral and tricuspid valve.

INTRODUCTION

Cardiomyopathy is a primary disorder of the heart muscle that causes abnormal myocardial performance and is not the result of disease or dysfunction of other cardiac structures. The dominant feature is a direct involvement of the heart muscle itself. They are distinctive because they are not the result of pericardial, valvular or congenital diseases. The prevalence of heart failure is about 1 to 1.5% of the adult population. The mortality and morbidity remain high (median survival of 1.7 years for men and 3.2 years for women). Dilated cardiomyopathy is an important cause of heart failure and accounts for up to 25% of all cases of CHF. Whether the result of improved recognition or of other factor, the incidence and prevalence of heart failure due to cardiomyopathy appears to be increasing. The incidence of DCM is reported to be 5 to 8 cases per 1,00,000 population per year¹. It is a form of left ventricular or biventricular dilatation and impaired ventricular contractility. This results in systolic dysfunction of the heart with decreased left ventricular ejection fraction. There is increased risk of Arrhythmia, Thromboembolism and even sudden death. This case report describes the successful anaesthetic management of a parturient with DCM underwent C/S under spinal anaesthesia.

CASE REPORT

A 25 years old 2nd gravida with 36 weeks of gestation and known case of Idiopathic DCM with mild pre-eclampsia, H/O NVD 3 years back was scheduled for Lower Segment Caesarian Section (LSCS) in view of cardiac disease. Previous medical records revealed patient was a diagnosed case of DCM since last 6 years. Her symptoms were controlled with Tab. Digoxin 25mg and Tab. Frusemide 40mg. On Examination there was pulse: Regular, 90 beats/minute, BP: 140/100 mmHg Respiratory rate: 20/min, on auscultation no systolic murmur was heard, there was no Ronchi, no leg oedema. Her laboratory investigation showed Haemoglobin : 10gm%, Results of Serum electrolytes, Renal function was normal. Echo cardiography showed poor systolic function. Ejection fraction 40%, Grade 1 diastolic dysfunction. Elective LSCS was planned in view of cardiac disease and ejection fraction. A high risk informed written consent was obtained. 2 units of packed cell were made available for surgery. Intravenous access was made with 18G

canula and routine monitor were attached. After taking all precaution spinal anaesthesia was administered in L2-L3 intervertebral space with 26G needle in sitting position and 1.8 ml 0.5% Bupivacaine and 25 micro gram fentanyl administered. Patient was preloaded by 700 ml of ringer lactate solution. T10 sensory block was obtained. After 2 minutes patient was given 3 mg of ephedrine intravenously to correct Hypotension (100/50 mmHg) after 10 minutes of spinal anaesthesia. A male infant weighting 2.4kg was delivered after 10 minutes. Inj. Oxytocin 2.5 IU bolus followed by infusion 10 IU/L was commenced after clumping the umbilical cord. The APGAR score of the baby was 9 and 10 after 1 and 5 minutes respectively. Post operative analgesia was obtained by Diclofenac suppository and Tramadol intravenously 8 hourly with protection of antiulcerant intravenously. Cardiologist advices her Enapril 5mg OD, Tab. Aspirin 150mg OD, Tab. Frusemide 60mg OD and patient transferred to CCU after operation.

DISCUSSION

Dilated Cardiomyopathy is characterized by left ventricular and biventricular dilatation and impaired cardiac contractility which results in progressive congestive cardiac failure. Most patient are seen at the age of 20-50 years. The commonest cause is Idiopathic. The prediction of poor prognosis is poor ejection fraction, left ventricular and diastolic dilatation and the presence of mitral and tricuspid regurgitation. Anaesthetic management of caesarian section with DCM is a challenging task. Both general and regional anaesthesia have been used. The goals are avoidance of myocardial depression maintaining normovolemia and avoid sudden hypotension. Epidural anaesthesia can safely and effectively be used. For quick induction in view of foetal distress associated with thick meconium the patient was given spinal anaesthesia with low dose Bupivacaine-Fentanyl combination. We didn't consider general anaesthesia as the response of sedative drug or induction agent may be slow due to the slow circulation time. Opioid and Benzodiazepine or Nitrous Oxide causes severe cardiovascular depression. Carefully administered regional anaesthesia avoids the stress of general anaesthesia. As the anticipated duration of caesarian section is less, these case can be managed with low dose spinal block without any complication as there is no need to prolong the duration. Our case reports highlights the same and signifies the importance of spinal anaesthesia in such patient².

According to study done by O'Connell et al peripartum cardiomyopathy is defined as left ventricular dilation and failure, first developing during the third trimester of pregnancy or in the first 6 months postpartum³. In an effort to characterize this syndrome in a middle class population, 14 consecutive patients with peripartum cardiomyopathy underwent a detailed history and physical examination, right heart catheterization, M-mode and two-dimensional echocardiography, radionuclide ventriculography and right ventricular endomyocardial biopsy. These patients were then observed with sequential noninvasive studies to determine prognostic indicators. Eight (57%) of these 14 patients were primiparous and an equal number first presented with heart failure concomitant with or immediately before the onset of labor. When these women were compared with 55 patients with idiopathic dilated cardiomyopathy, only mean age at onset of symptoms (28.7 ± 5.7 versus 48.2 ± 13.6 years, $p < 0.001$) and symptom duration (4.1 ± 7.7 versus 19.0 ± 18.4 months, $p < 0.001$) differed between the groups. There was no difference in ventricular arrhythmia, left ventricular chamber size, ejection fraction or hemodynamic. Myocyte histologic findings were similar; however, myocarditis was identified in 29% of patients with peripartum cardiomyopathy and in only 9% of those with idiopathic dilated cardiomyopathy. In all patients with peripartum cardiomyopathy and myocarditis, the myocardial biopsy was performed within 1 week of onset of symptoms. Seven (50%) of the patients with peripartum cardiomyopathy had dramatic improvement within 6 weeks of follow-up, and 6 (43%) died. Survivors had a higher ejection fraction (22.8 ± 11.7 versus $10.6 \pm 1.5\%$, $p < 0.05$) and smaller left ventricular cavity size (5.8 ± 1.2 versus 6.9 ± 0.7 cm, $p < 0.05$). Peripartum cardiomyopathy in a middle class population is hemodynamically indistinguishable from idiopathic dilated cardiomyopathy but is characterized by a high incidence of histologic myocarditis resulting in rapid, spontaneous improvement of congestive heart failure or progressive deterioration resulting in early death.

CONCLUSION

Careful and intense hemodynamic monitoring and slow and judicious titration of anaesthetic drugs and fluid is important in patient of DCM with low ejection fraction.

DISCLOSURE

All the authors declared no competing interest.

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