Hysterotomy Under Epidural Anesthesia In Patient With Peripartum Cardiomyopathy, Pregnancy Induced Hypertension and Acute Renal Failure

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ABSTRACT

Peripartum cardiomyopathy is a type of left ventricular systolic heart dysfunction with an unknown cause. We report a case of a 32-year-old female patient of 50 kg, known case of hypertension since 1.5 year. An epidural, catheter was inserted at the level of L3 and L4 intervertebral spaces. After confirmation 7 ml of 0.5% bupivacaine was injected into epidural space with two top-up doses of 2 ml of 0.125% bupivacaine. Echocardiography demonstrated findings suggested of peripartum cardiomyopathy with mild tricuspid regurgitation and mild mitral regurgitation.

Key words *Hysterotomy, Epidural anesthesia, Cardiomyopathy.*

INTRODUCTION:

A rare and serious type of cardiomyopathy in pregnant females or those experiencing early puerperium is peripartum cardiomyopathy (PPCMP). It is a kind of left ventricular systolic heart dysfunction with an unknown cause. Its incidence is 1/3000 - 1/15,000 pregnancies.[1] In 1971, Demakis reported criteria for the diagnosis of peripartum cardiomyopathy. Previous criteria comprised of three postulates however recent criteria consist of 4 postulates given below.[2]

1. Heart failure in last months of pregnancy or within five months post-partum.
2. Absence of any cause accounting for heart failure
3. Absence of any underlying pathology accounting for heart failure before the onset of pregnancy
4. Left ventricular dysfunction evident on echocardiography.

Majority of cases are idiopathic.[3,4] Up to 60% of cases present within two months of pregnancy however 7% cases become evident within last trimester of pregnancy.[5] If cardiac function is optimal in patients with PPCMP, there is no harm in undergoing spontaneous vaginal delivery. Urgent delivery is considered in hemodynamically unstable patients.[6] Hemodynamic goals in patients requiring anesthesia for lower segment C-section are similar for any kind of heart failure. The goals of management include maintenance of near normal blood pressure to prevent tissue hypoxia and limit fluctuations in heart rate so that the heart requirements for oxygen are not increased.[7] This report describe management of a patient with PPCMP.

CASE REPORT:

A 32-year-old female patient with 50 kg weight, who was a known case of hypertension since 1.5 years presented with previous 3 lower segment ceserean sections. At the time of presentation patient was in her 28th week of gestation and enrolled for hysterotomy. Echocardiography demonstrated findings suggestive of peripartum cardiomyopathy with mild tricuspid regurgitation and mild mitral regurgitation. She had hemoglobin 4 g/dl, Hct 22.5%, platelet $139x10^9$, total leukocyte count $8.8x10^9$, albumin 1.9 g/dl, LDH 445 U/L, urea 272 mg/dl, creatinine 7.13 mg/dl, BUN/Creatinine ratio of 14.26, PT 10.4 seconds and INR 0.95. Urine detailed report showed moderate proteinuria.

Preoperatively patient was started on labetalol 200 mg daily, carvedilol 0.5 mg daily and methyldopa 2g daily. Packed red blood cells were transfused and patient was optimzed. At the time of induction hemoglobin was 8g/dl, blood pressure 180/110 mmHg, pulse 84 bpm, saturation

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99% on room air and respiratory rate of 18 breaths per minute. ECG showed no evidence of ischemia. Echocardiography demonstrated ejection fraction of 25%. Chest was clear and pitting edema was present up to the level of the ankle. However chest x-ray demonstrated mild pleural effusion.

Loss of resistance against air technique was used to identify epidural space. An epidural catheter was inserted at the level of L3 and L4 intervertebral spaces and 2cc 2% lignocaine without adrenaline was given to confirm the placement of the catheter. After confirmation 7 ml of 0.5% bupivacaine was injected into epidural space with two top-up doses of 2 ml of 0.125% bupivacaine. During the procedure, 500 ml of Ringer lactate was given. The intra-operative course was uneventful without any fluctuations in blood pressure and heart rate. Duration of surgery was 36 minutes. Patient was shifted to anesthesia ICU for postoperative care. Postoperatively non-invasive vital monitoring was performed. No postoperative complication was reported.

DISCUSSION:

There are few cases reporting the use of bupivacaine of ropivacaine in patients with PPCMP undergoing lower segment C-section. Some researchers suggest the use of general anesthesia whereas some recommend regional anesthesia to avoid the use of cardio-depressant general anesthetic drugs. Bilehjani et al reported female aged 19 years diagnosed with severe PPCMP with uncompensated heart failure and pulmonary edema. Patient underwent emergency C-section. Etomidate was used to induce general anesthesia and remifentanil infused for maintenance of general anesthesia. No adverse outcome was reported on mother or fetus.[1]

Relatively fewer studies report the use of epidural anesthesia because it can cause sudden onset of the blockade of the sympathetic nervous system however, changes in preload produced by epidural anesthesia mimic treatment goals of cardiomyopathy supporting its use. Shrestha et al reported a case of 26-year-old primigravida female at 33 weeks of gestation with an ejection fraction of 18% who presented for emergency C-section. A total of 13 ml of lignocaine with adrenaline was injected into epidural space and an uneventful course was reported.[5] The combined spinal-epidural technique can prevent the abrupt fall in blood pressure associated with spinal anesthesia.[6] The management protocol adopted in this patient resulted in smooth operaration and postoperative recovery.

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