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CONTINOUS SPINAL ANAESTHESIA FOR LSCS IN PARTURIENTS WITH DILATED CARDIOMYOPATHY AND LOW EJECTION FRACTION

Anaesthesiology

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ABSTRACT

Parturients with cardiac conditions have risk to life during normal vaginal delivery hence elective LSCS under anaessthesia has been reported to reduce the risk to life of mother and safe delivery of foetus. Severe ventricular dysfunction occurs in peripartum cardiomyopathy during late pregnancy or early puerperium. Peripartum cardiomyopathy is associated with decreased ejection fraction in late pregnancy or early puerperium. Normal value of ejection fraction (EF) ranges from 55% - 70%. Patients with EF < 35% (low EF) are at risk of arrhythmias leading to sudden cardiac arrest and death. Intensive cardiac management is required in these patients along with anaesthetic interventions for painless labour and delivery either vaginal or operative. Maternal and neonatal mortality and morbidity can be reduced by highly skilled perioperative anaesthetic management. Here we present a case of 28 year old primigravida with dilated CMP and EF 20% was managed using continuous spinal anaesthesia for LSCS. Both the haemodynamic stability and outcome of mother and fetus is satisfactory with this type of anaesthesia.

KEYWORDS

EF 20%, Pregnancy, Dilated Cardiomyopathy, Continous Spinal Anaesthesia.

INTRODUCTION

Pregnant patients with cardiac condition presents a tough challenge for obstetrics anaesthesiologists.[1] As they were associated with severe complications in perioperative period, safe outcome of both mother and foetus is of special importance for anaesthesiologist in these high risk patients.[2] Pregnancy induces hamodynamic changes such as increased plasma volume and cardiac output. Cardiac demand increases during and after delivery due to uterine contraction, blood loss, auto transfusion of contracting uterus post delivery and anxiety. These all factors adds up an extra risk in peripartum period.[3] Reported incidence of idiopathic dilated cardiomyopathy in pregnant patients is 5-8/100000 live births/year. [4] Better maternal and fetal outcomes requires peri-operative anaesthetic care which includes preoperative optimisation of patients condition, constant haemodynamic stability intraoperatively and post-operative monitoring in addition to adequate pain relief postoperatively.[1] Continous spinal anaesthesia provides better hemodynamic stability than a single shot spinal as it allows incremental dosing of local anaesthetic with predictable titration of block to a desired level.[5]

A CASE REPORT

A 28 yr female, primigravida weighing 70 kg who was referred from peripheral centre to our medical college and attached hospital for further evaluation and management. She was 36 wks of gestation with history of sudden onset of palpitations and giddiness for 1 day. On examination she was conscious, oriented, pulse rate 124/min, irregular, blood pressure recorded 140/90 mmHg and respiratory rate of 36/min. She was further evaluated by cardiologist. 2D Echo revealed EF 20% and ECG revealed left ventricular strain pattern in V_5 -$V_6$and right axis deviation along with sinus tachycardia with heart rate 124/min. She was diagnosed as dilated cardiomyopathy with no evidence of congestive cardiac failure and pedal oedema. She was started on ecosprin 75mg for 1 week and stopped 24 hrs prior to surgery. On ultrasonography fetal age was in accordance with gestational age and fetal heart sounds were normal. She was planned for elective LSCS. High risk to life was explained and written consent taken. She was premedicated with ranitidine 150 mg orally at night and at 6 am before the surgery. In the operation theatre, an IV access is secured with 18G IV cannula and ringer lactate infusion was started. All routine monitors attached with 12 lead ECG and spinal procedure explained to patient. Under all aseptic precautions left radial artery was cannulated and invasive blood pressure recorded was 156/92 mm Hg. On examination of spine, the interspinous space was difficult to palpate and locating epidural space seemed to be difficult. The LSCS was planned under continuous spinal anaesthesia. Under all aseptic precautions, continuous spinal epidural catheter (20G Macro catheter) was placed in sitting position in L3-L4 space with the help of 18G Tuohy needle. After fixing the catheter, patient was made supine. Titrated dose of bupivacaine heavy was given. Initially 0.5 ml of bupivacaine heavy was given to note its anaesthetic effect and haemodynamic changes. Sensory effect(tingling sensation) began to appear with no change in HR and BP. After 5 minutes we repeated the dose of 1.0 ml bupivacaine heavy with no change in HR and BP and there was increased level of anaesthetic effect (i.e. upto T12). Again after 2 minutes we gave 0.5 ml to achieve level of T8 but this time there is fall in HR (102/min) and BP (114/82 mmHg). This was the end point of our titrated dosing with total 2 ml of local anaesthetic and adequate anaesthetic effect was achieved (i.e T8) with haemodynamically stable patient. Intraoperatively continuous ECG, IBP, oxygen saturation was monitored and 1.2L of ringer lactate given intravenously. Surgical procedure lasted for 1 hour and 10 minutes without any significant changes in vitals. New born was full term with immediate cry and normal APGAR score. Cardiologist was present throughout the procedure. Postoperatively patient was monitored in PACU till complete recovery from anaesthetic effect as perioperative period was the duration of maximum risk to patients life. The catheter was removed postoperatively in PACU and postoperatively analgesia was achieved with IV paracetamol infusion and IV tramadol. The patient was stable during this period and then discharged to ward where she was stable upto 7 days followup.

DISCUSSION

Patients with low ejection fraction are at risk of arrythmias leading to sudden cardiac arrest and death. Labour, delivery and immediate puerperium is the time of maximal risk.[6] Our anaesthetic goal is to achieve adequate level of blockade without producing hypotension and tachycardia i.e. maintaining cardiovascular stability.[7] Hypotension may cause myocardial ischaemia and tachycardia decreases left

ventricular filling time along with increased myocardial oxygen consumption. Our goal is to maintain normovolemia with preservence of normal myocardial function and preventing myocardial insufficiency. Continuous spinal anaesthesia using titrated dosing of bupivacaine heavy was adequate for performance of caesarean section with good fetal outcome and minimal side effects. Echocardiography reveals dilated ventricles with normal valves. Serial echocardiography is recommended to monitor left ventricular function throughout pregnancy and in postpartum period. Interventions required to decrease both preload and afterload as well as to improve cardiac contractility. Role of cardiologist during surgery is of utmost importance with these patients as pregnancy and delivery is associated with haemodynamic changes along with haemodynamic changes associated with anaesthetic drugs.

CONCLUSION

Parturient with poor cardiac condition puts risk to life for both mother and foetus. With proper pre-anaesthetic and cardiac evaluation along with intensive cardiac management patient can be successfully managed for LSCS under continuous spinal anaesthesia.

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