

CASE REPORT

EPIDURAL ANESTHESIA FOR CESAREAN SECTION IN ATRIAL SEPTAL DEFECT WITH PULMONARY HYPERTENSION

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ABSTRACT: Pregnant patients with atrial septal defect (ASD) with pulmonary hypertension, occasionally present for anaesthesia. These patients are considered high risk for anaesthesia due to increased chances of perioperative cardiovascular complications. Anaesthesia requires intensive cardiovascular monitoring and maintenance of stable pulmonary and systemic haemodynamics. Here is a case of second gravida for LSCS which was managed under epidural anaesthesia successfully.

KEYWORDS: Atrial septal defect, Pulmonary hypertension, Caesarean section, Epidural anaesthesia.

INTRODUCTION: Various cardiac diseases can complicate the normal course of pregnancy. Though the incidence varies from 1-4%, whenever the heart fails to meet the dynamic physiological changes required during pregnancy, the cardiac instability results. Among the common congenital acynotic heart diseases, ASDs are anatomically classified into four types: 1) Ostium secundum (85%), 2) Ostium primum (10%), 3) Sinus venosus (5%), and 4) Coronary sinus defects (rare).¹ Left to right intra-cardiac shunt leading to right ventricular volume overload causes increase in pulmonary blood flow and pulmonary hypertension. It results into right ventricular hypertrophy and congestive heart failure. Here is a case of ostium secundum defect with pulmonary hypertension who underwent emergency LSCS under epidural anaesthesia successfully.

CASE REPORT: A 24 yrs unbooked thin built second gravida with 37 weeks of gestation was posted for emergency LSCS in view of cephalo pelvic disproportion (CPD) and failure to progress. She had one abortion previously. She had history of breathlessness and palpitations at 7th month of gestation. She was investigated and her 2D Echo revealed E/o 24mm ostium secundum atrial septal defect with left to right shunt and grade I tricuspid regurgitation. She had pulmonary hypertension of PASP of 45mm. Ejection fraction was 55%. There was E/o minimum pericardial effusion. She was treated medically but patient did not continue the treatment nor follow up. This time she had no such complaints of breathlessness, palpitations or chest pain.

Her exercise tolerance was good. Her pulse rate was 82/min. BP was 114/70mmHg, Spo2 was 90% on air, bilateral pitting pedal edema was present. The respiratory rate was 22/min, NYHA class I. Chest was clear on auscultation. There was no evidence showing pericardial effusion. No clubbing or cyanosis. The ECG showed sinus rhythm with right axis deviation. She had systolic murmur in tricuspid area with loud S₂. Rest of the physical examination was unremarkable. Her biochemical, haematological and blood coagulation tests were within normal limits. Patient was nil by mouth. Patient was explained about the poor outcome of delivery and informed consent was obtained. Antiemetic prophylaxis was given with IV 50mg Ranitidine and 4mg Ondansetron. Multipara monitor with pulse rate, NIBP, Spo2, ECG was applied. IV Ringer lactate was started. IV 2gm Ampicillin was given. Lumbar epidural analgesia was administered without any difficulty in L2-3 inter space; with patient in left lateral position, and test dose of 2ml of inj. lignocaine 2% was given. Anaesthesia was

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instituted slowly with incremental doses up to 10 ml of 0.5% Ropivacaine being more cardiostable. O₂ supplementation was started on mask. The sensory block spread up to T8 level within 8 min. Except for one brief episode of systemic hypotension (80/60mmHg), which was treated with inj. Ephedrine 10 mg, the intra operative course was uneventful.

A wedge was put below right buttock. A baby weighing 2.6 kg was delivered with APGAR score of 6 and 9 at 1 and 5 min. Patient was started with IV Oxytocine 20 units in a drip. Postoperatively patient was continued on supplemental O₂ 4 L/min through mask for next 12hrs even as SpO₂ remained at 94-96%. Epidural Postoperative analgesia was administered epidurally with inj. Tramadol 75 mg. Patient was shifted to recovery room and next day to ward. Postoperative period was uneventful and patient was discharged for cardiologist reference on 12th day.

DISCUSSION: Mean pulmonary artery pressure of >25mmHg at rest or >30mmHg on exercise is generally considered as the diagnostic criteria for pulmonary hypertension. It excludes the congenital heart disease, myocardial disease or valvular disease etc. The enhanced activity of thromboxane or diminished activity of prostacyclin or impaired synthesis of nitric oxide has also been associated with PPH.² Pulmonary hypertension in pregnant women though uncommon carry high mortality and death regardless of severity of disease. Hence pregnancy has been suggested to be the contraindication in pulmonary hypertension.³

The hormonal changes associated with pregnancy allow large amount of fluid to accumulate in the interstitial space. Following delivery, this fluid is suddenly shifted to maternal circulation, increasing preload significantly and further increasing pulmonary hypertension. This lethal risk is highest during first 10 days of post-partum period. In healthy pregnant woman PVR is 34% less than in non-pregnant states, as the prostacyclin production is increased fivefold. The withdrawal of this pulmonary vasodilator effect of prostacyclin in immediate post-partum period may account for majority of deaths.⁴

Normal Vaginal delivery can lead to increased mortality in early post-partum period, hence Johnson et al advocated elective caesarean section to prevent haemodynamic changes of labour and to spare fetus as well as the risk of hypoxaemia secondary to maternal physical exertion.⁵ With careful epidural analgesia vaginal delivery can be successful, hence LSCS can be restricted to obstetric indications only.⁶ In our case emergency LSCS was planned due to failure to progress.

The management of anaesthesia in such patients differs with different school of thoughts. The goals of management should include—avoiding increase in pulmonary vascular resistance (PVR), avoid decrease in venous return (VR) and reduction in systemic vascular resistance (SVR) and avoid myocardial depression. Though general anaesthesia is recommended for LSCS, maternal myocardial depression, neonatal depression, sudden cardiovascular collapse, increase in PVR due to Nitrous oxide, inadequate analgesia are some of the disadvantages.⁷

If preload and after load are well maintained, regional blocks can be given.³ Epidural analgesia not only avoids increase in PVR, it provides optimal analgesia in combination with controlled vasodilatation to accommodate autotransfusion.⁸ Considering all above factors we successfully managed the case with epidural anaesthesia. Post-operative analgesia was provided with Tramadol given through the epidural catheter which provided stable cardiovascular situation.

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CONCLUSION: We experienced successful outcome with epidural block was experienced in this case. However no definite conclusion can be drawn from the single case and one should tailor the anaesthesia technique to avoid increase in PVR, decrease in SVR, hypotension and hypoxia with meticulous intraoperative and postoperative monitoring. It is demonstrated that in selected cases, caesarean section can be performed under epidural anesthesia. The peripartum management of patients with ASD is best conducted by a multidisciplinary approach to provide better results.

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