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SHORT COMMENTARY

Ebstein in Pregnancy: Can Combined Spinal–Epidural Anaesthesia be a Choice?

B. D. Vaishnavi[1] · Priyanka Sethi[1] · Manbir Kaur[1] · Pradeep Bhatia[1]

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Dear Sir

Ebstein anomaly is a rare congenital heart disease with an incidence of 1% [1]. It manifests in a wide range of severity from asymptomatic to severe illness with tachyarrhythmias and haemodynamic derangements leading to heart failure [2]. In patients with cardiac disease, pregnancy causes various cardiovascular changes, placing an additional strain on an already compromised cardiovascular system. We report successful management of primigravida with an Ebstein anomaly with atrial septal defect (ASD) scheduled for a caesarean section under neuraxial anaesthesia.

A 24-year-old primigravida, weighing 72 kg with 37 weeks of gestation, was posted for elective caesarean section. On preoperative evaluation (PAC), the patient presented with shortness of breath with New York Heart Association (NYHA) class II, which had progressed to class III during pregnancy. She had hypothyroidism and was on tablet thyroxin 50mcgs once-daily dose. She had no history of recurrent chest infection, palpitations, chest pain, and cyanosis. On examination, pulse rate was 103 beats per minute, regular, blood pressure (BP) 108/67 mmHg, and oxygen saturation 99% on room air. Cardiovascular examination revealed a grade 3 pan-systolic murmur in the tricuspid area. Her blood investigations reports were normal. An electrocardiogram (ECG) showed sinus rhythm with right axis deviation and a tall 'p' wave indicating right atrial enlargement. Echocardiography revealed dilated right atrium, right ventricular atrialization, severe tricuspid regurgitation with right ventricular systolic pressure of 45 mmHg with the apical placement of septal leaflet (16 mm), and a large ostium secundum ASD of 36 mm size with the left to right shunt.

After taking informed written consent, the patient was taken to the operating room. Monitors including electrocardiogram, non-invasive blood pressure, and pulse oximeter were attached. Preoperatively, radial arterial line and two wide bore intravenous cannula were secured, and all precautions were taken for prevention of air bubbles entry. Combined spinal–epidural anaesthesia (CSE) at L3–L4 with low-dose spinal and epidural supplement was planned. Bupivacaine (heavy) 5 mg + 25mcg fentanyl was given intrathecally, and the epidural catheter was fixed at 10cms. Lignocaine, 2% 3 ml, was given through the epidural catheter after checking the level of anaesthesia to achieve sensory blockade of T5–T6. 200 ml of crystalloid was co-loaded during CSE. A left table tilt avoided aortocaval compression. There were no significant haemodynamic changes, and hypotension was managed with phenylephrine boluses of 50mcg when required with a total dose used being 100 mcg. 500 ml of crystalloid was given in the intraoperative period. The procedure lasted for 45 min with a blood loss of approximately 800 ml, and the intraoperative course was uneventful with stable vitals, and the patient was monitored for 6 h in the high dependency unit. Infusion of 0.2% ropivacaine was given through the epidural catheter for postoperative pain, and the catheter was removed on postoperative day 2.

Vaishnavi B D (MBBS, MD) is an Senior Resident, Department of Anesthesia and Critical Care, All India Institute of Medical Sciences (AIIMS), Jodhpur, Rajasthan, India; Priyanka Sethi (MBBS, MD, DNB) is an Associate Professor, Department of Anesthesia and Critical Care, All India Institute of Medical Sciences (AIIMS), Jodhpur, Rajasthan, India; Manbir Kaur (MBBS, MD, DNB) is an Assistant Professor, Department of Anesthesia and Critical Care, All India Institute of Medical Sciences (AIIMS), Jodhpur, Rajasthan, India; Pradeep Bhatia (MBBS, MD) is an Professor and Head, Department of Anesthesia and Critical Care, All India Institute of Medical Sciences (AIIMS), Jodhpur, Rajasthan, India.

✉ Manbir Kaur
doctor.manbir@gmail.com

[1] Department of Anesthesia and Critical Care, All India Institute of Medical Sciences (AIIMS), Jodhpur, Rajasthan 342005, India

Ebstein anomaly is characterized by right ventricle atrialization, right atrial enlargement, severe tricuspid regurgitation with an apical displacement of the tricuspid valve with or without ASD and is predisposed to supraventricular arrhythmias and right heart failure [3]. Pregnancy-related cardiovascular changes, increased venous return and cardiac output, aggravate tricuspid regurgitation and right ventricular dysfunction which are the main concerns for anaesthesiologists. The goal of the anaesthetic plan should be to maintain sinus rhythm as well as preload and afterload and avoid hypercarbia, hypoxia, tachycardia, pain, acidosis, which can increase pulmonary vascular resistance. Given supporting the above goals, combined low-dose spinal drug with graded epidural supplementation was chosen. There are case reports where a similar case was done under general anaesthesia without any complication [4]. But in case of emergency caesarean section, spinal or general anaesthesia can be a reliable choice as CSE with low-dose spinal anaesthesia can take time to achieve the desired level of blockade. We planned our case in low-dose CSE anaesthesia as it was an elective case and as general anaesthesia has different implications, especially in such cases. In our case, the Ebstein anomaly was complicated with a large ASD, in which hypotension per se and the treatment with fluids would be detrimental. So we maintained systemic vascular resistance (SVR) with phenylephrine boluses to prevent fluid overload, leading to right heart failure or reversal of shunt and hypoxemia. Drugs like ephedrine should be avoided as they cause tachycardia [5].

In our case, we preferred two wide bore cannulas over central line insertion to reduce the risk of cardiac arrhythmias and infective endocarditis [5]. To avoid paradoxical embolism, air bubbles should not be allowed to enter intravenous and other invasive lines. Since oxytocin can cause hypotension in large doses, it should be administered in titrated doses via slow IV drip. Methylergometrine and prostaglandins cause an increase in pulmonary hypertension, therefore should be avoided [4].

The primary learning objective was to do such high-risk cases under neuraxial anaesthesia via CSE. It provides dense sensory–motor blockade in low doses of local anaesthetic agent and graded sensory blockade to the required level for the surgery postoperative analgesia. A multidisciplinary team approach, combined with close monitoring, can provide a safe perioperative period to pregnant women with this cardiac lesion.

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Declarations

Conflict of interest None.

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