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Anaesthetic Management of a Pregnant Patient with Repaired Ventricular Septal Defect: A Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Congenital heart disease (CHD) is the most common congenital anomaly. Pregnancy is not always well tolerated in women with congenital heart disease (CHD) such as atrio-ventricular septal defect (AVSD), predominantly due to heart failure deterioration and increasing pulmonary hypertension (PH). Management of those patients are challenging, especially during third trimester and after delivery care. Decision about time of termination, mode of delivery and anaesthetic management are also debatable.

Keywords: CHD; AVSD; PH; labour pains; maternal and fetal.

1. INTRODUCTION

Congenital heart diseases (CHD) are the most common birth defects in humans. Ventricular Septal Defect is one of the most common congenital heart diseases [1]. Interestingly, women with repaired Ventricular Septal Defect have a higher risk of premature labour than

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women with unrepaired Ventricular Septal Defect. Taken together, these data suggest that isolated Ventricular Septal Defect imposes a low risk for cardiac complications during pregnancy. In this case report we discuss about a case of a 22-year-old primigravida with repaired Ventricular Septal Defect posted for emergency caesarean section in view of fetal distress [2,3]. Case was done under spinal anaesthesia with successful maternal and fetal outcomes. The outcome for Ventricular Septal Defect is usually excellent, and almost all patients are expected to reach childbearing age. Ventricular Septal Defect is one of the most common forms of heart disease among pregnant women with 1.5-2.5 of 1000 women resulting in live birth. Isolated Ventricular Septal Defect is usually well tolerated during pregnancy but patients with large Ventricular Septal Defect complicated with other cardiac problems poses a significant risk to anaesthesia [4,5]. Many women with CHD are now reaching reproductive age; and maternal cardiac disease remains the largest contributor to maternal morbidity and mortality worldwide [6]. A critical component of the care of women of reproductive age involves knowledgeable preconception counselling along with skilful management throughout pregnancy and delivery. Such care requires both familiarity with the congenital lesions and close collaboration with high-risk obstetrical services [7].

2. CASE REPORT

A 22-year-old primigravida, with 37.5 weeks gestational age, in labour pains, with Ventricular Septal Defect closure was posted for emergency caesarean section in view of fetal distress. Initially it was supposed to be a planned elective caesarean section, which was posted for next morning. Considering the old cardiac lesion and her current pregnant status it was decided to do the case under Epidural Anaesthesia, so as to avoid sudden hemodynamic changes. However in view of fetal distress she had to be taken up at night, on emergency basis. Pre anaesthesia check up revealed that the patient had been operated for Ventricular Septal Defect closure 10 years ago. All routine investigations were within normal limits. 2D ECHO revealed Ejection Fraction of 60%, no hypokinesia, no valvular abnormalities, good biventricular function. Currently patient was not on any medications apart from folic acid, and multivitamins. On Physical examination Blood pressure was 106/78mmhg, Heart Rate – 88/min, Respiratory Rate- 26/min, SPO2- 97% on room air, mild pallor, no cyanosis. On Auscultation Heart sounds were normal, no murmur; Chest was clear with air entry bilaterally equal.

After confirming nil by mouth status which was just two hours for solid food, patient was shifted to operation theatre. ECG and pulse oximeter were attached. Infective endocarditis prophylaxis was given. Her baseline parameters were showing Heart Rate- 90/min, regular, Blood Pressure- 130/88 mmHg, SPO2 97% on room air. 18G IV cannula secured in left upper limb. Special care was taken to was avoid air bubbles in IV lines. Patient was premedicated with Injection Ondansetron 4 mg IV, Injection Pantpoprazole 40 mg IV line. Injection Metoclopramide 10mg IV was given in the ward. Preoperatively patient was given Injection Tranexa 500mg. As the patient was full stomach, it was decided to go ahead with Subarachnoid block, instead of general Anaesthesia, to outray the risk of Aspiration. Case was done under Spinal Anaesthesia with 2ml 0.5% Bupivacaine heavy Injection with 60mcgs Injection Buprenorphine. Patient was given 100% Oxygen via Hudson mask and about 15˚ of left lateral tilt was maintained to avoid any supine hypotension. Injection oxytocin 10 units given intramuscularly before giving skin incision. Intraoperatively Injection Calcium gluconate 10 ml was given for better uterine contractility. After the delivery of the baby and placenta, good uterine tone achieved. Vital parameters were stable throughout the perioperative period. Case done uneventfully. Patient was shifted to Surgical Intensive Care Unit for observation in order to avoid any unseen complications in perioperative period.

3. DISCUSSION

In Asia, congenital heart disease occurs in approximately 9.3 per 1000 live births. Maternal congenital heart disease is the leading cause of death in parturients with a history of cardiovascular disease in developed countries. The isolated Ventricular Septal Defect (VSD) is a normal occurrence. Large defects usually cause severe Left Ventricular volume overload and heart failure early in life, and they are usually corrected during childhood [8]. As a result, the majority of unrepaired defects in the adult population are minor. We have no idea what the long-term effects of Ventricular Septal Defect closure are, or how long people with repaired Ventricular Septal Defects will live. The prognosis is excellent if surgery was performed

early, before serious heart and lung problems developed. Adults with closed Ventricular Septal Defects should live a normal life expectancy. Even if your Ventricular Septal Defect has been restored, your heart is not “normal.” All born with a Ventricular Septal Defect are at risk for other heart issues for the rest of their lives. Some can happen years after the repair was made [9]. Endocarditis, or inflammation of the heart's lining and valves, is one possibility. It is important that you speak with your Atherosclerotic Coronary Heart Disease heart doctor on how to avoid endocarditis. People who have had their Ventricular Septal Defect repaired can experience a sluggish, rapid, or irregular heartbeat. This is often caused by scars left over from previous surgery in your heart. Other issues that may arise include valve issues, heart failure and stroke [10].

During labour there is strain on the heart, especially in patients suffering from heart disease or who have had any cardiac surgery in the past. Generally while managing such patients, the choice of Anaesthesia is Epidural Anaesthesia. As the small incremental doses of local anaesthetic given via Epidural catheter would not cause sudden changes in cardiovascular system of the patient keeping the haemodynamics stable. However, when encountered with a situation where both maternal and fetal distress is occurring and establishing Epidural catheter would increase the time interval between Induction and delivery of the baby; As compared to 5 mins of induction delivery time, if subarachnoid block is given. The patient was vitally stable preoperatively, intraoperatively and postoperatively. Also adequate sensory and motor block and analgesia were achieved by giving Subarachnoid block [11-12].

Despite the fact that a Ventricular Septal Defect is one of the most common types of heart disease among pregnant women, there is a scarcity of Ventricular Septal Defect -specific pregnancy data. The number of women reaching childbearing age with isolated Ventricular Septal Defect is rising. These women should receive adequate prenatal counselling about the risks of pregnancy and the likelihood of congenital heart disease recurrence in their children. It's important to remember that women who have had a Ventricular Septal Defect corrected in infancy or early childhood (larger defects) can experience other pregnancies related risks. The risk of preclampsia is more in unrepaired Ventricular Septal Defect whereas risk of preterm labour is more in repaired Ventricular Septal Defect as compared to unrepaired Ventricular Septal Defect. Generally patients with Ventricular Septal Defect, present early in life, specially patients with significant Ventricular Septal Defect get treated early in life [13-14].

4. SPECIAL CONSIDERATIONS

Risk of infective endocarditis following vaginal delivery and in repaired Ventricular Septal Defect posted for caesarean section is relatively low. The decision regarding use of antibiotic proplylaxis should depend on the cardiac status of the patient. The American College of Cardiology/American Heart Association recommendations for the routine antibiotics after skin incision are unchanged. Also the addition of Low Molecular Weight Heparin post surgery should be considered in order to avoid post-operative thromboembolism.

5. CONCLUSION

In conclusion, an overall outcome of a patient posted for caesarean section with repaired Ventricular Septal Defect is good with the availaibilty of a multidisciplinary team including Obstetricians, Cardiologists, Anaesthesiologists and Neonatologists. Patients with partially or fully corrected Congenital Heart Disease should be managed in centres experienced in care of such conditions. Mode of Anaesthesia and Surgery should depent upon patient’s condition and decision should be taken in conjuction with the concerned departments. Although recent advances have been very helpful in improved survival of congenital heart disease patients; with increased population in Child bearing pregnant patients presenting with Congenital Heart Disease.

CONSENT

As per international standard or university standard, patient’s written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

Ethical clearance Taken from institutional ethics committee.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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