

Anaesthetic Management of a Case of Pregnancy with Rheumatic Heart Disease

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ABSTRACT

We present a case report of a 28 year old pregnant female with moderate mitral stenosis who was posted for emergency caesarean section. The patient was given low dose subarachnoid block with injection bupivacaine (H) 7.5 mg and injection fentanyl 20 micrograms. Adequate intraoperative monitoring, optimum sedation, analgesia, oxygenation was done. Judicious use of intravenous fluids was considered. The patient maintained smooth intraoperative vitals. Postoperatively also the patient was monitored in the ICU and adequate analgesia was provided.

Keywords: Rheumatic Heart Disease, Anaesthetic Management, Pregnancy, Mitral stenosis of rheumatic origin

INTRODUCTION

Mitral stenosis of rheumatic origin is the most common valvular heart disease in pregnancy¹. Incidence of rheumatic mitral stenosis was 5.4 per 1000 school children in 1995² and it has been reduced to 0.5-0.6 per 1000^{3,4}. The normal area of the mitral valve is 4-6 cm². When the area reduces to 2 cm², the patient becomes symptomatic. The valvular heart disease often manifests for the first time during pregnancy because of the physiological cardiovascular changes occurring at that time. The mortality and morbidity is considerably reduced by better obstetric and anaesthetic care.

CASE REPORT

28 year old pregnant female, primigravida with gestation 38 weeks 4 days presented in the casualty with difficulty in breathing. On history, she was a known case of rheumatic heart disease for last 6 years. She had a mitral valvotomy done 6 years ago. Presently she had a complaint of difficulty in breathing for last one month which was progressively increasing. The vitals of the patient were as following:- heart rate-88/minute regular, blood pressure-118/78 mmHg, respiratory rate-18/minute, SPO2-95% on room air. ECG revealed normal sinus rhythm. On cardiac consultation maternal ECHO was done which showed following findings:- RHD Post PTMC, Moderate MS (1.6cm²), Trivial MR, Trivial TR, No PAH, Normal LV function, LVEF 66%. The patient was posted for emergency caesarean section in view of non progress of labour.

The patient was taken in the operation theatre. The standard monitors were attached and baseline vitals were recorded:- heart rate-82/minute, blood pressure-120/76mmHg, respiratory rate-18/minute, SPO2-98% on room air. Two peripheral IV lines with 18 gauge cannula were secured. Right side radial artery was cannulated for invasive arterial blood pressure monitoring. The patient was then placed in the left lateral position. Taking all aseptic precautions, 26 gauge Quincke's spinal needle was introduced into the L3-L4 space. Injection bupivacaine 0.5% (H) 7.5

mg and injection fentanyl 20 micrograms was injected into the subarachnoid space. The patient was then placed supine. Oxygen was given with venturi mask @ 5 litre/minute. The highest sensory level was achieved upto T6 level. The surgery was then started.

Just after the birth of the baby, injection oxytocin 10 units was given in IV infusion with normal saline. The patient was then sedated with injection fentanyl 25 microgram IV and injection midazolam 1 mg IV stat. The patient maintained stable intraoperative vitals throughout. The surgery got completed in 40 minutes. Our patient received 700 ml of crystalloid (normal saline) intraoperatively. The blood loss and urine output during the surgery was 500 ml and 300 ml respectively. The surgery went smooth and uneventful. After the completion of the surgery, the patient was shifted to the ICU for post operative care. For post operative analgesia, the patient was given injection morphine 20 mg in 50 ml NaCl 0.9% via infusion pump @ 2ml/hr. Oxygen was continued with venturi mask @ 5 litre/minute. The patient was then shifted to the general ward on the 3rd day and was later discharged after one week.

DISCUSSION

Rheumatic heart disease involving mitral valve is the most common valvular heart disease in women of reproductive age group. There are various physiological changes that occur in pregnancy like increase in blood volume and increase in cardiac output⁵. The increased cardiac output is not well tolerated in patients who already have a stenosed mitral valve and thus can be detrimental to the patient.

In symptomatic patients with moderate to severe mitral stenosis and pulmonary hypertension, percutaneous mitral balloon valvuloplasty should be considered before pregnancy to improve the pregnancy outcome⁶. In our case report, the patient had undergone mitral valvotomy 6 years back and now the patient had presented with moderate MS (valve area-

1.6 cm²) for emergency caesarean section. Anaesthetic goals for pregnant females with MS include control of heart rate and left atrial pressures⁷. Invasive monitoring helps in assessment of physiological impairment caused by the MS⁸. In our case, we did invasive arterial blood pressure monitoring via radial artery cannulation to access adequate intravascular fluid volume. Oxygen was applied via venturi mask @ 5 litre/minute to maintain adequate oxygenation as hypoxemia is detrimental. It can lead to pulmonary hypertension and right ventricular heart failure. In our case report we have used neuraxial anaesthesia. Measures have been taken to avoid hypotension, tachycardia and maintain optimum preload. We have given sub arachnoid block at L3-L4 space with a low dose of bupivacaine 0.5% (H) 7.5 mg and fentanyl 20 micrograms. The use of opioid has been considered to maintain hemodynamic stability.

Phenylephrine is considered as vasopressor of choice in case of hemodynamic instability as it has very little effect on uteroplacental perfusion. Epinephrine should be avoided as it causes tachycardia. However in our case vasopressor was not required. Adequate sedation was done in the patient with injection fentanyl and injection midazolam. This helped to prevent pain and anxiety induced tachycardia. Judicious intraoperative fluids (700 ml) have been used to avoid occurrence of congestive heart failure. Postoperative analgesia has also been provided with infusion of morphine. This prevented post operative pain that can cause increased heart rate and pulmonary vascular resistance. The post operative period in such cases is very important as there is a risk of pulmonary oedema and right heart failure. Thus adequate cardiovascular monitoring is required at that time. Our patient was kept in ICU for post operative monitoring and care and was later shifted to the ward on the 3rd day.

CONCLUSION

Low dose sub arachnoid block is a considerable option in the anaesthetic management of caesarean section with moderate mitral stenosis. Adequate intravascular monitoring, adequate sedation, analgesia and oxygenation should be maintained. Maintenance of optimum haemodynamic status in the postoperative period is equally important.

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