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Uncorrected Tetralogy of Fallot in a Patient for Caessarian Section- the Wounds That Became Scars- A Case Report

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ABSTRACT

Uncorrected cyanotic heart disease has a higher risk in pregnant women. A 26 year old, gravida 3, nulliparous, at 35 weeks gestation was brought in the operation theatre with a bad obstretic history. The physiological changes of pregnancy worson TOF symptoms. These include decrease in SVR, increased CO (hence increased rt- left shunt). The main factors to be considered before any anaesthesia in these patients are maintainence of SVR, prevention of increase in PVR and avoiding excessive myocardial contractility. Keeping these in mind we opted for GA. Most important was maintainence of adequate analgesia. Further options are required to decide upon the optimal and best anaesthetic technique which is possible in these cases that fulfils all requirements.

Keywords: tetralogy of fallot, cyanotic, general anaesthesia

INTRODUCTION

Cyanotic heart disease in pregnancy, although very rare prove fatal both to the mother and foetus. TOF alone accounts for 5-6% of cases, accounting for the most common cyanotic heart disease.

Uncorrected cyanotic heart disease has a higher risk in pregnant women. It increases the chances of caessarian intervention upto 16%. Other adverse effects being heart failure, arrhythmias and thromboembolism (more common in pregnant women with CHD).[1,2]

In view of the greater adverse effects in pregnant women with TOF, we discuss a case of a woman with an uncorrected TOF presented near term with labour pains.

CASE REPORT

A 26 year old, gravida 3, nulliparous, at 35 weeks gestation was brought in the operation theatre with a bad obstretic history. She had a history of breathlessness on routine normal work. Although she was a known case of heart disease since childhood but she had neither undergone a surgery nor taken any medication. There was a history of two previous abortions. O/E- peripheral cyanosis was present. Pedal edema along with clubbing was also positive.vitals were stable (BP- 140/90, pulse 88-94%). Her CVS examination was remarkable with a harsh pansystolic murmur (grade- III) in aortic and pulmonary areas, radiating all over the precordium. Hb -14.5gm%, SPO2 room air 76%. ECHO showed- a large subaortic VSD. The shunt present was predominantly right- left. Significant right ventricular hypertrophy present. Overriding of aorta was 40-50%. The ventricular function was normal. Pulmonary atresia which was infundibular and vulvular type was moderate to severe. Pulmonary gradient was 72%. ECG examination showed sinus tachycardia with prominent P waves. ABG was not immediately possible, but sampling was done before induction. Report showed pH-7.28, pO2- 56.2 mmhg, Pco2- 29.4 mmhg, spO2- 84.3%, HCO3- 19.2 mm/L, base deficit 5.9 mm/l. X ray chest clearly showed

upturned cardiac apex (RVH) and concave pulmonary arterial segment- boot shaped heart.

After explaining and obtaining a high risk consent, infective endocarditis prophylaxis administered and patient taken to OT. General anaesthesia was planned in our case. I/V rantac (50 mg), and metoclopramide (10mg) were given. All routine monitors (NIBP, ECG, SPO2) attached, radial artery cannulation done (allens test confirmed).

The patient was placed in a 15° left lateral tilt and 30° head up was provided to make intubation easier. Spo2 was 76% in supine position and after PPV increased to 95%. GA induced with I/V glycol (0.2mg), I/V propofol (1mg/kg) and ketamine 50mg. To facilitate relaxation for tracheal intubation scoline (100 mg) given. Bilateral air entry checked and tube fixed. Maintainence of anaesthesia done with 1-2% sevoflurane and 50-60% oxygen. N2O was started after delivery of the baby. Spo2 was never below 92%. Fentanyl 70 mg given after birth of the baby. I/V oxytocin added in the drip (10 units infused over one hour). The vitals remained stable throughout the procedure. Muscle relaxation was maintained with inj. Atracurium. I/V RL infused 1000 ml over one hour. Blood loss was not significant. Urine output was 100 ml in one hour. Analgesia taken care off with inj. Fentanyl, inj. PCM (Igm), inj. Ketorolac (30mg). Extubation done taking care of increase in BP and pulse and patient observed in recovery room for one hour before shifting to ICU.

DISCUSSION

TOF complications during pregnancy include increased risk of thromboembolic events, higher chances of caessarian delivery (1.6 times), and chances of adverse cardiac events were (27 times, especially heart failure) for women with CHDs compared with women without. The risks of arrhythmias during childbirth were also higher. The main factors that play a role in governing our mode of action is resistance of blood flow- systemic aswell as pulmonary. If pulmonary vascular resistance (PVR) is high and systemic vascular resistance (SVR) is low (normal in pregnancy) predominant right to left shunt occurs. Hence the worsening of symptoms of TOF in pregnancy. Chances of uncorrected TOF patients to survive to 30,s and 40,s are very rare. But with improvement in medical science more cases of pregnancy with TOF are coming, hence the need for precautions during pregnancy, at labour and postpartum. The physiological changes of pregnancy worson TOF symptoms. These include decrease in SVR, increased CO (hence increased rt- left shunt). As a result of these oxygenation decreases, erythropoiesis occur that deteriorates the outcome of pregnancy. Finally leading to cardiac failure, syncope, right ventricular strain, ECG changes and saturation below 80%.[1]

The main factors to be considered before any anaesthesia in these patients are maintainence of SVR, prevention of increase in PVR and avoiding excessive myocardial contractility. Keeping these in mind we opted for GA (RA can cause decrease in SVR). We chose combination of ketamine and propofol for induction. As any increase in myocardial contractility caused by katamine is offset by propofol any decrease in SVR by propofol is offset by ketamine. I/V RL preloading with 500 ml done to prevent hypovolemia, hypotension that potentiates increase in right to left shunt. Preoxygenation with 100 % oxygen done for increasing SPO2 >95% for intubation apnea. N2O usage has its own advantages and disadvantages. Its adverse effects on PVR are countered by favourable effects on SVR. Oxytocin infusion given very slowly to avert its effect on PVR.[2,3]

Controlled mechanical ventilation (volume control ventilation) goes a long way in these patients to avert the effects that tend to increase PVR (hypoxia acidosis and hypercarbia). In such types of patients paco2 is more reliable than etco2. Sevoflurane has a favourable effect. Phenylephrine was used whenever hypotension develops (only one episode of BP- 80/54). In case of emergency, inj. Propanolol was kept ready to deal with cyanotic episodes. Most important was maintainence of adequate analgesia. We used I/V PCM, I /V fentanyl, I /V ketorolac. Best Would have been multimodal analgesia- combination of epidural fentanyl + general anaesthesia or intrathecal fentanyl + general anaesthesia.[4]

Conclusion

Pregnancy with TOF is a rare medical condition and a challenging case for anaesthesiologist. Further options are required to decide upon the optimal and best anaesthetic technique which is possible in these cases that fulfils all requirements.

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A written informed consent was taken from the patient for writing this case report.

Source of conflict- none

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