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Case Report

Anaesthetic management of a pregnant woman with uncorrected tetralogy of fallot for caesarean section

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ABSTRACT

Tetralogy of fallot (TOF) is the most commonly encountered congenital cyanotic heart disease in pregnant females and maternal mortality approaches 10% in unrepaired TOF. General anesthesia is classically considered the technique of choice for incidental surgery in TOF and neuraxial anesthesia is considered relatively contraindicated. However, general anesthesia for caesarean section can increase maternal morbidity. Author report a case of caesarean section performed under epidural anesthesia in patient with uncorrected TOF.

Keywords: Anaesthesia, Congenital

INTRODUCTION

Tetralogy of fallot (TOF) is the most common congenital cyanotic heart disease in pregnancy and unrepaired TOF is associated with significant fetal and maternal mortality.[1] Neuraxial anesthesia is considered unsafe in TOF patients,[2] while general anaesthesia also increases both maternal and fetal morbidity.[3] We report the anaesthetic management of a pregnant patient with uncorrected TOF who presented for caesarean section which was done under epidural anaesthesia.

CASE REPORT

A 19-year-old primigravida at 34 weeks of pregnancy presented to emergency room with chief complaint of worsening difficulty in breathing [New York Heart Association (NYHA III)] since 2 days. She dated back the events of exertional dyspnea since third month of pregnancy, along with bluish discoloration of fingers and toes which used to get relieved on taking rest. There was no orthopnea, nocturnal paroxysmal dyspnea, cough, wheezing sound during breathing. Patient was then admitted in the maternity ward and planned for emergency caesarean section because of peterm labour and intrauterine growth retardation.

Her pulse was 80/min, blood pressure (BP) 126/72 mmHg, airway-Mallampatti class (MMP)-II, thyromental distance 6.5 cm. Heamoglobin was 18 gm%, Hematocrit 53%;on room air arterial blood gas (ABG) showed pH 7.38, pO2 46 mmHg, pCO2 40 mmHg, SaO2 84% and other hematological and biochemical investigations and electrocardiography (ECG) were normal. Oxygen saturation (SpO2) on room air was 85% and 88% on oxygen. ECHO revealed small VSD (4 mm) with severe Pulmonary Stenosis with TR, with no features of pulmonary hypertension.

Patient was shifted to operation theatre and drip started on non-dependent arm. Epidural anesthesia for ceasarean section was planned. Epidural was given at L_{2-3} level

with Injection Bupivacaine 0.25% of 5 ml+Injection Fentanyl 2 µg/ml + Injection Lignocaine 1% 5 ml after assessing patient for effect. When the level reached T4 surgery was allowed. Injection oxytocin 10 units intramuscular was given after delivery of baby. Patient's hemodynamics were well maintained during the intra-operative period. Patient was shifted to post-operative ward after cesarean. Epidural Catheter was kept in situ for 48 hours with continuous infusion of injection bupivacaine 0.125 % and injection fentanyl 2µg/ml given at 5 ml/hour. Epidural catheter was removed on 3rd post-operative day. Both maternal and fetal outcome was good.

DISCUSSION

Uncorrected TOF is associated with poor feto-maternal outcome. Severe maternal hypoxemia and polycythemia lead to miscarriage, fetal growth retardation (36%), fetal death (14%), and maternal death (10%). At hematocrit >65%, pregnancy wastage is 100%.4 Anaesthetic goals in TOF are to maintain venous return, systemic vascular resistance (SVR), and to prevent rise in pulmonary vascular resistance(PVR) and heart rate so that right-to-left shunt does not increase. General anaesthesia is considered the technique-of-choice though it can cause rise in PVR due to hypoxia, hypercarbia, acidosis, hypothermia, and positive pressure ventilation; a decrease in SVR due to various anesthetic drugs and thereby increases the risk of cyanotic spells.[5] Spinal anesthesia is considered contraindicated as it causes sudden fall in SVR,[6] but it allows spontaneous respiration with little disruption of ventilation perfusion relationship and no rise in PVR. Low dose graded epidural anaesthesia thus can provide a safe alternative to both with minimal and gradual fall in SVR which can be counter-balanced by adequate intravenous fluids and vasopressors. Intrathecal bupivacaine 5-7 mg as part of graded epidural provide effective anesthesia for caesarean section and avoid maternal hypotension.[7]

Our patient received 500 mL of crystalloid at the onset of neuraxial blockade. Phenylephrine is the vasopressor of choice as it is pure α1 agonist and maintains BP by increasing SVR without causing tachycardia. Moreover, phenylephrine-induced rise in BP is associated with increased pulmonary blood flow and improved oxygenation in patients with TOF.[8] Oxytocin bolus should be given slowly or intramuscular as it causes hypotension and tachycardia[9].

CONCLUSION

Graded epidural anaesthesia can be a safe and efficacious alternate anaesthetic technique for caesarean section in patients with uncorrected TOF which can thereby avoid side effects associated with both general anaesthesia as well as subarachnoid block.

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