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RESEARCH ARTICLE

SPINAL ANESTHESIA IN PARTURIENT WITH SEVERE MITRAL STENOSIS.

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Abstract

Anesthesia for pregnant women with cardiac disease can be very challenging due to the pregnancy induced physiological changes. Considering the variable cardiovascular changes in parturient1 and their functional status, anesthesia management should be based on clinical experience, pathophysiological concepts and the risk benefit concerns for the patient.

Introduction:-

Mitral stenosis of rheumatic origin is the most common valve lesion in women of reproductive age in developing countries2. We represent our patient with active bronchial asthma having severe mitral stenosis being taken up for emergency caesarean section.

Case report:A 22 year old primigravid parturient with height of 155 cm and weight 80 kg presented to gynecological casualty with labor pains for urgent cesarean section in view of fetal bradycardia. She was a diagnosed case of bronchial asthma and severe mitral stenosis with mild pulmonary artery hypertension which was rheumatic in origin. At 32 weeks of gestation, she experienced breathlessness and palpitations for which she consulted in a cardiac center and was started on oral digoxin, diuretics and erythromycin which was switched to oral beta blockers and diuretics after a month on which her symptoms were controlled. She remained symptom free after medical treatment but did not had regular followup but was compliant with the medications throughout. Now she had presented in emergency with echocardiography at 33 weeks with mitral valve area of 0.9 cm2 and ejection fraction of 56 % with clear left atrium. She was afebrile but had cough with wheeze audible all over the chest. As per history, she was non-compliant with her metered dose inhaler (MDI) containing salbutamol but had never developed asthmatic attack or any features of cardiac failure throughout the gestation. Considering her clinical condition, epidural anesthesia with monitoring was planned. Patient was wheeled into operation theatre in left lateral position with oxygen attached by facemask. An 18G IV access was secured in left hand after attaching standard ASA monitors. Baseline vitals were recorded and were in normal range. No preloading was done and patient was catheterized to monitor urine output. Due to non-availability of epidural catheter in emergency setup at our institution and patient having a reactive airway, with fetal bradycardia, we decided to give low dose spinal anesthesia to the patient to limit the hemodynamic effects caused due to vasodilation. After written informed high risk consent, 0.8 ml of 0.5% heavy bupivacaine with 20 mcg of fentanyl (total volume = 1.2ml) was given after tapping L3-4 inter-space with 25G Quinkes Babcock spinal needle, after conforming clear and free flow of cerebrospinal fluid. T4 sensory level was achieved and the surgery was started. After delivery of the anterior shoulder of the baby, 20 units of oxytoxinwas started for uterine contraction via intravenous drip. Hemodynamics remained stable throughout the intraoperative period and only 500 ml of isotonic crystalloid was given intravenously. There were no events of bradycardia, hypotension or features of pulmonary edema and patient was transferred to HDU for intensive hemodynamic monitoring and care.

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Discussion:-

Stenoticvalvular disease is poorly tolerated with advancing pregnancy. The physiological changes in cardiovascular system with pregnancy can be detrimental to those diagnosed with mitral stenosis. When the valve area < 2cm2, pressure gradient develops, the magnitude of which, depends on the severity of stenosis and amount of blood flow across the valve. Thus, as the Cardiac output increases during pregnancy, the gradient increases. The increase in left atrial pressure causes congestion in the pulmonary area and increases the risk of pulmonary edema. This progression results in pulmonary arterial hypertension that may lead to increases in right ventricular pressures and to right ventricular failure.3 For symptomatic patients with moderate to severe mitral stenosis and severe pulmonary hypertension, percutaneous mitral balloon valvuloplasty or mitral valve surgery should be considered before pregnancy to reduce the need for gestational treatment and to improve pregnancy out-comes.4 Beta blockers and diuretics remain the main stay of medical management for symptomatic patients in pregnancy.5

There is no current consensus on the choice of anesthesia management of the pregnant women with MS. The anesthesia goals for such patients should be, maintenance of an acceptable low- normal heart rate, avoidance of aortocaval compression, maintenance of adequate venous return and SVR, and prevention of pain, hypoxemia, hypercarbia and acidosis, which may increase pulmonary vascular resistance.

Previous studies have reveled high rate of maternal mortality in patients undergoing caesarean section under general anesthesia due to volatile inhalational agents which decreases cardiac contractility, positive pressure ventilation may increase pulmonary resistance and laryngoscopy and intubation may increase pulmonary arterial pressure. Our patient with a valve area of 0.9 cm2, was controlled on beta blockers and diuretics and was symptom-free. Co-existence of asthma, complicates the management of caesarean section in patients with mitral stenosis. The bronchodilators used can cause tachycardia decreasing time for left ventricular filling. In the presence of reactive airways, general anesthesia carries significant morbidity. A well-controlled, individualized epidural neuraxial block using incremental dosing of local anesthetic with invasive monitoring of arterial and cardiac filling pressures may be beneficial even for the most severe cardiac disease.6 But in our scenario considering the best for the mother and fetal outcome, low dose spinal combined with opioid was decided upon. Fixed output disease are now considered relative contraindication for administrating subarachnoid block.7 Our patient had never gone into cardiac failure and belonged to NYHA class 2-3 with mild pulmonary hypertension. By reducing the dose of spinal drug, we could limit the hemodynamic variability and take benefit of cardio-stabilizing opioid through intrathecal route.

Conclusion:-

Management of parturient with cardiac disease requires individualized approach and combined team efforts of obstetric care, cardiologist and anesthetist. We recommend that the anesthetic management of such patients must be decided according to the severity of disease, cardiovascular status, knowledge and experience of the anesthetist, for a successful outcome.

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