Abstract 

Successful Obstetric Anesthetic Management of a Parturient with Congenital Bicuspid Aortic Valve

Abstract Type: Case Report/Case Series
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Case Presentation:
A 22-year-old female with a congenital bicuspid aortic valve presented in active labor at 37 weeks. Shortly after admission, signs of fetal distress necessitated an urgent cesarean section.

During preoperative assessment, the patient reported good exercise tolerance and remained asymptomatic through the pregnancy. Her echocardiogram revealed a mean aortic gradient of 35mmHg, left ventricular hypertrophy and preserved ejection fraction.

The decision was made to administer a single bolus spinal anesthetic after adequate fluid preload. Blood pressure was closely monitored and maintained by boluses of vasopressors. The patient tolerated the procedure well and her son was born with APGAR scores 8 and 9.

Discussion:
Congenital bicuspid aortic valve is currently the most common cause of aortic stenosis in the United States. About 1-2% of the population have bicuspid aortic valves but moderate to severe stenosis often takes 3-4 decades to develop and thus is rarely encountered in the obstetric population. Females with severe aortic stenosis should be counseled to avoid pregnancy until their valve is fixed due to increased morbidity and mortality.

The physiologic changes of pregnancy include expanded plasma volume and decreased systemic vascular resistance. This normally results in increased cardiac output, but the stenotic patient lacks the ability increase her stroke volume. The ventricle is faced with elevated filling volumes and decreased coronary perfusion pressures. Further, the stress of labor itself places additional burden on the heart.

When confronted with fetal distress and an urgent cesarean section, we were faced with a difficult choice between a general or spinal anesthetic. While spinal anesthesia is the preferred technique for cesarean section, the resulting hypotension can be detrimental with aortic stenosis. On the other hand, rapid sequence general anesthesia can result in swings in the blood pressure and the patient remains at increased risk for aspiration.

Since our patient had a mild aortic stenosis and a preserved cardiac function, spinal anesthesia was utilized, avoiding general anesthesia difficult airway and aspiration risks. The anticipated decrease in blood pressure was aggressively treated by vasopressors and by maintaining euvoolemia.

If the patient was seen earlier, an arterial line followed by a slowly titrated continuous spinal or epidural technique could have been used for labor analgesia. Spinal opiates provide pain relief with minimal cardiovascular effects and are especially useful during the first stage of labor. As labor progresses, local anesthetics can be cautiously added for Stage II or to provide surgical anesthesia for cesarean section.

The unpredictability of the obstetric patient requires an understanding of the physiologic changes of pregnancy and the pathophysiology of coexisting conditions in order to react and adapt assuring safe care when the unplanned occurs.