

Management of a Parturient with Aortic Coarctation Undergoing Vaginal Delivery

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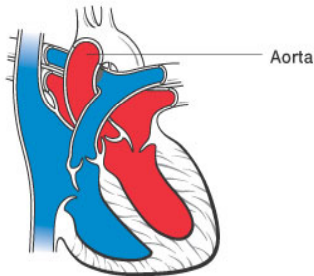


Introduction

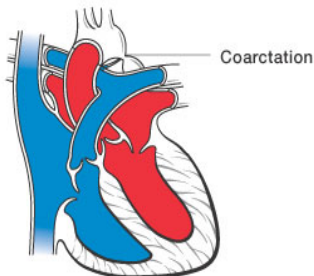
Parturients with congenital heart disease account for roughly 80% of the 0.2-4% of pregnancies complicated by cardiac disease. Therefore, it is important that anesthesia providers understand their management. This case report illustrates the successful anesthetic management of a parturient with aortic coarctation undergoing vaginal delivery.

Coarctation of the Aorta

Normal



Defect



Case Presentation

A 33-year-old G3P2 patient at 39 1/7 weeks gestation presented to labor and delivery unit for induction of labor. Her medical history was remarkable for hypertension and aortic coarctation diagnosed just four months prior. She reported an exertional tolerance consistent with >4 METS and had a history of two uneventful vaginal deliveries without an epidural.

On examination, her weight and height were 73.5 kg and 62 inches respectively. Baseline vital signs were as follows: blood pressure in left arm 153/66, blood pressure in right arm 160/68, pulse 71, respiratory rate 18, oxygen saturation 100% on room air. On auscultation, no murmur was heard. Recent echocardiography demonstrated aortic coarctation with a peak gradient of 32 mmHg and an ejection fraction of 55-59%. Angiography of the chest illustrated focal narrowing of the superior descending thoracic aorta. No regions of aneurysmal dilatation were noted. All laboratory data were within normal limits.

After obtaining patient consent and administering an appropriate preload, the patient's \sim L3L4 epidural space was uneventfully engaged via loss of resistance technique using saline at a depth of 5cm. An epidural catheter was easily threaded 4cm and secured. A negative test dose was confirmed, and the patient's epidural was incrementally dosed with a solution containing 0.125% bupivacaine with 2 mcg/ml of fentanyl. A T8-level bilaterally was achieved and a maintenance infusion was initiated at 10 ml/hr. The patient remained comfortable and hemodynamically stable throughout the labor course and underwent successful vacuum-assisted delivery of a healthy 3500g female.

Discussion

Coarctation of the aorta accounts for 5-8% of congenital heart lesions. It refers to a discrete narrowing in part of the aorta, usually in the area of the ligamentum arteriosum. Diagnosis is made during infancy or childhood in the majority (80%) of patients. Survival into adulthood is common. Those patients without severe obstruction and with the development of abundant collaterals can go undetected until late childhood or even adulthood at which time a murmur and/or a difference in upper and lower body blood pressure may be observed. This blood pressure differential is caused by constriction of the aorta and slows blood flow to the lower body tissues.

Pregnancy may be well tolerated in patients with both surgically corrected and uncorrected (hemodynamically mild or unrecognized) lesions. Pregnant women with aortic coarctation may present several ways. In this case, coarctation was initially diagnosed when elevated blood pressures during a prenatal visit were further investigated. Coarctation during pregnancy may also be detected in a patient with a known surgical repair or when aortic dissection occurs.

Anesthetic management of aortic coarctation patients focuses upon minimizing any hemodynamic disturbances. This is important because possible changes in the aortic wall during the gravid state, coarctation-associated aortopathy, and long-standing hypertension combine to increase the risk of aortic rupture or dissection. Both general and regional anesthetic techniques have been demonstrated safely.

Conclusion

Most women with aortic coarctation reach childbearing age. In this population, major cardiovascular complications are a source of concern although such events occur infrequently. Parturients with a history of aortic coarctation should have formal hemodynamic assessment of the coarctation site and undergo close monitoring of blood pressure during pregnancy. Epidural or general anesthesia may be executed safely. Goals of management include a thorough understanding of the patient's disease process and avoidance of hemodynamic changes. Regardless of anesthetic technique, optimal management requires extensive preparation and effective communication between caregivers and the patient.

References

1. Beauchesne et al. Coarctation of the aorta: outcome of pregnancy. *J Am Coll Card*, 2001; 38: 1728-33.
2. Lip GY et al. Aortic coarctation diagnosed after hypertension in pregnancy. *Am J Obstet Gynecol*. 1998;179:814-815.
3. Anesthetic management of aortic coarctation in pregnancy. *Int J of Ob Anes*. 13(4): 266-70.
4. Weitzel N and Gravlee G. Cardiac disease in the obstetric patient. In: Bucklin, Gambling, & Wlody (Eds.) *A Practical Approach to Obstetric Anesthesia*. Philadelphia: Lippincott Williams & Wilkins, 2009.
5. Mangano DT. Anesthesia for the pregnant cardiac patient. In: Shnider SM, Levinson G (Eds.) *Anesthesia for Obstetrics*. Baltimore: Williams & Wilkins, 1987: 345-82.