

Anaesthesia for Vertebral Body Tumor in the Pregnant Patient

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Abstract

Introduction: Vertebral body tumors although are rare in pregnancy can cause significant problems like neurological symptoms in the mother and if progressed may cause severe side effects in the fetus.

Case presentation: We present here successful anesthetic management of a 20-year-old pregnant lady with 26 weeks of gestation with a D8 vertebral body tumor posted for excision and spinal fusion in the prone position.

Conclusion: Surgical intervention in pregnant ladies with spinal cord tumors depends on the neurological manifestations and early intervention may be required to prevent harmful effects to both the mother and fetus, hence a multidisciplinary approach between the surgeon, anesthetist and obstetrician is essential in such cases for a safe outcome.

Keywords: Pregnancy; Vertebral body tumors.

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Introduction

Any disease during pregnancy can cause an alteration in the normal functions of other systems. It is imperative to treat the disease based on its emergency. Hence it's essential to report rare diseases and to discuss their pathology, treatment options, and anesthetic management if surgery is deemed necessary.¹ An aneurysmal bone cyst (ABC) is a benign, tumor that is vascular, aggressive, and an osteolytic lesion.² The lesions mostly occur in the first two decades of life, usually slightly more

in women than men.^{3,4} After osteoid osteoma and osteoblastoma, ABC is the third most common benign bone tumor. Primary ABCs represent 1.4 % of primary bone tumors and the vertebral column; particularly the lumbar area and posterior elements are involved in 3–30 % of cases.^{5,6} Vertebral body tumors are very less in pregnancy but can cause significant problems like neurological symptoms in the mother and may cause severe effects in the fetus, especially progressive neurological deficits, which require immediate surgical correction.⁷ We discuss here the perioperative management of a 20-year-

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old pregnant lady with 26 weeks of gestation with a D8 vertebral body tumor (ABC).

Case Report

A 20-year-old primiparous pregnant woman at 26 weeks of gestation was admitted with paraparesis to the neurosurgical division of R L Jalappa Hospital and Research Center. Her history revealed she had progressive bilateral lower limb weakness for one month associated with decreased power of both limbs. MRI study showed expansile lesions involving the left body, transverse process, and posterior elements of D8 vertebra compressing the spinal cord and left neural elements at that level. Due to increased maternal risk neurosurgical intervention was not delayed.

Pre-operative examination revealed a 55 kg female with a heart rate of 116 bpm, BP of 100/60 mmHg, and respiratory rate of 20/min. Her cardiovascular and respiratory parameters were normal. Abdominal examination showed a uterus size analogous to the period of gestation. Airway examination revealed a Mallampatti Score of I, with intact dentition, good mouth opening, and a full range of neck movements. The patient was given 10 mg intravenous (IV) metoclopramide and 50 mg of ranitidine 30 minutes before induction. Monitoring consisted of continuous ECG, invasive arterial blood pressure, pulse oximetry, capnography. After Preoxygenation with 100% O₂ for three minutes, rapid sequence induction was done with 250 mg of thiopentone and 100 mcg of fentanyl. Intubation was facilitated with an injection of succinylcholine 100mg. Anesthesia was maintained with Isoflurane (1%), oxygen, air, and an intermittent boluses of Vecuronium. An arterial line was established and the patient was prone. All pressure points were padded, and the abdomen was made to hang freely. D8 total laminectomy, tumor excision, and posterior instrumentation were performed for about 4 hours. The intraoperative systolic blood pressure and end-tidal carbon dioxide were maintained at ≥ 100 mmHg and 35-40 mmHg, respectively. Tocolytics were given intraoperatively to prevent preterm labor. Vital parameters were stable. We gave 1500 ml of crystalloids with blood loss of about 350 ml and urine output was 200 ml. After surgery, the patient was supined and awake extubation was done with no complications and transferred to the intensive care unit. The patient had a full neurological recovery by the first postoperative day and the fetus was viable.

Discussion

Vertebral tumor complicating pregnancies are rare and surgery and anesthesia at pregnancy is risky for the mother and pose a significant threat to the fetus also. Knowledge is less regarding the anesthetic management of neurosurgery in parous women. Proper preparation and thorough evaluation must be done based on surgical and anesthetic needs. Several factors must be taken into account for surgery during pregnancy this includes the position of the patient, plan of anesthesia, fetal heart rate monitoring, plans for urgent delivery, aspiration prophylaxis, and tocolysis to prevent preterm labor.⁷ Care should be taken to avoid hypoxemia, hypotension, acidosis, and hyperventilation.⁸ In this patient, an arterial line was secured to respond immediately to hemodynamic changes. Hypotension reduces uterine blood flow and can cause fetal hypoxia. Urine output should be checked every hour and Isotonic and glucose-free fluids must be given to reduce the risk of cerebral edema and hyperglycemia, crystalloids were given. Spinal surgery in the prone position in pregnant women may improve placental perfusion but monitoring the fetus is difficult and there may be increased epidural venous bleeding. Prone is relatively safe in the first and early second trimester, but a left lateral position is better for the latter part of the second trimester and third trimester.⁹ Care must be taken for proper positioning at the time of surgery as excessive pressures can lead to preterm delivery.¹⁰ The main point is to make sure that the abdomen is free, irrespective of the position on the operating table.¹¹

Parous women requiring non-obstetric surgery pose a unique challenge where the health of the mother is paramount but equal importance must be given for fetal well-being. A team involving surgeons, anesthesiologists, obstetricians, and intensivists must be involved in the decision regarding surgery. In the first and second trimesters, if the fetus is nonviable, early neurosurgical intervention is better as it improves the outcome and during the later trimesters, priority must be given to cesarean section.¹²

Conclusion

Neurosurgery in pregnant women is very rare. Caring for them is challenging and complicated. A multidisciplinary approach must be followed during that time. The urgent nature of these situations requires respective departments to be accustomed

to managing pregnant patients. Guidelines should be developed for such emergencies with established lines of communication and referrals between specialties.

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