Case Report

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Anaesthesia for spinal tumor in the pregnant patient: a case report

Abstract

The spinal cord tumor being rare in pregnancy can cause serious problems continuing pregnancy. Extensive neurological involvement which is rapidly progressive due to compression should be considered for immediate decompression. We present a case of a patient in the 17th weeks of pregnancy who had paraparesis due to thoracic intradural extramedullary meningoma. Surgical intervention was deemed necessary and was performed in the prone position. The early operative treatment and appropriate anaesthetic procedure resulted in good clinical outcome with complete neurological recovery.

Keywords: pregnancy, spinal tumor, prone position

Volume 8 Issue 6 - 2017

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Received: February 28, 2017 | **Published:** October 12, 2017

Introduction

The presence of disease during pregnancy leads to alteration in the normal function of other system. It is important to treat the disease depending upon the severity and type of urgency. The management of several diseases in pregnancy has been reported earlier but it is necessary to report a rare pathology, treatment option and its anaesthetic management.[1] Spinal tumors although being rare in pregnancy can cause serious problems in terms of continuing pregnancy. Increased tumor growth or edema, increased vascularity, or pregnancy-related immunotolerance under hormonal influence constitute or exacerbate the symptoms. Especially, progressive neurologic deficits necessitate urgent spinal surgery in the pregnant patients.[2] The aim of this case report is to present the anaesthetic approach in the surgery of a pregnant woman with a thoracic intradural extramedullary meningoma.

Case report

A 30 year-old primiparous pregnant woman at 17 weeks gestation was admitted with paraparesis to spine division of orthopedic department at Grande International Hospital. Her history revealed that she had difficulty in walking for last two and half months. The weakness was progressive over the time period. There was ataxic gait, decreased power of bilateral lower limbs, increased jerks of ankle and knee joints. MRI study showed intradural extramedullary hypointense lesion at D7 level compressing the spinal cord (Figure 1). Due to the increased risk of morbidity, neurosurgical intervention was not delayed.

Pre-operative examination revealed a 50kg female with a heart rate of 86 bpm, BP of 110/70mmHg and respiratory rate of 18/min. Her cardiovascular and respiratory systems were within normal limits. Abdominal examination revealed a uterus size corresponding to her period of gestation. Airway assessment revealed a Mallampatti Score of I, with intact dentition, adequate mouth opening and a full range of neck movements. The patient was given 10mg intravenous (IV) metoclopramide and 50mg of ranitidine thirty minutes prior to induction. Monitoring consisted of continuous ECG, invasive arterial blood pressure, pulse oximetry, capnography and analysis of arterial blood gases. For the suppression of uterine hypermotility, intravenous infusion of isoxsuprine was initiated before the surgery and it was continued in postoperative period for 24 hours.

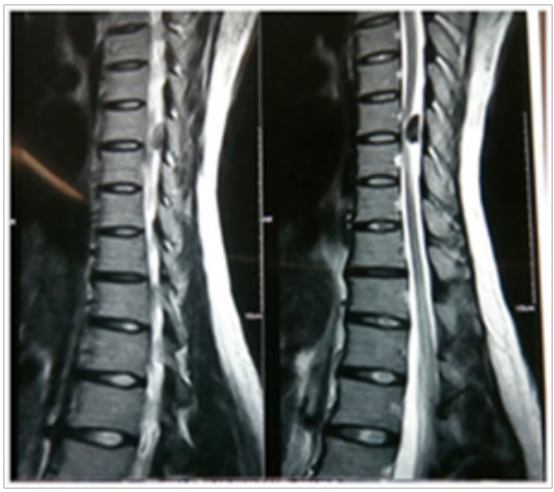

Figure 1 MRI showing tumor at D7.

Rapid sequence induction of anaesthesia was performed with 2mg/kg of IV propofol and 0.6mg/kg of rocuronium and the patient was intubated with a cuffed 7.5mm of flexometallic endotracheal tube. Anaesthesia was maintained with IV fentanyl and isoflurane with approximately 50% O_2-air mixture during the operation. Arterial line was established and the patient's position was changed to a prone position. Care was taken to pad all pressure points, and the abdomen was allowed to hang freely. Partial D8, D7 total laminectomy, excision of the tumor and posterior instrumentation were performed in 4 hours duration. Cardiovascular stability was maintained throughout. The patient received 2500ml of crystalloids with estimated blood loss around 300ml and urine output was 800ml during the operation. Once the operation concluded, the patient was returned to the supine position and awake extubation was done without complications and the patient was sent to intensive care unit. The patient's neurology had fully recovered by the first postoperative day and a fetal ultrasound on the first postoperative day showed a viable fetus.

Discussion

A spinal tumor complicating a pregnancy is rarely seen and

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the serious risks of surgery and anaesthesia during pregnancy are important not only for the mother, but also for the fetus. There is little literature currently available to guide anaesthetic management in neurosurgery for the pregnant patient, and so planning and decision-making must be based on general principles of obstetric and neurosurgical anaesthesia. Several important factors should be considered when contemplating a surgical intervention during pregnancy including positioning, anaesthetic type, fetal heart rate monitoring, plans for urgent delivery, monitoring of maternal blood pressure, aspiration prophylaxis, and tocolysis for the prevention of preterm labor.[2] Anaesthetic management should center on preventing hypoxemia, hypotension, acidosis, and hyperventilation.[3] In our case, an arterial line was placed to quickly observe and treat hemodynamic changes. Maternal hypotension decreases uterine blood flow and can lead to fetal hypoxia. Severe alterations from maternal baseline blood pressure must be avoided to maintain adequate uterine blood flow. In addition, hourly urine output should be monitored and IV fluid therapy during spinal neurosurgery should consist of isotonic and glucose-free solutions to reduce the risk of cerebral edema and hyperglycemia. Accordingly, our patient was given crystalloid solution.

During the spinal surgery, in prone position, the placental perfusion may increase in pregnant patients. Nevertheless, difficulties like fetal monitoring and increased epidural venous bleeding may be encountered. Prone position for surgery is safe during the first and early second trimester, but a left lateral position is preferable for the latter part of the second trimester and third trimester.[5] An additional care should be taken for the position of the pregnant woman during surgery for excessive pressure can cause preterm delivery.[6] The key aspects of the management of such cases is to take meticulous care during positioning to ensure that the abdomen is free, no matter what position or operating table is chosen.[7]

Pregnant women presenting for non-obstetric surgery represent a unique clinical situation where the health of the mother is paramount but equally careful consideration is needed for fetal wellbeing. A multidisciplinary team involving surgeon, anesthesiologists, obstetricians, perinatologists and intensivists should be involved in the decision on proceeding with surgery. If the fetus is determined to be non viable i.e. during the first and early second trimesters, neurosurgical intervention should be undertaken as soon as possible to improve neurological outcome with special considerations for surgery in the pregnant patients. During the late second and third trimesters the consideration must be given to early cesarean section.[8,9]

Conclusion

The requirement for neurosurgery in the parturient is a rare occurrence. When these patients do present, their care is likely to be complex and challenging. As such, a multi-disciplinary approach should be adopted throughout their period of care. The emergency nature of neurosurgical conditions requires departments to be familiar with the management of pregnant patients. Protocols should be developed for such emergencies with established lines of communication and referral between specialties.

Acknowledgments

None.

Conflicts of interest

Authors declare that there is no conflict of interest.

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