Anaesthetic Management of a Pregnant Patient with Intraspinal Schwannoma for Excision.

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ABSTRACT

Spinal tumours, like schwannomas although rare in pregnancy may cause serious problems ranging from acute neurological manifestations in the mother to adverse effects in the developing fetus. Both surgery and anaesthesia, although necessary can also have risks of their own. We describe here the successful anaesthetic management of a 30 year old pregnant patient at 23 weeks gestation for excision of an intraspinal schwannoma with the help of tailor-made neuroanaesthetic plan for the patient. A multidisciplinary approach and cooperation between the surgeon, the anaesthetist, neurologist, obstetrician and neonatologist helped us achieve this goal.

Keywords: Schwannoma, Pregnancy, Spinal Tumors.

INTRODUCTION

Spinal tumors are rare in pregnancy, but their importance arises from causing serious problems in terms of continuing pregnancy.¹ Schwannomas are nerve sheath tumors that are most often benign in nature. These tumors rarely occur in the retroperitoneum, where they are found in 0.5 to 5% of cases.² Progressive neurologic deficit can necessitate urgent spinal surgery in the pregnant patient. Spinal tumors may become symptomatic under hormonal influence.³ The literature is generally unhelpful with respect to evidence-based neuroanaesthetic management for the pregnant patient, and so planning and decision-making must be based largely on general principles of neurosurgical and obstetric anesthesia.⁴ Here, we present the anaesthetic management of a pregnant patient posted for intraspinal schwannoma excision.

CASE REPORT

A 30 year old 50 kg pregnant patient was admitted in neurosurgery ward with paraplegia. Ultrasound obstetrics showed a single viable fetus of 23 gestational weeks. MRI dorsolumbar spine revealed multicystic area of altered intensity T6 to T8 levels with intraspinal extension and cord compression [Figure 1 (a,b)]. All other preoperative investigations were normal. Excision of the tumour was planned due to acute ongoing neurological deficit under general anaesthesia.

Injection ranitidine 50 mg IV and metoclopramide 10 mg was given for aspiration prophylaxis preoperatively. Pelvic tilt of 15 degrees to the left was given to minimize aortocaval compression by means of a hip wedge. All standard monitors (electrocardiography, pulse oximetry, oxygen analyser, end-tidal carbon dioxide) were connected preoperatively. 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 injection succinyl choline 75 mg. Anaesthesia was maintained with sevoflurane (1%), oxygen, air and intermittent bolus of vecuronium. A central venous and an arterial line were established. Neuromonitoring of the mother was done by neurologists and fetal heart was monitored continuously by obstetricians by using a cardiotopography attached to the patient’s anterior abdominal wall. To avoid a decrease in uteroplacental blood flow, the intraoperative systolic blood pressure and end-tidal carbon dioxide were maintained at ≥100 mmHg and at 35-40 mmHg, respectively. Depth of anaesthesia was monitored using bispectral index and temperature was monitored using nasopharyngeal temperature probe. The patient was then anchored to operating room table in the right lateral decubitus using adhesive tapes and harness. Left posterolateral thoracotomy was done in this position to visualize and expose the tumour by the cardiothoracic surgeon. The table was then tilted 90° to bring the patient to semi-prone position. The neurosurgeon then did laminectomy from T6-T8 levels and extradural component of the tumour was identified and removed. Histology confirmed the tumour as schwannoma. Intraoperative blood loss was minimal. Arterial blood gases were assessed periodically. Haemoglobin, packed cell volume, and plasma electrolyte concentrations remained normal.
within normal limits throughout the operation. The surgery ended in about 5 hours without any complications and the patient was extubated gradually in the intensive care unit after 3 hours. Both the mother and the fetus were doing well post operatively. Tocolytics were advised postoperatively by the obstetrician to prevent premature labour.

Figure 1: MRI shows location of schwannoma on Sagittal(a) and transverse (b) sections.

DISCUSSION

Although schwannoma is a benign nerve sheath tumour, the presence of acute onset neurological deficit as paraplegia warranted early removal of the tumour despite the pregnant status of the patient. Usually surgery is delayed up to 36 weeks until fetal lung maturity if possible, but semi emergency or emergency surgery can be performed at any time of pregnancy. Any delay may lead to serious consequences for both the mother and fetus and may even cause abortion or premature delivery according to some case reports. Understanding the physiological changes of pregnancy, their implications, and the specific risks of anesthesia during pregnancy is of utmost importance so that the surgical and neuroanaesthetic requirements can be individualized for each case.

The uteroplacental circulation is not subject to autoregulation and perfusion is therefore entirely dependent on maintenance of adequate maternal systemic blood pressure. Careful maintenance of stable maternal hemodynamic parameters and oxygenation are essential for fetal wellbeing. Close monitoring of fetal responses for signs of distress is therefore strongly recommended. Intraoperative cardiopulmonary aids in our endeavour to monitor the fetal heart rate. Intratraumal BP monitoring is recommended before induction of anesthesia, so that hemodynamic changes are quickly observed and treated. Bispectral index may be useful if electrode placement does not interfere with surgical access.

In our case, lateral approach to access the tumour helped us to monitor the fetal heart rate unhindered.

Thiopentone is still most frequently used as the induction drug for general anesthesia during pregnancy because in several countries propofol is stated by the manufacturer to be contraindicated during pregnancy. In clinical practice, however, propofol appears acceptable. Propofol however may better attenuate the hemodynamic response to laryngoscopy and intubation. Apart from the teratogenic effects, many drugs are responsible for premature labour, abortion and growth retardation. Fortunately most of the anaesthetic and sedative agents are free from teratogenic effects, provided these drugs are used in a minimal dosage format using the titration effect.

During the first trimester and early part of the second trimester, surgery can be performed in the prone position. But, from third trimester onwards, prone positioning becomes difficult owing to the enlarging gravid uterus and any excessive pressure can lead to fetal loss or preterm delivery. We used the lateral position to expose the tumour through thoracotomy and later tilted the OR table 90° to attain the semi prone position to excise the tumour.

CONCLUSION

The presence of a live fetus inside the uterus in a patient undergoing an intraspinal tumour resection increases the risks of anaesthesia and surgery both to the mother and the fetus manifold. The type of anaesthesia to be administered should be individualized in each case for the safety of both the mother and the baby. A multidisciplinary approach and cooperation between the surgeon, the anaesthetist, neurologist, obstetrician and neonatologist is of vital importance to achieve this goal.

REFERENCES

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