Section: Anesthesia

Case Report

ANAESTHETIC MANAGEMENT OF VESTIBULAR SCHWANNOMA IN PREGNANT PATIENT

Kaur Arshdeep[1], Kaur Sarvjeet[2], Ramesh Athira[3]

[1]Junior Resident, Department of Anesthesia, GGSMCH, Faridkot, Punjab, India.
[2]Head of Department, Department of Anesthesia, GGSMCH, Faridkot, Punjab, India.
[3]Senior resident, Department of Anesthesia, GGSMCH, Faridkot, Punjab, India.

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Corresponding Author:
Dr. Arshdeep Kaur,
Email: arshdeepkaur401@gmail.com

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ABSTRACT

Background: Vestibular schwannomas rarely present during pregnancy. Their diagnosis and management pose a therapeutic challenge in pregnant women. **Materials and Methods:** A 33-yearold G3P2L2 at 24 weeks of gestation presented in emergency of our facility with complain of headache, loss of speech, vomiting and inability to swallow liquids and solid food. On neurological examination there was loss of gag reflex. Magnetic resonance imaging revealed large vestibular schwannoma. Patient was admitted with plan of decompression of posterior fossa tumour for symptom relief after multidisciplinary team discussion. With careful foetal monitoring tumour resection was performed in 2nd trimester. Symptoms were relieved after surgery and middle cranial fossa tumour resection was planned after completion of pregnancy. **Conclusion:** This case highlights the complexity of managing vestibular schwannomas in pregnancy and shows the importance of collaborative approach for planning the treatment and allowing the best outcome for both mother and foetus.

INTRODUCTION

Vestibular schwannomas (acoustic neuromas, acoustic neurilemmomas) are rare, generally slow-growing tumors of Schwan cell origin, usually arising from the vestibular portion of the eighth cranial nerve.[1]

Schwann cell derived tumors comprise approximately 8% of all intracranial tumors and 80-90% of tumors arising from cerebellopontine angle.

Incidence appears to be rising in pregnant patients. Incidence of brain tumors in woman of child bearing age group is 2-3.2 per 100000 women.[2]

These tumors are essentially benign and found more frequently in women.

Pregnancy may increase the growth of a previously existing intracranial tumor, and can even unmask a previously undiscovered tumor.[3]

Most common presenting symptom is hearing loss with or without tinnitus. Other cranial nerves involved include trigeminal and facial nerves.

We are hereby describing the successful anesthetic management of a 24 weeks pregnant woman with vestibular schwannoma. The patient approved the publication of the following case report.

Case Report

A 33year old woman obstetric code G3P2L2 at 24 weeks of gestation presented in emergency with history of headache since 2 months, loss of speech since 10 days, vomiting since 2 days.

History of inability to swallow both liquids and solid food since 2 days.

Patient underwent neurological examination with conscious, oriented, GCS 15/15, positive finding of loss gag reflex.

Patient diagnosed with vestibular schwannoma using clinical and radiological investigation.

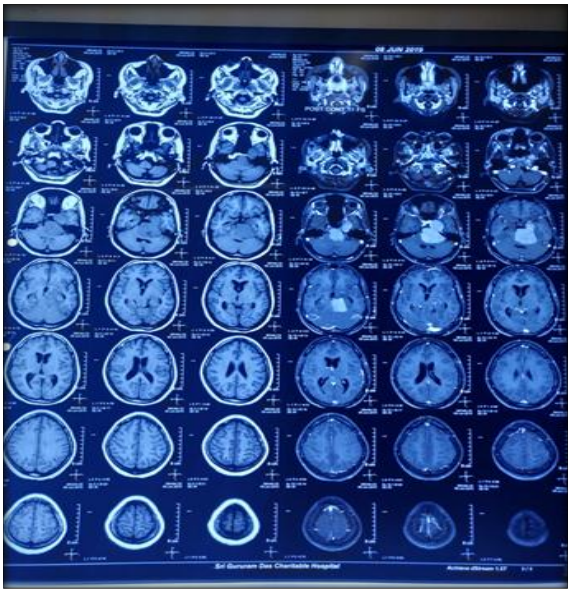

Figure 1

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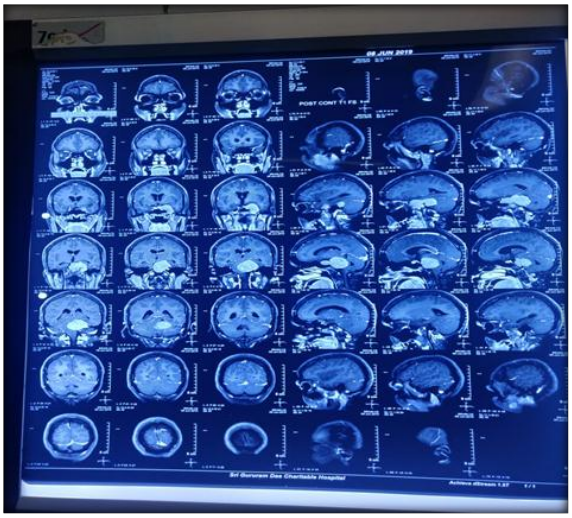

Figure 1 and 2: MRI showing tumor from middle to posterior cranial fossa

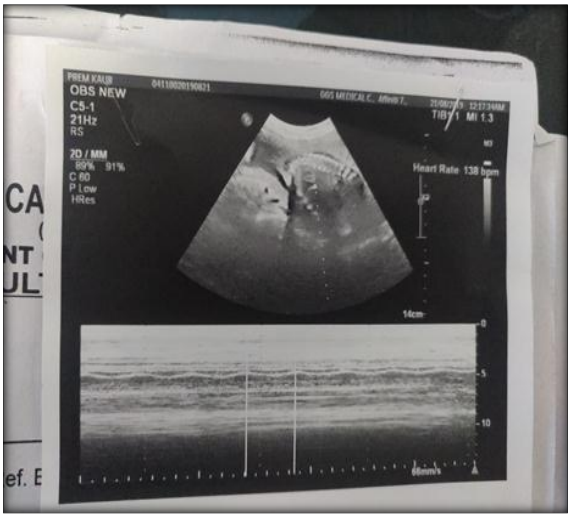

Figure 3: USG showing viable fetus

We considered her "high risk" because both the patient and the fetus in utero would require careful consideration.

A multidisciplinary meeting of neurosurgeons, obstetricians and anesthesiologists was held before the operation. Based on that, a detailed plan was made with the aim of ensuring maternal safety, maintaining the pregnancy, and achieving the best possible fetal outcome.

Obstetrician planned for continuation of pregnancy and no need for tocolytics advised.

Upon the patient's arrival to the operating room, ASA standard monitors were connected. Her blood pressure was 130/70 mmHg, heart rate was 90 beats per minute (BPM), and oxygen saturation was 98% when breathing normal atmospheric air.

General anesthesia with rapid sequence induction was done. Premedication- inj. Glycopyrrolate 0.2mg, inj. dexamethasone 8mg, induction with propofol-120mg, succinylcholine-100mg.

Maintained with vecuronium and sevoflurane. Analgesic given were injection paracetamol-1gm and ketorolac- 30mg.

After the smooth induction, the ultrasound examination done to confirm the fetus's well-being.

Neuromuscular blockade was maintained. Opioids and nitrous oxide were avoided.

Invasive arterial blood pressure monitoring done using right radial artery.

The right lateral position is maintained for the surgical exposure and also helped to minimize aortocaval compression.

When the operation had finished, USG was done to confirm the fetal well-being.

The patient's intraoperative systolic blood pressure was 100 to 140 mm Hg, her heart rate was 80 to 100 beats per minute and EtCO2 ranged from 30 to 35mm Hg.

Surgery was completed without any complications. The duration of surgery was 8hours.

Intraoperatively, total blood loss was 700 mL, urine output was 1000 mL, and total infusion volume was 4050 mL crystalloids and one unit of packed red cells. Intraoperatively ABG was done twice and which were within normal limits.

After surgery patient was shifted to neuro ICU in intubated state electively, then patient was extubated day 2 postop.

There were improvement of symptoms such as headache, dysphagia, speech after surgery.

First step surgery that was posterior cranial fossa tumor decompression was done for symptom relief.

Middle cranial fossa tumor decompression planned after completion of pregnancy.

After surgery, specimen sent for immunohistochemistry and diagnosis of vestibular schwannoma confirmed.

DISCUSSION

It was suggested that immunological tolerance and steroid mediated growth led to this exacerbation during pregnancy.[4]

Diagnosis of vestibular schwannoma can be made by clinical evaluation, CT scan, MRI, immunohistochemistry.

In 1988, Simon postulated a theory to predict the prevalence of brain tumors in pregnant patients by using the intersection of the probability of being pregnant at any given time with the probability of having a brain tumor at a specific age and sex.[4]

Brain tumors in pregnant patients impose a risk to both the fetus and mother.

Anesthesiologists need evidence-based solutions for the challenges in performing neurosurgery during pregnancy.[5,6]

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In this case prolonged duration of the surgery as well as anesthesia is one of the rare entity and most challenging part due the extensive growth of the tumor.

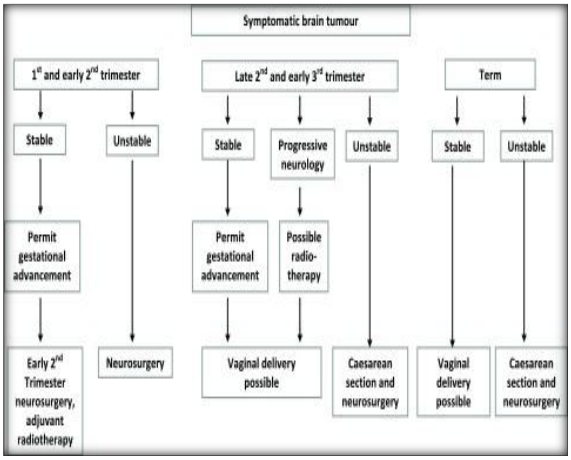
The question regarding the treatment of brain tumors diagnosed during pregnancy is whether the brain tumor should be treated during pregnancy or after termination of pregnancy.[7]

When diagnosis is made at 34weeks or later, all patients underwent delivery of baby first followed by treatment of brain tumor after delivery.

In a case report by Kushal J. shah emergency c-section was performed in 26weeks pregnant patient and 8days later tumor was resected.[1]

In our case patient presented with symptoms in 2nd trimester which is the most favorable time for both mother and fetus because surgery with general anesthesia during this stage presents lowest surgical and anesthetic risk to both mother and fetus.

So after multidisciplinary discussion resection of tumor is done first for symptom relief and pregnancy continued to allow fetus to mature and planned for 2nd stage surgery after completion of pregnancy.



There are no guidelines for the management of intracranial tumors in pregnant women. A possible algorithm to follow is shown (modified from Tewari et al).[8]

CONCLUSION

Although these tumors are uncommon, a treatment strategy involving a multidisciplinary team of obstetrics, anesthesia, and neurosurgery allows for the best outcome for both mother and fetus.

Treatment options depends on patient's stage. If patient is neurologically stable, best option is to delay resection until after delivery. If resection is necessary second trimester is optimal time for surgery.

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