Management of a Rare Case of Cerebral Arterio - Venous Malformation in Pregnancy

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Abstract: We present a case of a 21 year old female with 22 weeks of pregnancy, who developed sudden headache followed by drowsiness. Magnetic resonance imaging (MRI) of the brain revealed intra parenchymal bleeding secondary to a right sided arterio - venous malformation (AVM). Craniotomy, AVM excised. Patient improved neurologically post op; and delivered by LSCS lateron. Cerebral AVMs, though rare, have the tendency to cause potentially fatal outcomes. Neurological symptoms in a pregnant woman should be investigated for early diagnosis and management, due to its associated morbidity and mortality. A multidisciplinary approach should be adopted due to the complexity of the condition.

Keywords: Cerebral AVM, Pregnancy, Arterio - venous malformation

1. Introduction

- Arterio venous malformation (AVM) is abnormal connection between arteries and veins through tortous vessels without capillary bed. The vascular conglomerate is called Nidus.
- Cerebral AVM is a rare congenital condition that causes change in the vasculature of brain, with increased chances of rupture during pregnancy due to increased cardiac output and higher levels of estrogen.
- Cerebral AVM is one of the leading cause of cerebrovascular accidents resulting in hemorrhage. The cerebral AVM presents most commonly as IC bleed.
- Otherwise may be diagnosed incidentally during neurological workup for epilepsy or headache. Ruptured AVM in pregnancy is associated with high mortality for both mother and fetus.

2. Case Presentation

- A 21 year old female, with 22 weeks of gestation, presented to emergency department with complaints of headache, left sided weakness; in drowsy arousable state.
- There was no history of trauma.
- On examination, there was left sided hemiparesis with GCS of E3V4M5.
- On MRI brain, there was fairly large intraparenchymal bleed in right fronto parietal region, measuring 6 ×4 cm was noted with midline shift of 11 mm.
- On MR angiogram of brain a vascular arteriovenous malformation measuring approximately 20 × 19 × 18 mm was seen in right frontal lobe with arterial feeder from M3 part of right cerebral artery and venous drainage in superior sagittal sinus.
- Obstetric ultrasound showed a single live intrauterine fetus with anterior segment placenta.

Management:

- Patient was a pregnant female with ruptured AVM malformation.
- Therefore a multidisciplinary team consisting of physician, obstetrician, neurosurgeon and anesthetist was looking after the patient.
- Treatment option was explained to relatives, which was to operate and remove the AVM.
- Right Frontotemporoparietal Cranietomy done under general anesthesia.
- AVM was approached from posterior side, feeder from base identified and coagulated. Draining vein identified and coagulated
- A 5 cm large AVM, present in eloquent area, and draining into deep Venous system was excised. So it was Spetzler Martin grade 3 AVM.
- Post procedure, patient was shifted to ICU for further management.
- Overall recovery was good. She became conscious - oriented postop.
- Left sided hemiparesis improved over the period of time.
- Speech and comprehension functions were intact.
- HPR report confirmed AVM.
- Post op fetal scan showed live intrauterine fetus with FHS 110.
- Patient was followed post op, improved to normal without any neurological deficit and delivered a full term baby lateron, on the expected date of delivery by LSCS.

Excised specimen of AVM

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3. Discussion

- Cerebral arteriovenous malformation is a rare congenital condition (0.01% to 0.5%)²
- Cerebral AVM has high tendency to rupture during pregnancy.
- Timely recognition of signs and symptoms of a ruptured cerebral AVM in pregnancy is crucial for optimal outcomes
- It is important that neurological symptoms in pregnancy are addressed promptly, because neurological diseases contribute to approximately 20% of maternal deaths.⁵
- Various studies have reported the maternal mortality of 10 to 40% and fetal mortality of upto 14%.⁶
- Various treatment options are available.
- Embolisation of the AVM can be done
- Open surgical excision of the AVM yields good results especially after IC bleed; complete removal of AVM can be done.
- Approach for intervention for a cerebral AVM in the pregnant patient should be based on neurosurgical rather than obstetric considerations
- A multidisciplinary approach should be adopted due to the complexity of the condition, involving neurosurgery, obstetrics and gynecology, anesthesia, and pediatrician.

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None to declare

Conflict of interest
Author has no conflict of interest to declare.

References


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