

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

Dr. Ashutosh Rajguru¹, Dr. Chandratej Kadam², Dr. Kailash Mogal³

^{1,2,3}Department of Surgery, Dr Vasantrao Pawar Medical College, Hospital and Research Centre, Nashik, MH, India

Abstract: We present a case of a 21 year old female with at 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 tortuous 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 saggial sinus.
- Obstetric ultrasound showed a single live intrauterine fetus with anterior segment placenta.

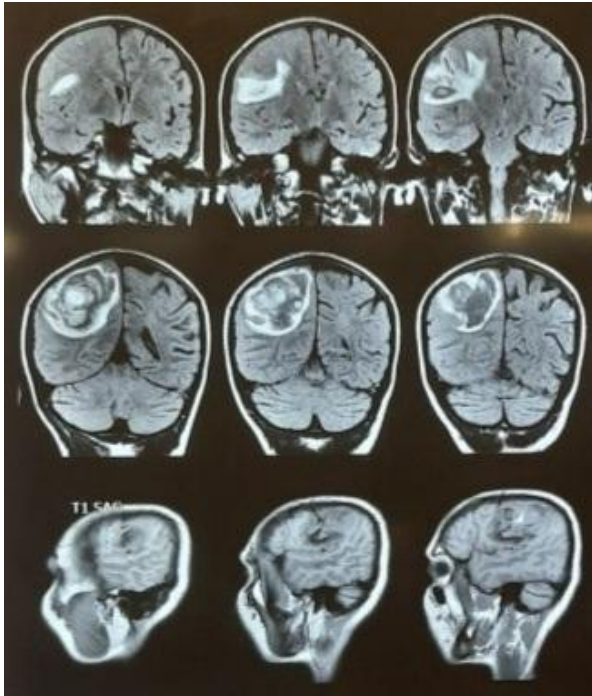
Management:

- Patient was a pregnant female with ruptured AV 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 Craniectomy 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



Pre op MRI Scan

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Author Profile

Dr. Ashutosh Rajguru, Junior Resident.

Dr. Chandratej Kadam, Consultant Neurosurgeon.

Dr. Kailash Mogal, Professor and HOD.

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%¹
- 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.

Financial Disclosure

None to declare

Conflict of interest

Author has no conflict of interest to declare.

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