

Cerebral Venous Thrombosis in Pregnancy

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Abstract: Cerebral venous sinus thrombosis (CVST) during pregnancy and puerperium is an uncommon diagnosis. CVST can present with wide range of symptoms and signs, and most of the time it is left undiagnosed. Here, three cases of CVST in early pregnancy and puerperium in young women who presented with seizure attacks, altered sensorium and severe headache, respectively, are reported. Subsequent imaging with MRI and magnetic resonance venography (MRV) showed CVST in the first two cases, whereas in the third case it showed a venous infarction. All were treated with low molecular weight heparin followed by warfarin. They all made excellent recoveries and are in regular follow-up.

1. Introduction

Cerebral venous sinus thrombosis is the presence of a blood clot in the dural venous sinuses, which drain blood from the brain. Symptoms may include headache, abnormal vision, symptoms of stroke such as weakness of the face and limbs on one side of body and seizures.

Pathophysiology of CVST:

- Thrombosis of cerebral veins or dural sinuses obstructs blood drainage from brain tissue leading to cerebral parenchymal lesions (stroke) or dysfunction and to increased venous and capillary pressure with disruption of blood brain barrier
- Occlusion of dural sinus resulting in decreased csf absorption and elevated intracranial pressure.
- Obstruction of venous structure results in increased venous pressure decreased capillary perfusion pressure and increase in cerebral blood volume. Increased venous pressure and capillary pressure causes disruption of blood brain barrier causing vasogenic edema with leakage of blood plasma into interstitial space.
- As Intravenous pressure continues to increase localized cerebral edema and venous haemorrhage may occur due to venous or capillary rupture.
- Cerebral blood flow and cerebral perfusion also reduces because of increase in intravascular pressure secondary to venous obstruction.

2. Case Report

We report a case of CVT with early pregnancy in our hospital SBMCH in the month of June 2018. 34 year old G2P1L1 Prev FTNVD with 6 weeks 3days of gestation she conceived with ovulation induction clomiphene citrate and came with complaints of headache more prominent on B/L Frontal and Temporal headache with increasing intensity past 10 days and associated with excessive vomiting. Ophthalmology opinion obtained fundus examination shows mild hyperemic with tilted disc and mild arterial narrowing. MRI BRAIN done shows Diffuse cerebral edema and Thrombus seen filling the superior sagittal sinus, Right transverse and sigmoid sinus, Thrombosis involving the cortical veins overlying bilateral parietal lobes. Partial

thrombus involving Left Transverse sinus, Thrombus in upper part of right internal jugular vein. Neurologist opinion obtained shifted the patient to ICU and started on Inj LMWH, Inj. NEUROTOL 100ML, Inj. Microspan 500ml, Inj LEVIPILL 1gm loading dose followed by 500mg IV, T. ECOSPRIN 75MG, T. HOMOCHECK, T. ANAS 200MG. Monitored APTT every 2nd hourly done. Then patient monitored PT, APTT, INR every 6th hrly. Her vitals were stable.

Patient counselled for the further risk to the mother and fetus as also been explained as follows patient can have recurrent CVT, excessive bleeding PV during pregnancy and delivery and minimal teratogenic effect inspite of explaining all risks we insisted to continue the pregnancy but patient insisted MTP. We W/H LMWH and gave T. mifepristone 200mg and T. Misoprostone 600mcg p/v kept discussed with neurologist and started Inj LMWH and T. Acitrom 3mg after bleeding subsides. Patient was having intolerance to Miso advised Suction and evacuation. The same informed to attenders willing for procedure. Suction evacuation done on 20/6/18 at 12:30pm. MRI BRAIN DONE AGAIN it was mild diffuse cerebral edema and right sigmoid sinus and right internal jugular vein shows partial flow. USG pelvis done shows no evidence of retained products of conception. Patient was symptomatically better and advised T. LEVETRIACETAM 500mg, T. HOMOCHECK, T. ACITROM 3mg, T. ATROVASTATIN 20mg given. Patient gradually improved.

3. Discussion

Cerebral venous sinus thrombosis has a variety of clinical presentations ranging from severe headache to deep coma. The most common presentation includes headache (97%) followed by seizure attacks (47%) and paresis (43%).¹ The incidence is increasing to 7 per 1 000 000 as newer and more advanced imaging modalities emerge.² Women are more commonly affected than men, with a ratio of 1.29:1.³ It commonly presents in women of 25–35 years of age and it occurs more often during puerperium than during pregnancy.⁴ There is no race predilection, and the associated mortality is reported to be 7%.⁵ More than 100 causes of cerebral venous sinus thrombosis have been recorded in the scientific literature. However, even with extensive

investigation, no cause is identified in 20% to 25% of patients.⁶ The most common pathogenesis includes hypercoagulable states such as pregnancy and puerperium and the use of oral contraceptives. Women using oral contraceptive have an increased risk of CVST by approximately 20%.⁷ Largely inherited prothrombotic tendencies such as factor V Leiden mutation, protein S and C and anti-thrombin III deficiencies are important causes, accounting for perhaps 10% to 15% of cases, and infective causes related to middle ear, facial infection or penetrating head trauma probably occur less commonly due to modern aggressive antibiotic treatment.⁸

Neuroimaging remains the main cornerstone for the diagnosis. A CT scan is a useful initial examination technique to rule out other acute cerebral disorders and to show venous infarcts or haemorrhages, but its results can be entirely normal. The most sensitive examination technique and imaging modality of choice is MRI in combination with MRV.⁹ The combination of abnormal signal in a sinus and a corresponding absence of flow in MRV confirmed the diagnosis, but expert radiological judgement is required to avoid diagnostic and technical pitfalls.¹⁰ Treatment options for cerebral venous sinus thrombosis include anticoagulation, thrombolytic therapy and in some cases surgical thrombectomy. Anticoagulation therapy with low molecular weight heparin is the treatment of choice followed by the oral warfarinisation. Prognosis is quite variable. The outcome can result from total recovery to death, however prospective studies have reported independent survival rate of approximately 80%.¹¹ The risk of recurrent cerebral venous sinus thrombosis in future pregnancies and puerperium is low.¹²

In conclusion, CVST may present with extremely varied symptoms and signs. Diagnosis can be confirmed by MRI in most cases. It is a potentially life-threatening condition if it is undiagnosed, but remains a treatable disorder and it should be considered in every woman with neurological symptoms in pregnancy and/or puerperium.

4. Conclusion

Cerebral venous sinus thrombosis (CVST) is an uncommon disorder in pregnancy and puerperium, so a high index of suspicion needs to be present in order to diagnose it.

- MRI + magnetic resonance venography (MRV) scans can confirm the diagnosis.
- The mainstay of treatment is heparinisation.

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