



Cerebral Venous Sinus Thrombosis in Pregnancy: A Case Report



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Introduction

Cerebral venous sinus thrombosis (CVST) is characterized by thrombosis of the dural venous sinuses or the cerebral veins. Pregnancy, particularly the puerperium, is a recognized risk factor for CVST due to the hypercoagulable state induced by physiological changes such as increased levels of coagulation factors, reduced fibrinolysis and venous stasis. It can present with a range of neurological complaints including headache, seizures and paresis. However, CVST in pregnancy is still a relative rarity, occurring in an estimated 10-20 per 100,000 pregnancies.

We present the case of a 34-year-old woman presenting with CVST in the 2nd trimester of pregnancy.

Case Report

A 34-year-old nulliparous woman presented to her general practitioner with acute onset headache and respiratory symptoms at 13 weeks gestation. She was initially treated for a lower respiratory tract infection and sinusitis. Her past medical history included migraine and two prior spontaneous miscarriages.

She later represented with photophobia, neck pain and a frontal headache which was exacerbated by coughing. CT-Venogram identified a chronic non-occlusive thrombus in the left proximal sigmoid sinus extending to the transverse sigmoid junction. The patient was commenced on therapeutic low molecular weight heparin (tinzaparin 175IU/kg). She had ongoing multi-disciplinary input from obstetrics, anaesthetics, neurology and haematology throughout pregnancy. She was referred to Ophthalmology where fundoscopy was found to be normal. She continued to experience headaches throughout her pregnancy but her burden of symptoms gradually improved.

Neurology had been further consulted regarding the potential risks of epidural / spinal anaesthesia causing a clinically significant rise in intracranial pressure. She was deemed suitable for neuraxial anaesthesia.

She ultimately received epidural analgesia during labour, having allowed adequate time to pass following her most recent dose of tinzaparin. She went on to deliver by emergency caesarean section under epidural anaesthesia. She has no neurological sequelae but did develop a wound haematoma whilst on therapeutic anti-coagulation.

Take Home Points

CVST in pregnancy is associated with a significant risk of maternal morbidity and mortality. Due to its rarity and myriad mimics, a high degree of clinical suspicion is required for timely diagnosis.

Prompt diagnosis and initiation of anti-coagulation are critical for optimizing maternal and foetal outcomes.

Discussion

Pathophysiology

Pregnancy induces a hypercoagulable state as a physiological adaptation to reduce the risk of haemorrhage during delivery. This state is characterized by increased levels of clotting factors (I, VII, VIII, IX, and X), decreased fibrinolytic activity, and reduced levels of anticoagulant proteins such as protein S. Additionally, obstetric conditions such as preeclampsia and hyperemesis (through dehydration) further amplify thrombogenic risk. Sinusitis is a recognised risk factor for developing CVST

Clinical Presentation

The clinical manifestations of CVST are highly variable, often contributing to a delay in diagnosis. Headache is the most common symptom, reported in up to 90% of cases, and may mimic migraine or tension-type headaches. Seizures, focal neurological deficits, altered consciousness, and symptoms of raised intracranial pressure, such as papilloedema and vomiting are also common. Symptoms typically evolve over hours to days but may also present acutely.

Diagnosis

Magnetic Resonance Imaging with Magnetic Resonance Venography (MRV) is the gold standard due to its high sensitivity and avoidance of ionizing radiation. Non-contrast CT may reveal indirect signs but can miss up to 30% of cases. CT venography is a rapid alternative when MRI is unavailable.

Management

Anticoagulation is the cornerstone of treatment, typically with low molecular weight heparin. Therapeutic dosing is recommended **even in** the presence of haemorrhagic infarction, as benefits outweigh the risks. Thrombolytic therapy or mechanical thrombectomy is generally reserved for patients with clinical deterioration despite anticoagulation or with extensive thrombus burden. Management should involve a multidisciplinary team including neurology, haematology, obstetrics, and anaesthetics. Consideration must be given to the timing of anti-coagulation therapies when planning the delivery.

Prognosis

The prognosis of pregnancy-associated CVST has improved significantly with early diagnosis and treatment. Maternal mortality rates have declined to below 10% in most contemporary series. Persistent neurological sequelae such as epilepsy, motor deficits, or cognitive impairment can persist in a subset of patients. Subsequent pregnancies are generally safe but warrant prophylactic LMWH in high-risk individuals.

Selected References

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