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CASE REPORT PEER REVIEWED | OPEN ACCESS

Cerebral venous thrombosis in pregnancy: A case report

Naima Shatry, Andrew Wright, Osama Selim Eskandar

ABSTRACT

Cerebral venous sinus thrombosis (CVST) is a very rare condition. The incidence of CVST in general is 3–4 per million, however, in pregnancy the incidence ranges from 1/2500 to 1/10,000. Headache is the most common and first symptom of presentation of CVST. Cerebral venous sinus thrombosis can be associated with other neurological manifestations such as papilledema, focal neurological signs, diplopia, cranial nerve palsy, and psychosis. This is a case of a 28-year-old woman in her second pregnancy who presented at 38+2 weeks gestational age with migraine-like headache associated with nausea, vomiting, and blurred vision. She was diagnosed with CVST by magnetic resonance venography (MRV) which demonstrated thrombotic venous sinus occlusion. The condition was treated with therapeutic dose of low molecular weight heparin (LMWH). Although CVST is a rare condition, it should be excluded in women who present with headache in pregnancy particularly when presenting with associated neurological symptoms and signs.

Keywords: Cerebral venous thrombosis in pregnancy, Computed tomography, Low molecular weight heparin, Magnetic resonance venography

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INTRODUCTION

Headaches are a common feature in pregnancy. They mostly present due to non-threatening reasons and resolve with simple measures. In pregnancy, however, more serious causes of headaches like cerebral venous sinus thrombosis may arise. This is thought to be due to the hyper-coagulable state in pregnancy, which may be worsened by factors such as vomiting, dehydration, and anemia [1]. The incidence of cerebral venous sinus thrombosis is 11.6 per 100,000 deliveries [2].

The headache resulting from a CVST can be described as having no specific characteristics: it is most often diffuse, progressive, and ranging from mild to severe, but can also be unilateral and sudden. It may also present as a migraine-like headache [3].

Although the nature of the headache is non-specific, headache remains the most common feature that a patient with CVST presents with.

This is a case of a 28-year-old G2 P1 at 38 weeks gestation, who presented with a sudden onset, unilateral, frontal headache.

CASE REPORT

A 28-year-old G2P1 38+2/40 woman presented to the day assessment unit with a one day history of sudden onset right, frontal headache. This was associated with intermittent blurred vision, floaters, and nausea. She was otherwise well in herself, had no recent illness, no focal neurology, and no concerns regarding fetal movement. She had received her first COVID-19 vaccination 32 days prior to her presentation. The pregnancy thus far had not been complicated. She had a spontaneous conception.

On examination at admission, her observations, including her blood pressure was normal except that she was noted to be tachycardic (121 bpm). Neurological examination was normal with the cranial nerves globally intact, pupils equal and reactive to light. Admission

bloods including urea and electrolytes, liver function and full blood count were within normal limits.

On consultation with the neurology team, a magnetic resonance venography (MRV) was requested due to the sudden onset nature of the headache. The MRV demonstrated evidence of absence of flow within the right transverse sigmoid and jugular bulb including the proximal internal jugular vein with corresponding high signal change on T2 and fluid attenuated inversion recovery (FLAIR) sequences, likely to represent an occluded sinus secondary to acute venous sinus thrombosis (Figure 1).

Her care involved a multi-disciplinary team including obstetricians, midwives, neurology, anesthesia, and hematology teams. She was started on treatment dose LMWH and discussed with the on-call neurologist who advised checking for papilledema/raised increased intracranial pressure (ICP), in which case treatment for this would be offered. Papilledema was subsequently ruled out. The plan from the team was to start therapeutic dose of LMWH initially, then once delivered, introduce warfarin which would be continued for six months. She was to stop her LMWH once in labor, avoiding regional anesthesia for 24 hours after her dose of LMWH.

She was initially planned for induction, but opted to have a planned caesarian section at 39 weeks instead. The procedure was uneventful with the baby born in good condition and a blood loss of 250 mL. She recovered well post-operatively and was discharged on her second day. She was to be followed up by hematology and neurology teams subsequently following her post-natal visit at six weeks.

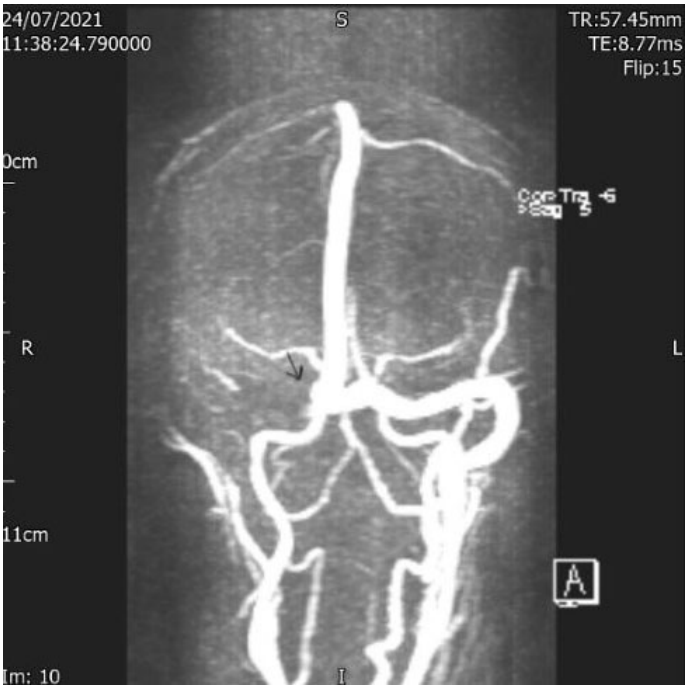

Figure 1: MRV demonstrates evidence of absence of flow within the right transverse sigmoid and jugular bulb including the proximal internal jugular vein.

DISCUSSION

Cases with CVST may present in different ways. The frequent presentation is headache with acute or subacute onset. A detailed history of the presenting symptom is important. Other findings may include: papilledema, focal neurological deficits, altered consciousness, seizures, and cranial nerve signs [3]. Clinical findings with neurological presentation may fall under two categories: those linked to increased intracranial pressure, or more focal deficits as a result of stroke [4]. Approximately 2 in every 100 cases of pregnancy associated strokes are as a result of CVST [5]. The diagnosis is mainly from clinical findings and confirmation by imaging, with the investigation of choice being magnetic resonance imaging (MRI) with venography [6]. Other imaging investigation is computed tomography (CT) scan which is widely used in investigating headache; however, it is less sensitive than MRV.

Pregnancy remains one of the major risk factor in this case. There is no current available information whether having COVID-19 vaccination prior to her presentation being a risk factor.

Management of this condition involves multi-disciplinary team effort. Prompt referral to a neurologist and possibly hematologist is advised [3]. A detailed plan for delivery needs to be put in place ensuring patient involvement in decision making. Treatment includes anti-coagulation with the rationale of preventing thrombus growth, to facilitate recanalization, and to prevent deep venous thrombosis and pulmonary embolism [4]. This is continued for six months. It is recommended to maintain the anticoagulation by maintaining the international normalized ratio (INR) in a range of 2–3 [7]. A follow-up with MRV in 3–6 months is advisable to assess the condition and recanalization of the occluded blood vessel. If there is no improvement or the patient deteriorates despite the use of anticoagulation, then other interventional techniques including endovascular options may be considered [4].

CONCLUSION

Even though headaches are a common presentation in pregnancy, one must have a higher index of suspicion for the more serious causes of headaches. A good assessment of the presenting features followed by the relevant investigations is the key for a successful management of this potential life-threatening condition. A team approach in planning for antenatal care as well as the delivery is essential.

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Author Contributions

Naima Shatry – Conception of the work, Design of the work, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Andrew Wright – Design of the work, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Osama Selim Eskandar – Conception of the work, Design of the work, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.