

Cerebral Venous Sinus Thrombosis- A Study of 4 Cases

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Abstract:

Cerebral venous sinus thrombosis is an uncommon but important cause of stroke, especially in young-aged woman. Clinical presentation is variable, usually in the form of focal neurological deficit, seizure, headache and other features of raised intracranial pressure, leading to misdiagnosis or delay in treatment. Here we report 4 cases of venous sinus thrombosis with variable presentation. Diagnosis is confirmed by neuroimaging including magnetic resonance imaging with magnetic resonance venography of brain. Treatment consists of anticoagulation along with supportive management.

Key words: Cerebral venous sinus thrombosis, Stroke, Magnetic resonance venography

Introduction:

Cerebral venous sinus thrombosis (CVST) is a rare disorder accounting for less than 1% of all strokes¹. In the adult population, the incidence of CVST is estimated to be around 3-4 cases per one million people and most commonly occurs between the ages of 20-40 years with a mean age of 38.7 years². Its epidemiology has changed over past few decades with increasing prevalence that may be attributed to not only greater awareness among the physicians, but also of greater availability of noninvasive radio diagnostic modalities like MRI with MRV³. Presenting symptoms are variable; therefore it is important for clinicians to consider CVST when evaluating patients, especially those at increased risk of thrombosis.

Case 1: A 39 year old lady presented with headache for 7 days, 2 episodes of convulsion and irregular per vaginal bleeding for 2 months for which she took tab norethisterone acetate for 2 cycles. She denied any history of fever, blurred vision, ear discharge, speech abnormality, sphincter disturbance or head injury. On examination, she was afebrile with pulse 84/min, regular, BP-140/80 mm of Hg, respiratory rate-18/min. Neurological

examination revealed only bilateral papilledema. Examination of other systems was normal. Investigation revealed normal biochemical, coagulation and vasculitic profile. Ultrasound showed bulky uterus and she was diagnosed as dysfunctional uterine bleeding. CT head was normal. MRI of the brain showed infarct in left parietal lobe and MRV revealed thrombosed venous sinuses (figure 1). She was managed with low molecular weight heparin 40 mg twice daily for 7 days followed by tab rivaroxaban 20 mg daily and tab levetiracetam 500 mg twice daily. During active bleeding, she was treated with low dose heparin along with tranexamic acid and there was no complication. She was discharged on day 14 of her illness and advised to continue anticoagulation for 6 months.

Case 2: A 37 year old male presented with occipital headache with blurring of vision for 2 weeks. He denied history of fever, vomiting, seizure or altered sensorium. On examination, he was afebrile with hemodynamically stable. Neurological examination revealed bilateral papilledema. Biochemical, coagulation and vasculitic profile were within normal limit. CT head & MRI brain was normal.

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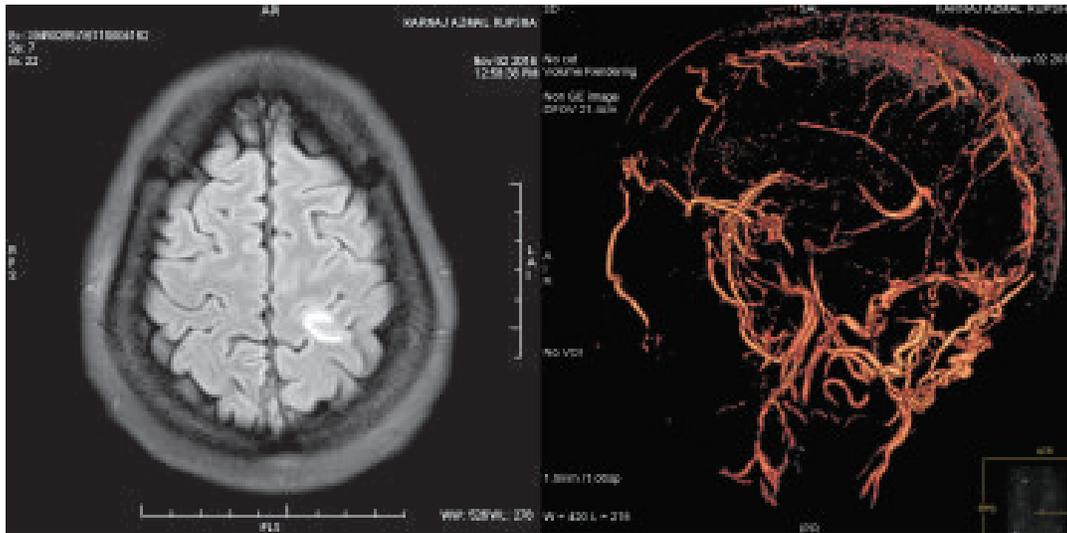


Fig.-1: MRI brain showing left parietal lobe infarct and MRV showing thrombosed venous sinuses

MRV showed evidence of superior sagittal sinus thrombosis (figure 2). He was treated with low molecular weight heparin 60 mg twice daily for 10 days followed by tab rivaroxaban 20 mg daily for 6 months.

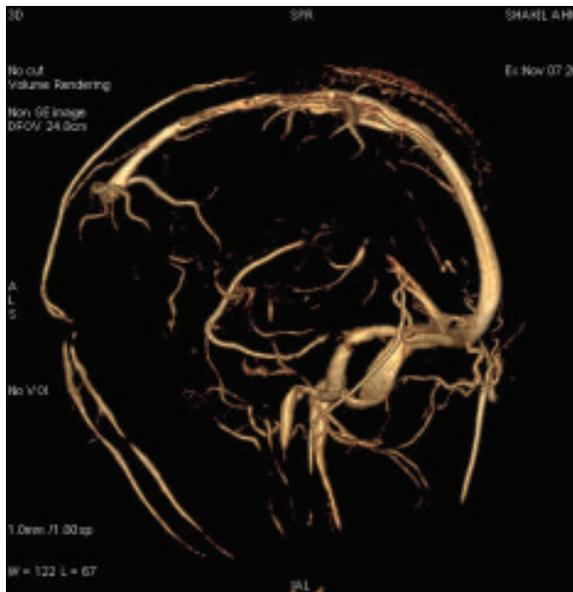


Fig.-2: MRV of brain showing thrombosis of superior sagittal sinus

Case 3: A 42 year old hypertensive male presented with headache, vomiting for 7-8 times and blurring of vision for 1 day. He denied any history of fever,

convulsion, altered sensorium, speech abnormality or head injury. On examination, he was afebrile, pulse-94/min, BP-150/85 mm of Hg. Neurological examination revealed bilateral 6th cranial nerve palsy with 1mm pupil in both eye. CT head was normal. MRI brain showed pontine infarct and MRV showed evidence of superior sagittal sinus thrombosis (figure 3). He was started low molecular weight heparin 60 mg twice daily followed by tab rivaroxaban 20 mg daily for 6months.

Case 4: A 73 year old male presented with abdominal distension with vomiting for 10 days, hiccup for 7 days and drowsiness for 3 days. On examination, he was drowsy, dehydrated, pulse-98/min, BP-100/70 mm of Hg, respiratory rate-22/min. Abdomen was distended with sluggish bowel sound. Neurological examination showed GCS-12 (E3V4M5), pupil-2mm in both eye, absence of papilledema and focal neurological deficit. Among biochemical profile, serum sodium -129 mmol/L. Plain X-Ray abdomen revealed distended bowel loop. Upper GIT endoscopy reported pyloric stenosis. CT head & MRI brain was normal. MRV showed left transverse sinus thrombosis (figure 4). He was treated conservatively for subacute intestinal obstruction along with low molecular weight heparin 60 mg twice daily. He was gradually improving and discharged on 20 day of his illness with continuation of oral anticoagulation for 6 months

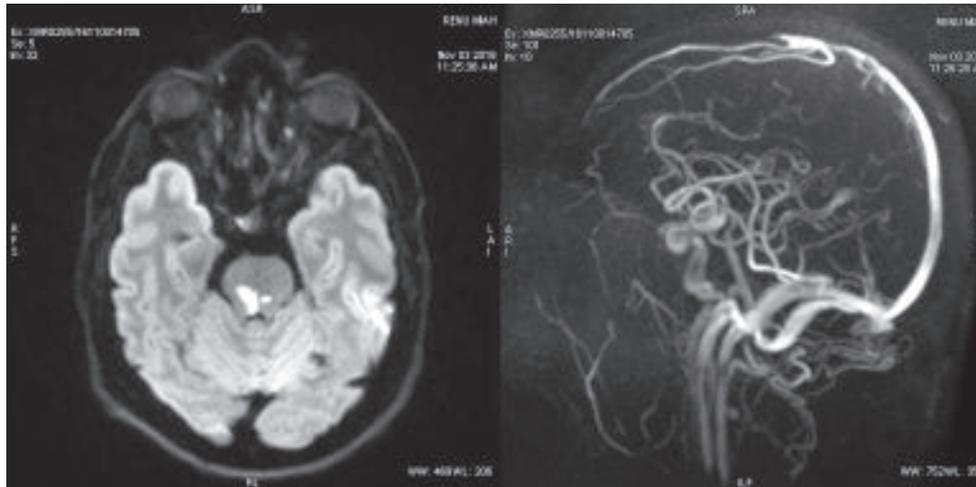


Fig.-3: MRI of brain showing pontine infarct and MRV showing thrombosis of superior sagittal sinus



Fig.-4: MRV of brain showing thrombosis of left transverse sinus

Discussion:

Cerebral venous sinus thrombosis is a potential life threatening condition that requires rapid diagnosis and urgent treatment. The main causes of CVST are dehydration, puerperium, antiphospholipid antibody syndrome, malignancy, infection, polycythemic state, paraproteinemia, factor V Leiden & protein C resistance, hyperhomocysteinemia, drugs like oral contraceptive. No risk factor can be discovered after extensive investigation in 25% of cases⁴. In the 4 cases, only 1 had history of taking oral pill.

CVST most commonly involves superior sagittal sinus (72%) followed by lateral sinus (70%). More than one sinus involved in 30-40% of cases⁵. The sinuses involved in our cases were superior sagittal sinus in case 2 & 3, transverse sinus in case 4 and multiple sinuses in case 1. So superior sagittal sinus was commonly involved in this study which was similar to Ashjadadeh N⁶. Clinical presentations are headache, seizure, focal neurological deficit and papilledema. Unusually patients present with thunderclap headache mimicking subarachnoid hemorrhage⁴. Among the cases, 3 patients presented with headache, 1 with seizure and 2 with papilledema.

Neuroimaging modalities of choice in CVST are computerized tomographic (CT) scan and MRI with MRV. Classically, CT scan depicts a hyperattenuating thrombus in the occluded sinuses; however, this sign is only present in 25% of patients. While CT scan is quick test to obtain in emergency room to assess extent of parenchymal injury. CT and MR angiography are also helpful to demonstrate the extent of thrombosis⁷. MRI with MRV is the investigation of choice which shows absence of flow void in the thrombosed sinuses. New modalities for diagnosis include 2D time-of-flight and phase contrast MRV⁸. In all of our cases, conclusive evidence was found on MRI with MRV. Work up for thrombophilic state such as Protein C, Protein S, antithrombin III, antiphospholipid antibody was done which was normal in this study.

Anticoagulation is the mainstay of treatment in CVST. Patients can be treated effectively with both forms of heparin .Oral anticoagulation should be initiated following acute treatment with heparin and continued for at least 3-6months if no procoagulant state was found or lifelong if there is an irreversible procoagulant state⁹. In all 4 cases, they were treated with low molecular weight heparin followed by oral anticoagulation (rivaroxaban) for 6 months. Warfarin was used as oral anticoagulant in most studies^{10, 11}. But we treated with rivaroxaban and there was no complication. Outcome was good in all cases.

Conclusion:

CVST is a rare cause of stroke that presents with variable symptoms that can mimic other neurologic pathologies. Prompt verification of thrombus with neuroimaging is necessary to provide adequate treatment in a timely manner. Treatment outcome was good by using rivaroxaban.

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