Diagnosing deep cerebral venous thrombosis

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ABSTRACT

Cerebral venous thrombosis (CVT) is a relatively rare vascular disorder involving the formation of a thrombus in the venous system of the cerebral vasculature. The nonspecificity of clinical symptoms seen with CVT elicits significant diagnostic challenges with the potential of serious morbidity and mortality associated with delays in therapeutic intervention. We present a case of CVT in a young patient who presented with loss of consciousness with no headache or focal deficits, the usual type of presentation.

KEYWORDS Cerebral venous thrombosis; loss of consciousness; seizure; thrombus

Cerebral venous thrombosis (CVT) is an infrequent cerebrovascular disorder caused by the formation of a blood clot in the venous sinuses, accounting for ~0.5% to 1%¹ of strokes. Although the presentation of CVT is highly variable, headaches and focal neurological deficits are the usual presenting features.

CASE DESCRIPTION

A 37-year-old woman was brought to the emergency room after being found on the floor at home unresponsive with urinary and fecal incontinence. In the emergency room, the patient was encephalopathic and dyspneic. She was oriented to month but not to year or location, was unable to correctly state her age or recent holidays, and had decreased speed of cognition with poor concentration. There were no focal cranial nerve findings, motor weakness, sensory loss, or cerebellar findings. Reflexes were 3+/4+ and symmetric. She denied headache or any other neurologic complaints. Further investigation revealed that she did visit the emergency room a week earlier with complaints of headache and lethargy. At that visit, the patient had refused further workup and left against medical advice with a presumptive diagnosis of dehydration. The patient's urine pregnancy test, head computed tomography (CT) scan, and electroencephalogram were negative. Hemoglobin was 7.4 g/dL, urinalysis was normal, cerebral spinal fluid and opening pressure was not recorded. Her cerebrospinal fluid had a glucose level of 64 mg/dL, leukocytes of 3 M/mL, and protein of 110 mg/dL. Magnetic resonance imaging (MRI) demonstrated CVT involving the straight sinus, vein of Galen, and the internal cerebral veins with subsequent venous infarction of the basal ganglia, thalami, central portion of the splenium, and scattered areas of white matter

(*Figures 1a–1d*). The extent of the thrombosis was clearly evident on the MRI and therefore magnetic resonance venography was not done. The patient was immediately started on a continuous heparin infusion on day 2. A complete hypercoagulable panel was ordered to investigate any underlying etiology, which also came back negative. On day 3 of admission, the patient reported occipital headaches for the first time. The patient continued to improve on heparin infusion and was discharged on day 7 with 6 months of anticoagulation therapy.

DISCUSSION

CVT is a rare cerebrovascular disorder with an incidence of about 5 per million and accounts for roughly 0.5%–1% of strokes.¹ The incidence is greater in the younger population, and roughly three-fourths of the cases occur in those under the age of 50 years.² The occurrence of CVT is most common in the third decade of life, with 75% of the cases being in women.³ Risk factors for CVT include hypercoagulable disorders, pregnancy, oral contraceptive pills, malignancy, and dehydration. The patient was not on any oral contraceptive pills. Nearly 90% of patients present with symptoms of headache.⁴ Of patients found to have CVT on imaging, only roughly 15% are found to have involvement of the deep venous structures.⁵ Seizures occur in almost 40% of patients with CVT. Such patients therefore require antiepileptic drug treatment.⁶ Our patient's loss of consciousness with urinary and fecal incontinence supports the possibility of a seizure that may have been triggered by CVT. Timely diagnosis of CVT remains challenging due to its diverse presentations. Our case highlights an atypical presentation of CVT in a patient with few risk factors and demonstrates the importance of considering this diagnosis in

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Figure 1. (a) MRI sagittal view with evidence of thrombosis in straight sinus, vein of Galen, and possibly the internal cerebral veins. (b) MRI axial view with evidence of venous infarction of the basal ganglia, thalami, central portion of the splenium, and scattered areas of white matter. (c) Sagittal CT view with hyperdensity in the internal cerebral vein. (d) Coronal CT comparison of the normal superior sagittal sinus (upper arrow) and the hyperdense thrombosed straight sinus (lower arrow).

young encephalopathic patients. The case further demonstrates the inevitable limitations of imaging modalities.

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