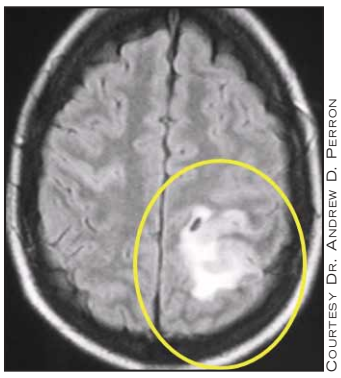
Imaging Is Often Helpful in Diagnosing CVT



Courtesy Dr. Andrew D. Perron

In this T2-weighted axial MRI, evidence of infarct can clearly be seen. The 22-year-old woman had thrombosis of the superior saggital sinus and the left transverse sinus.

BY KERRI WACHTER
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Without the information provided by imaging, the differential diagnosis of cerebral venous thrombosis is fairly broad, said Dr. Andrew D. Perron, residency program director in the department of emergency medicine at Maine Medical Center in Portland.

The patient may have ongoing seizures (nonconvulsive status) with a variety of etiologies possible—infectious, tumor, metabolic, or toxic, Dr. Perron said in an interview.

Cerebral venous thrombosis (CVT) disproportionately affects women. Mortality in untreated cases is reported to range from 14% to 48%. The outcome overall is good, particularly with IV heparin therapy, he said.

The MRI shown on the left is from a 22-year-old female graduate student who was taken to the emergency department by her roommate. She had had a headache for 5 days, and over the last 18 hours she had been somnolent with episodes of vomiting. Her right leg began twitching rhythmically and continuously about an hour before her admission to the ED. She had suffered no trauma, recent illness, or previous episodes.

On physical examination the patient was somnolent but aroused to pain, opening her eyes to regard the examiner. She made nonsensical but fluent verbalizations. Her right leg and right abdominal muscles were rhythmically twitching. She could move her arms and legs, but she clearly moved her left extremities more than her right. Bilateral papilledema was present on examination, Dr. Perron said.

The woman had a history of irregular, heavy menses, and she had recently started taking oral contraceptives to regulate her cycle.

When considered together, the recent history of headache, vomiting, twitching of the right leg, impaired movement of extremities on her right side, verbal difficulties, and papilledema strongly suggested CVT. Initial imaging of CVT can be difficult, and the diagnosis may not always be evident on contrast/noncontrast CT, Dr. Perron said. CT can be useful for ruling out other conditions such as neoplasm and in evaluating coexistent lesions, such as subdural empyema.

Evidence of infarction may not correspond to arterial distribution on CT. And in the absence of a hemorrhagic component, evidence of an infarct may be delayed by 48-72 hours. The empty delta sign, pathognomonic of sagittal sinus thrombosis, can be seen sometimes on contrast CT. It appears as an enhancement of the collateral veins in the superior sagittal sinus walls surrounding a nonenhanced thrombus in the sinus. But the empty delta sign is frequently absent, and early division of the superior sagittal sinus can give a false delta sign.

This patient was given an initial dose of phenytoin to manage the rhythmic leg twitching. Due to the strong suspicion of CVT, she was heparinized and admitted to the intensive care unit.

She underwent MRI and MR venography (MRV). MRI shows the pattern of an infarct when it does not follow the distribution of an expected arterial occlusion. It may show the absence of flow void in the normal venous channels. MRV provides excellent visualization of the dural venous sinuses and larger cerebral veins, Dr. Perron said.

In this case, both MRI and MRV revealed thrombosis of the superior saggital sinus and also the left transverse sinus. In addition, other findings were consistent with left parietal venous infarction. The woman had no further seizure activity on phenytoin. She was started on warfarin. The weakness on the right resolved, and she was discharged on phenytoin and warfarin.

CVT is an uncommon cause of cerebral infarction, relative to arterial disease, Dr. Perron said. The top five causes of CVT are oral contraceptive use, thrombophilia, pregnancy and puerperium, infection, and hematologic causes (polycythemia, thrombocythemia, and anemia). ■

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