66 year-old female presenting with altered mental status

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Axial CT head (noncontrast)
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Axial slice T2 weighted MRI
Dural venous sinus thrombosis (cerebral venous thrombosis) complicated by cerebral hemorrhage
Dense vessel sign (visualization of thrombosis)

CT head noncontrast
CT head without contrast

Cord sign (cord-like hyperdensity within dural venous sinus due to thrombosis)
Hemorrhage with surrounding infarct/edema in left temporoparietal lobe
Venous congestion related edema in thalamus bilaterally

Venous congestion related edema in splenium of corpus callosum
Hemorrhage in posterior left temporal lobe
- Acute hematoma: Isointense on T1, hypointense on T2

Vasogenic edema: Hyperintense on T2 and FLAIR, hypointense on T1, hypointense on DWI (unrestricted diffusion)
Thrombosis of superior sagittal sinus presenting as a filling defect highlighted by gadolinium
Cerebral venous thrombosis (CVT)

Epidemiology
- Typically occurs in patients < 50 years old
- More common in females than males (3:1 ratio)
- Accounts for 0.5%-1% of all strokes; incidence of approximately 3-5 cases per 1 million people per year

Etiology and risk factors
- Prothrombic state: Genetic and/or acquired conditions that affect either stasis of blood, endothelial dysfunction and/or injury, or hypercoagulable state (Virchow triad)
- High-risk thrombophilias (e.g. antithrombin III, protein C and S deficiency, homozygosity for factor V Leiden or prothrombin G20210A mutations)
- Oral contraceptive use
- Pregnancy
- Malignancy
- Infection
- Trauma
Cerebral venous thrombosis (CVT)

Complications:
- Intracranial hemorrhage (in up to 40% of cases)
- Neurologic worsening after diagnosis, e.g. new focal deficit or seizure (in up to 23%)
- Mortality (3-15%)

Presentation:
- Clinical presentation is highly variable depending on location and extent of thrombosis
- Possible symptoms include: headache, diplopia, visual impairment (with papilledema), sixth nerve palsy, reduced level of consciousness, hemiparesis, motor weakness, aphasia, sensory deficit, encephalopathy, seizures, somnolence
- Most common presentation is motor weakness, including hemiparesis in up to 40%
Cerebral venous thrombosis (CVT)

Diagnosis:
- Based on clinical suspicion with imaging confirmation
- If hypercoagulable state, clinical suspicion increases
- CT head or MRI brain useful for initial evaluation, but CVT is not ruled out if normal
- If CT or MRI negative and CVT is still suspected, or if need to further define extent of thrombosis, perform CT venography or MR venography

Management
- Initial anticoagulation with unfractionated heparin or LMWH, followed by vitamin K antagonist (regardless of presence of intracerebral hemorrhage)
- If infected CVT, antibiotics and surgical drainage
- If seizures and parenchymal lesions present, initiate antiepileptic drugs for defined duration
- Consider endovascular intervention if deterioration occurs despite intensive anticoagulation treatment


