



Neurovascular Service: Venous Sinus Occlusive Disease

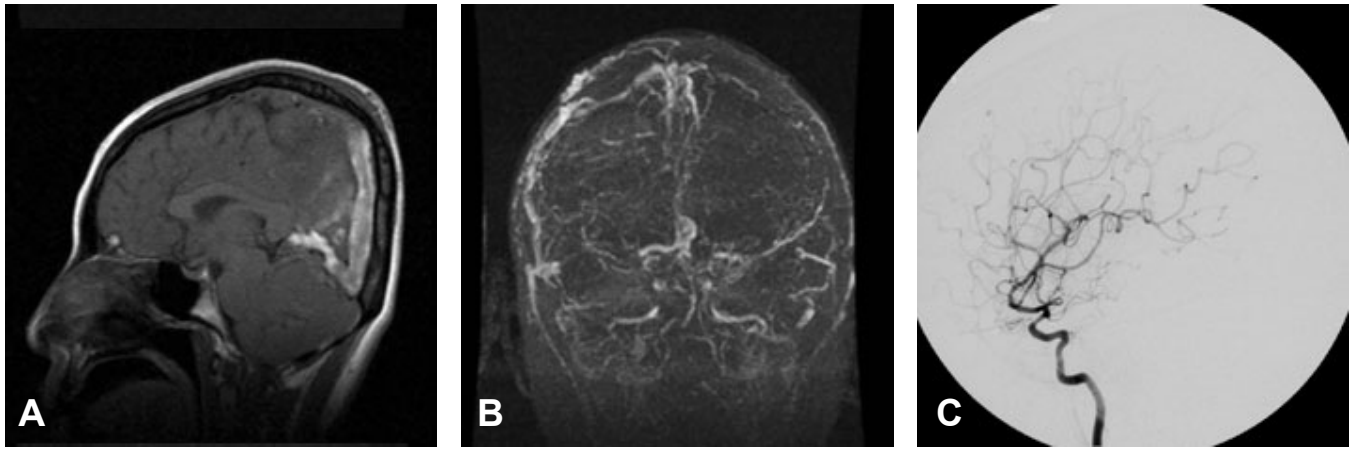
An uncommon vascular abnormality is that of venous sinus occlusive disease. This may result from a variety of hypercoagulable states such as paraneoplastic syndromes, birth control pills, smoking and genetic variations in which clotting factors are abnormal. As a result the slow flow within the veins may lead to clot formation. This affects normal circulation in the brain and can lead to edema, stroke or hemorrhage. In the hospital a CT venogram or MR venogram will be obtained to make the diagnosis. If a patient has mild symptoms, the MGH Neurology service often treats with anticoagulation medications including Heparin and possibly Warfarin. If patients present with serious neurologic deficits, an interventional procedure to lyse the clot may be necessary. This is accomplished under general anesthesia, and the procedure may last 4-6 hours. A sheath is placed in the femoral artery, and an angiogram is done to look at the circulation in the brain from the arteries to the veins. When the clot is identified, a second sheath is placed in the vein and a catheter is placed next to the clot in the affected venous sinus. A microcatheter is passed through the clot and medication is administered to break up the thrombus (tPA). Alternate methods of treatment include angioplasty, aspiration, guide wire manipulation, stent-like retriever device or Angiojet rheolysis. If the latter is used, one must watch for the degree of hemolysis passing into the urine and the hematocrit. Patients who present with chronic stenosis or near occlusion of a venous sinus can present with chronic severe headaches, blurry vision and elevated intracranial pressure. Some of them may be considered for angioplasty and stent of the sinus to improve venous outflow from the brain. The sheaths may be left in for a few days in case a second treatment is necessary. Patients are monitored in the Neuro-intensive care unit.

Interventional Neuroradiology Program, Neurovascular Service

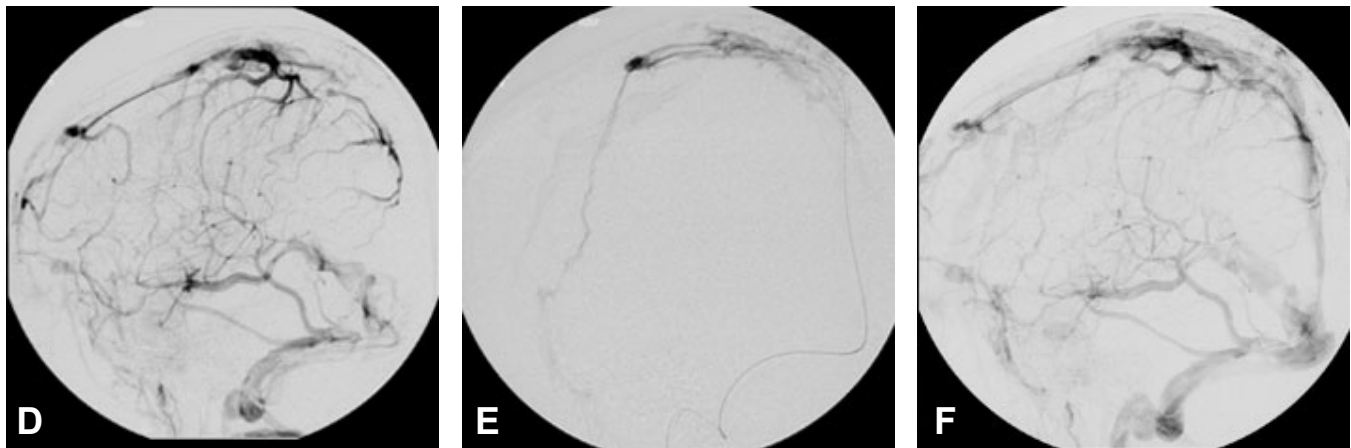
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(A) Young female presents with severe headache and cerebellar stroke. Sagittal MRI shows thrombus in the sagittal and straight sinuses. **(B)** AP view of the MR venogram show minimal flow or occlusion of the venous sinuses. **(C)** Lateral angiogram of the arterial phase is normal, but lateral view of the venous phase of the angiogram shows thrombosis of the sagittal sinus and torcular.



(D) Lateral view of the microcatheter in the sagittal sinus shows the thrombus. **(E)** Tissue Plasminogen Activator (TPA) and guidewire manipulation along with rheolysis were used to open the blockage. **(F)** Lateral view after thrombolysis shows recanalization of the sagittal and right transverse sinus.

The Neurovascular Service at Massachusetts General Hospital provides a multidisciplinary approach to patient care that combines neurosurgery, neurology and interventional neuroradiology. Based in the Department of Radiology, the Neurovascular Service's Interventional Neuroradiology Program uses minimally invasive procedures to treat a range of neurovascular disease and spinal disorders. For more information, visit www.mgh-interventional-neurorad.org

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