

Severe Subacute Headache Two Months after Head Trauma

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Clinical Background

A 59 year old presented unconscious with elevated blood alcohol level following closed head injury as a result of pedestrian, hit by a car. CT head revealed fractures of the left temporal and parietal bones as well as scattered subarachnoid and parenchymal hemorrhage within the left temporal lobe. Keppra was started. Over 48 hours the patient improved in orientation and neurologic exam and was discharged. 2 months later returned with subacute headache. Imaging is shown in Figure 1.

Discussion

Vascular imaging, noted an enlarged right superior ophthalmic vein and increased number and size of tortuous flow voids in the bilateral cavernous sinuses. MRA revealed abnormal flow related enhancement of the prominent cavernous sinuses (right greater than left), right superior ophthalmic vein, right sphenoparietal sinus and bilateral petrosal sinuses.

Carotid cavernous fistula (CCF) is an abnormal communication between the carotid artery and the cavernous sinus. This can be either due to a direct connection between the cavernous internal carotid artery and the cavernous sinus, or a communication between the cavernous sinus and a meningeal branch of the internal carotid artery or external carotid artery. The most common (70%-90%) etiology of direct CCF is trauma from a basal skull fracture. Symptoms include conjunctival chemosis, proptosis, pulsating exophthalmos, diplopia, ophthalmoplegia, orbital pain, audible bruits and blindness [1]. Our patient had subacute headache which prompted her visit to the emergency room. Treatment options for traumatic direct high flow CCF include endovascular embolization using liquid embolics, coils and, occasionally, parent artery sacrifice [2].

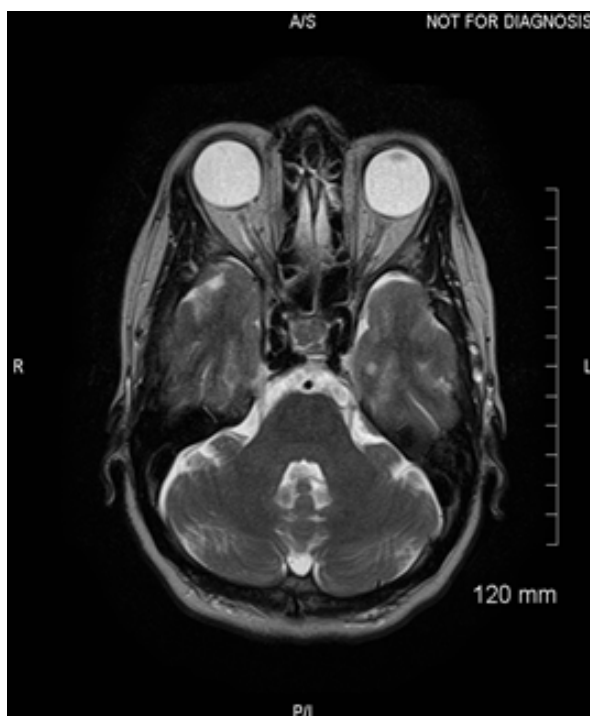


Figure 1: Axial T2 MRI demonstrate increased number and size of tortuous cavernous sinus flow voids bilaterally

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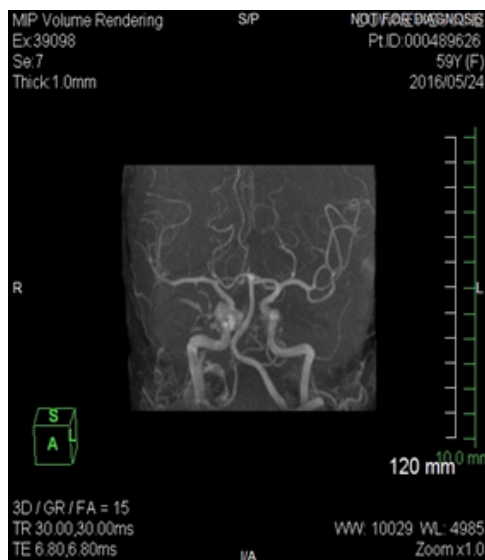


Figure 2: 3D MIP TOF MRA demonstrate increased number and size of tortuous cavernous sinus flow voids bilaterally, right greater than left

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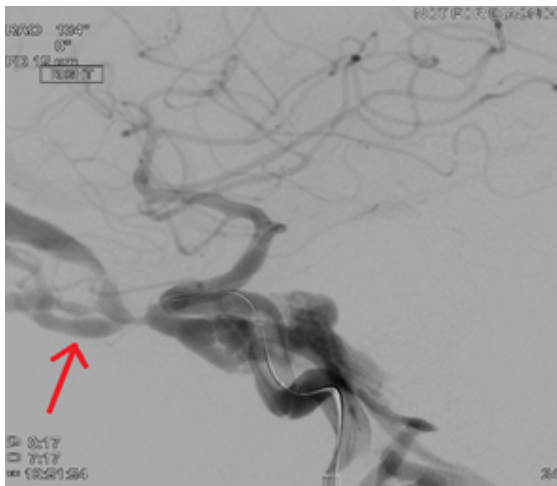


Figure 3: Lateral right ICA injection angiogram before endovascular coil embolization of CCF demonstrate resolution of enlarged right ophthalmic and cavernous sinus veins status following embolization

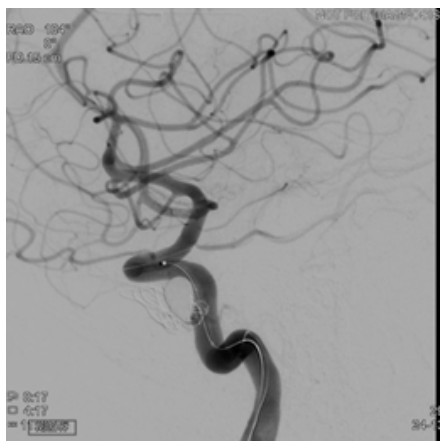


Figure 4: Lateral right ICA injection angiogram after endovascular coil embolization of CCF demonstrate resolution of enlarged right ophthalmic and cavernous sinus veins status following embolization