Transverse and sigmoid sinus thrombosis after traumatic brain injury

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CASE REPORT

A 40-year-old male was presented to the emergency department with complaints of diffuse frontal headache with photophobia, nausea and sinus pressure that developed gradually over three days. His medical history was significant for a basilar skull fracture from a motor vehicle collision. He was cleared of his cervical collar two weeks prior. Remaining review of systems was negative. No focal neurologic deficits present. The computed tomography (CT) scan showed an area of increased density in left transverse sinus which was concerning for thrombosis (Figure 1) so a magnetic resonance imaging (MRI) scan was done which confirmed the diagnosis. Magnetic resonance venography demonstrating non-visualization of the left transverse and sigmoid sinuses, and proximal left jugular vein, consistent with thrombus in the vein. He was treated with anticoagulation (Figure 2).

DISCUSSION

Cerebral venous thrombosis (CVT) as an etiology of headache is not always easy to diagnose unless suspected. The clinical manifestations are non specific, and overall, it is still not a common diagnosis, especially in North America [1].

Figure 1: Noncontrast head computed tomography. Arrow points to area of increased density in left transverse sinus, (dense clot sign) which is asymmetric when compared to right side.

Figure 2: Magnetic resonance venography demonstrating non-visualization of the left transverse and sigmoid sinuses, and proximal left jugular vein, consistent with thrombus in the vein.

Sinus thrombosis is not classically thought of as being associated with closed head injury, even though trauma is certainly one of the etiologies. Rather, the
Classic etiologies are neoplasms or hypercoagulable states such as pregnancy. However, with the increasing prevalence of traumatic brain injuries, and imaging for these injuries, it is being recognized more as a risk factor, both in adults and children. The initial imaging study of choice is unenhanced CT scan, which can demonstrate a hyperdensity in the sinus, referred to as a ‘dense clot sign’, in about 20–50% of cases. The follow-up study is MRI scan and magnetic resonance venography, or CT venography. A retrospective review found a 40% thrombosis rate, and concluded that CT venography should be performed in patients with fractures extending to a dural venous sinus or jugular bulb. In all imaging techniques, a hypoplastic or aplastic dural sinus can mimic thrombosis [2].

CONCLUSION

Given the increasing prevalence of traumatic brain injury, it is important to recognize that several sequelae, perhaps some not commonly recognized, are possible. Maintaining a high index of suspicion and following-up on potentially abnormal initial imaging findings is thus imperative. Untreated, cerebral venous thrombosis can lead to hemorrhagic infarction and death.


REFERENCES
