

Large Arteriovenous Malformation in an Adolescent Presenting With First Seizure

A 16-YEAR-OLD PREVIOUSLY healthy male had a generalized seizure. In the emergency department, he was combative, requiring administration of lorazepam and haloperidol. A noncontrast computed tomographic scan of the head (**Figure 1**) was suspicious for a large vascular malformation involving the left temporal, parietal, and occipital lobes. The neurological examination was significant for impaired word repetition ability and truncal ataxia without dysmetria or dysidiadoxia. The ataxia resolved over 24 hours and was assumed to be secondary to medications. The young man's brain magnetic resonance imaging revealed a large arteriovenous malformation (AVM) involving the aforementioned lobes with arterial supply from the left middle cerebral artery and the left posterior cerebral artery (**Figure 2**). The consultant neurosurgeon indicated that the lesion was not amenable to surgical treatment owing to almost complete involvement of the left hemisphere and the lesion's dual supply from the anterior and posterior circulations. The patient was

prescribed antiepilepsy medication and has remained seizure free 18 months out.

DISCUSSION

Josephson et al¹ reported that 25% of AVMs present with an unprovoked seizure in the adult population. This is the case even if there are no radiological signs of intracranial bleeding and the patient's examination is normal. Crawford et al² found that when epilepsy was the presenting symptom of AVMs, the risk for bleeding at 10 and 20 years was 22% and 30%, respectively. The overall annual bleeding rate of an unruptured AVM is 1% to 2%; the annual risk for disability is 1%, while the annual risk for death is approximately 1%.³ For these reasons, AVMs should be treated when possible. The goals of treatment are to reduce the risk for bleeding, mass effect, and seizures. Partial obliteration is not known to reduce the risk for future hemorrhage.³ Crawford et al² monitored 343 patients to assess the natural history of AVMs; they reported that lesions were more likely to be managed conservatively if they involved the left hemisphere, were

large (>6 cm), or were located deep in the brain.

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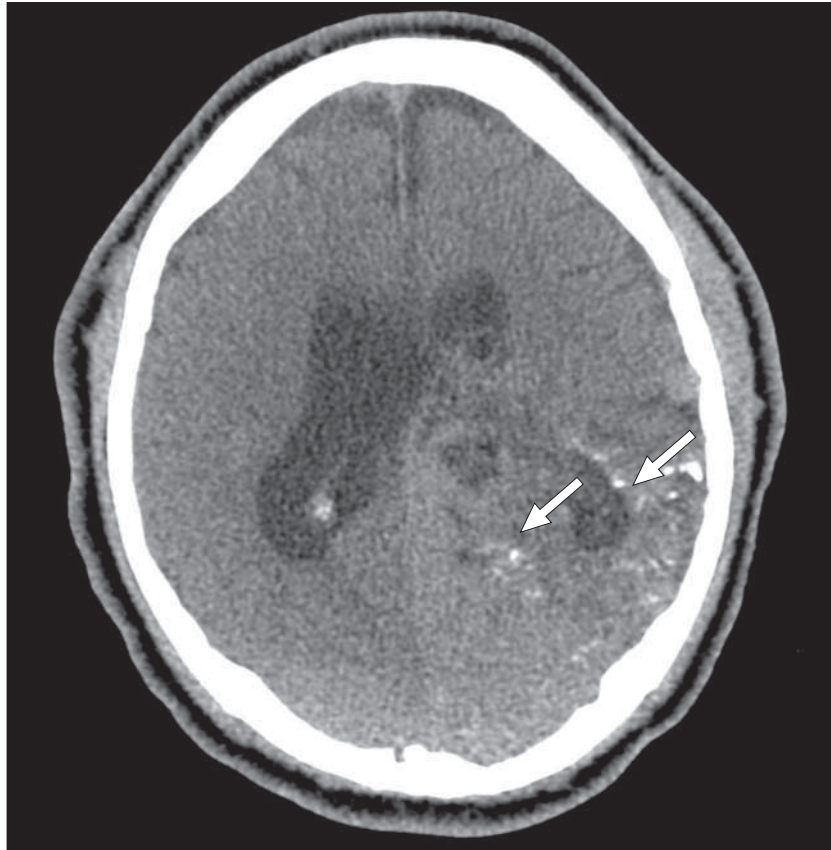


Figure 1. Noncontrast head computed tomographic scan. There are multiple irregular structures involving the posterior aspect of the left lateral ventricle. Also, there are multiple cortical calcifications involving the left temporal, parietal, and occipital lobes (arrows). There is significant cortical and white matter atrophy of the involved tissues.

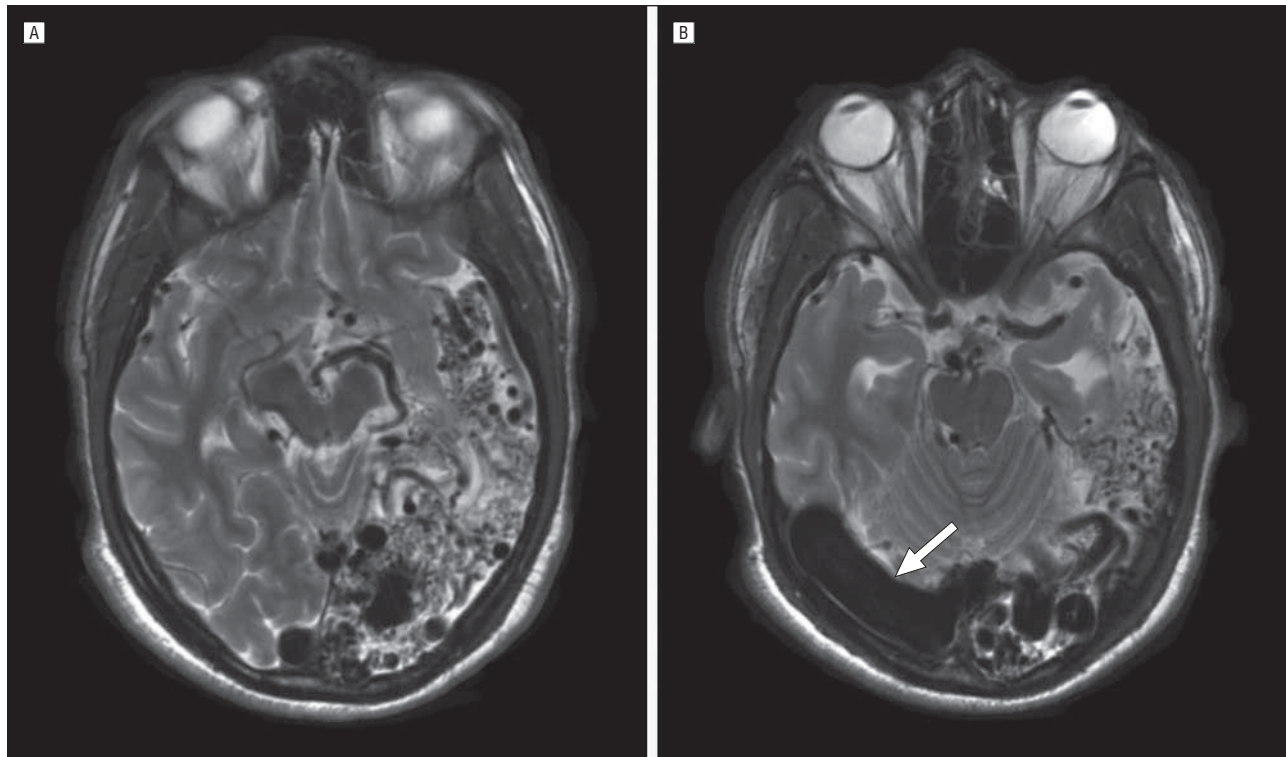


Figure 2. Axial T2-weighted brain magnetic resonance image. A, Arteriovenous malformation involving the left temporal, occipital, and parietal lobes associated with severe atrophy. B, Venous drainage is primarily in the superior sagittal sinus and vein of Galen, with reciprocal enlargement of the straight, right transverse, and right sigmoid sinuses (arrow).