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Intraventricular Peritoneal Shunt for Obstructive Hydrocephalus Caused by Cavernous Hemangioma of the Aqueduct of Sylvius

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A 74-year-old female presented with unresponsiveness, lethargy, nausea, and vomiting of unknown etiology. There was no discernible limb movement disorder or twitching. The patient had a history of diabetes for 20 years and hypertension for 5 years, with a blood pressure of 168/82 mmHg. A head computed tomography demonstrated hydrocephalus, and a dense nodule in the aqueduct of Sylvius (AOS) was observed (Figure 1a). Magnetic resonance imaging (MRI) of the brain revealed hydrocephalus, with the nodules in the AOS exhibiting a high signal on the T1-weighted image (T1-WI) (Figure 1b) and a low signal on the T2-WI (Figure 1c). Additionally, no enhancement was observed on the enhanced scan (Figure 1d), consistent with cavernous hemangioma. There was no evidence of bacterial proliferation in the cerebrospinal fluid culture, and the Pandy's test yielded negative results. The patient was diagnosed with hydrocephalus secondary to obstruction of the AOS. The patient was initially treated with subdural ventricular trepanation and drainage, but the patient's condition deteriorated after the drainage tube was removed. Because of the patient's poor underlying condition, a ventriculoperitoneal (VP) shunt was surgically implanted to redirect cerebrospinal fluid from the lateral ventricles to the peritoneal cavity, thereby reducing intracranial pressure. Simultaneously, betahistine hydrochloride was administered to regulate cerebral circulation and compound mannitol was administered to reduce intracranial pressure. Upon completing the treatment, the hydrocephalus-associated symptoms were alleviated, and the patient was discharged.

An AOS obstruction, which can lead to hydrocephalus, is a relatively uncommon occurrence. However, it can result in significant morbidity if left untreated. The most prevalent causes include congenital stenosis, tumors, or developmental venous anomalies.[1,2] The presence of cavernous hemangiomas on the AOS is rare, with only a few cases reported.[3-5] Its clinical presentation varies depending on the severity and chronicity of the obstruction, ranging from headaches and cognitive decline to ataxia and syncope. Early diagnosis through neuroimaging, particularly MRI, is essential for the timely implementation of intervention. Previously published literature indicates that endoscopic resection is feasible for small, vascularized, and cystic/fragile lesions.[3-5] Still, surgical resection is the primary method for relieving obstruction. However, considering the patient's age and history of hypertension and diabetes, we opted for a relatively conservative symptomatic treatment. The surgical implantation of a VP shunt effectively diverts excess cerebrospinal fluid and alleviates intracranial pressure. Nevertheless, long-term management necessitates vigilant monitoring for shunt-related complications and neurocognitive sequelae.

Hydrocephalus caused by the obstruction of the AOS poses diagnostic and therapeutic challenges. However, it can be effectively managed with timely intervention. This case study illustrated the significance of a comprehensive clinical evaluation, neuroimaging, and multidisciplinary collaboration in optimizing outcomes for obstructive hydrocephalus patients.

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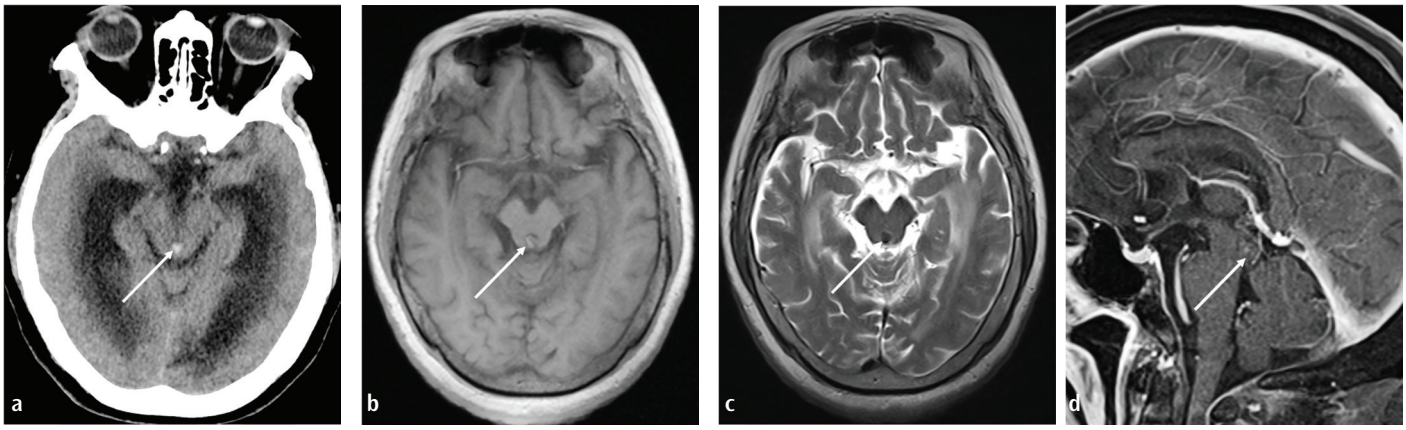

FIG. 1. Preoperative CT and MRI brain examination. Head CT revealed hydrocephalus and a high-density nodule in the aqueduct of Sylvius (a). The T1-weighted image indicated a high signal nodule in the aqueduct of Sylvius (b). The nodule elicited a low signal on T2-weighted imaging (c). The enhanced scan exhibited no substantial enhancement of the nodule (d).
CT, computed tomography; MRI, magnetic resonance imaging.

Informed Consent: Informed consent was obtained from the patient's immediate family for the anonymous use and publication of clinical and imaging data.

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