

Progressive Confusion, Memory Loss, and Gait Ataxia in an Adult

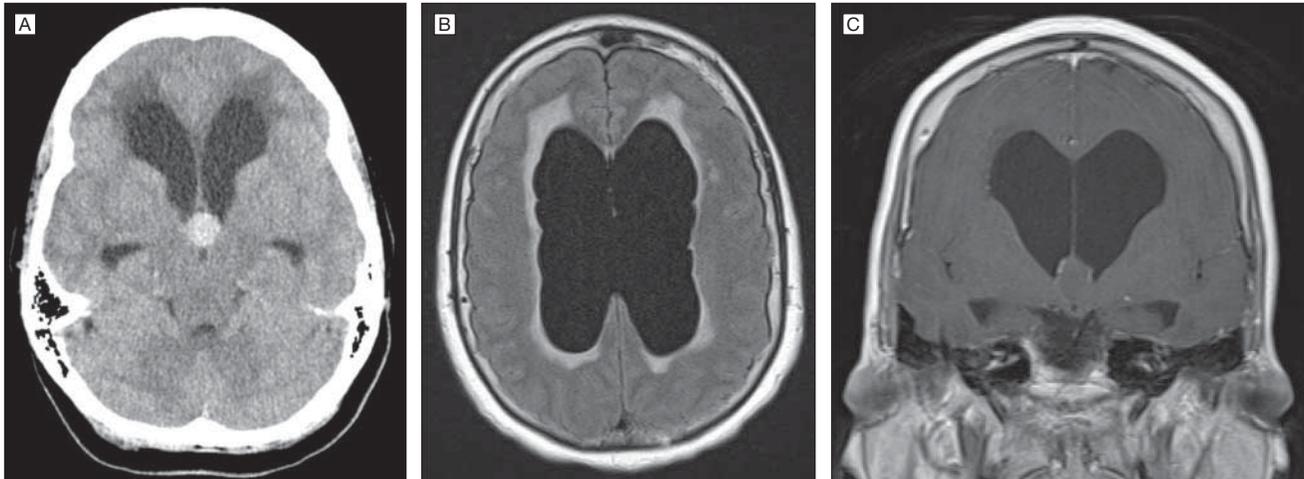


Figure 1. A, Axial noncontrast head computed tomography (CT) scan demonstrating significant hydrocephalus with periventricular hypodensity consistent with transependymal flow and a well-circumscribed hyperdense lesion in the third ventricle. B, Axial fluid-attenuated inversion recovery magnetic resonance imaging (FLAIR MRI) demonstrating enlarged lateral ventricles with periventricular hyperintensity indicative of transependymal flow. C, Coronal T1-weighted postcontrast MRI demonstrating enlarged lateral ventricles and a lesion in the third ventricle obstructing the foramen of Monro bilaterally.

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A 62-YEAR-OLD WOMAN IS SEEN IN THE EMERGENCY DEPARTMENT FOR progressive confusion, memory loss, and gait instability over a 6-month period with noticeable worsening over the last 2 months. She denies nausea, vomiting, lethargy, headache, fevers, chills, or night sweats. She smokes cigarettes (1 pack/day) and her family history is significant for breast cancer. On examination she is oriented to person, place, and time. Cranial nerves are intact and visual fields are full to confrontation. There is full strength in all extremities, sensation is intact, and reflexes are normal. She demonstrates instability with tandem walking and difficulty remembering 3 of 3 objects over a 5-minute period. Vital signs are normal and she is afebrile. Serum electrolytes, liver enzymes, glucose, complete blood cell count, and urinalysis results are normal. Computed tomography (CT) of the head demonstrates a mass in the third ventricle and significantly enlarged lateral ventricles with transependymal flow (FIGURE 1).

What Would You Do Next?

- A. Administer intravenous steroids
- B. Consult neurosurgery for resection
- C. Obtain a CT scan of chest and abdomen
- D. Perform lumbar puncture to treat hydrocephalus and obtain cerebrospinal fluid for analysis

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Diagnosis

Intraventricular obstructive hydrocephalus due to a colloid cyst of the third ventricle

What to Do Next

B. Consult neurosurgery for resection

The key clinical feature in this case is to recognize that hydrocephalus and blockage of cerebrospinal fluid (CSF) absorption can be due to intraventricular or extraventricular pathology, and this distinction dictates proper treatment.¹ Although communicating or extraventricular obstructive hydrocephalus can be treated with a lumbar puncture, such an approach in the setting of a colloid cyst in the third ventricle and intraventricular obstructive hydrocephalus is contraindicated and can lead to herniation and death.² Symptomatic colloid cysts should be fully resected³ due to a high recurrence rate with aspiration or partial resection.⁴

Comment

Altered mental status and gait instability in an adult with hydrocephalus on imaging is classically seen in cases of idiopathic normal-pressure hydrocephalus or other types of communicating hydrocephalus secondary to hemorrhage, infection, tumor, or other causes. Intraventricular masses, cysts, hematomas or tumors, and, specifically, colloid cysts in the third ventricle can result in an intraventricular obstructive hydrocephalus and present similarly.² Without neuroimaging, chronic hydrocephalus may be misdiagnosed as Parkinson disease, Alzheimer disease, or dementia given the nonspecific symptoms.

All hydrocephalus is obstructive and classified as either noncommunicating or communicating depending on whether the blockage of CSF is intraventricular or extraventricular, respectively.¹ Lesions within the ventricular system result in blockage of CSF outflow and dilation of the ventricular system proximal to the obstruction. Extraventricular obstructive hydrocephalus, as seen in normal-pressure hydrocephalus or other communicating hydrocephalus, often results in dilation of the entire ventricular system, which includes the lateral, third, and fourth ventricles. In this patient, the colloid cyst in

the third ventricle resulted in blockage of both foramen of Monro causing dilation of both lateral ventricles (Figure 1). Hydrocephalus can present acutely and lead to headache, nausea, vomiting, and lethargy, eventually resulting in death. Chronic hydrocephalus typically presents in a more indolent fashion consisting of headache, confusion, gait ataxia, memory loss, and urinary incontinence.

Common lesions of the third ventricle include colloid cysts, craniopharyngiomas, astrocytomas, choroid plexus cysts, and teratomas.⁵ The most common neoplastic lesion of the third ventricle is a colloid cyst.⁶ Colloid cysts vary greatly on CT and MRI but are usually diagnostic on imaging because they are well circumscribed and hyperdense on CT⁷ and are most commonly located near the foramen of Monro, just posterior to the fornices in the antero-superior third ventricle.⁶ Colloid cysts are typically found incidentally and are asymptomatic. Occasionally patients present with positional headaches due to the ability of the cyst to swing from its attachment to the roof of the third ventricle into the foramen of Monro and acutely obstruct CSF flow out of the lateral ventricle(s).² Presenting symptoms vary and are related to the cyst, hydrocephalus, or both.^{2,8} Rarely, but most concerning, colloid cysts can result in acute hydrocephalus that may lead to sudden death.^{2,9} Although the workup of many intracranial masses includes CT of the chest, abdomen, and pelvis, colloid cysts are histologically benign lesions present only in the brain.²

The treatment of colloid cysts is surgical.³ However, all colloid cysts do not need to be treated. Symptomatic masses should be resected, but small asymptomatic colloid cysts can be serially imaged for enlargement.³ Historically, surgical resection has required open, microsurgical techniques.³ Recent technological advances have led to an increase in neuroendoscopic resections, which are proving to be safe and effective.¹⁰

Patient Outcome

The patient underwent endoscopic resection of the mass in the third ventricle, which histologically was confirmed as a colloid cyst (FIGURE 2). The

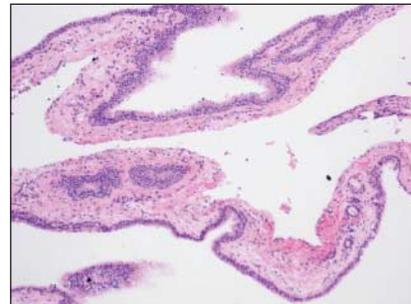


Figure 2. Photomicrograph of the colloid cyst in the third ventricle demonstrating columnar to cuboidal and occasionally ciliated epithelium with an underlying thin capsule of fibrous connective tissue (hematoxylin-eosin, original magnification $\times 100$).

patient was discharged on postoperative day 2, and postoperative MRI demonstrated a complete resection of the colloid cyst. At her 4-month follow-up, the patient was neurologically intact with normal gait, mental status, and memory function. Given the chronic hydrocephalus and delayed presentation, the patient maintains some cognitive impairment but is improving.

Conflict of Interest Disclosures: Both authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Dr Greenlee reported being a member of an Aesculap Inc advisory board. Dr Dlouhy reported no disclosures.

Additional Contributions: We thank the patient for providing permission to publish her information.

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