



Case Report

Colloid cyst curtailed: A case report of spontaneous colloid cyst regression

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ABSTRACT

Background: Colloid cysts arise from the roof of the third ventricle and are at risk for obstructing the flow of cerebrospinal fluid (CSF) and causing increased intracranial pressure. With advancements and increased frequency of imaging, colloid cysts are sometimes discovered incidentally. In these cases, the neurosurgeon is faced with the decision of whether to intervene or manage conservatively.

Case Description: A 67-year-old man was discovered to have a colloid cyst when imaging was performed for transient neurologic deficits. CT and MRI brain revealed a 5mm lesion in the third ventricle with characteristics suggestive of the colloid cyst. Except for his initial presentation, the patient did not exhibit any symptoms and was followed with serial imaging. Four years after discovery, the colloid cyst regressed in size.

Conclusion: The evolution and resolution of colloid cysts remain elusive; however, the discovery of incidental colloid cysts due to more frequent and more advanced neuroimaging emphasize the importance of this topic. The fear of conservative management is acute decompensation due to obstruction of CSF. However, surgical risks may be avoided if these asymptomatic lesions regress and resolve without intervention. Conservative management is a viable option for patients with colloid cysts, who may not only avoid surgery but who might also rarely experience cyst resolution.

Keywords: Colloid cyst, Cyst, Third ventricle

INTRODUCTION

Colloid cysts are benign neoplasms of neuroepithelial origin, thought to be derived from the parapophysis of the roof of the third ventricle where they are typically located.^[7] They are rare, accounting for only 0.5–2% of all brain tumors, which are identified on average in patients aged 20–50 and affect both men and women equally.^[5] About half of the cases are symptomatic; the other half are identified incidentally after imaging for neurotrauma or nonspecific complaints.^[2,10] Symptomatic patients generally present with evidence of hydrocephalus or raised intracranial pressure: headache, diplopia, nausea/vomiting, and disturbance in gait. The location of colloid cysts within the third ventricle is such that occlusion of the foramen of Monro is possible and may lead to hydrocephalus. There have also been reports of acute obstruction of the foramen and sudden death, the most feared complication of the colloid cyst.^[6]

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Treatment of symptomatic colloid cysts requires neurosurgical intervention. Colloid cysts can be resected using microsurgical or endoscopic techniques, aspirated using stereotaxis, or patients can be shunted as a means to treat their symptoms.^[10] Historically, the fear that colloid cysts may cause sudden death favored intervention. However, it has become accepted practice that smaller, asymptomatic colloid cysts can be followed expectantly, reserving surgery for enlarging lesions, thereby reducing the risk of exposure to surgical risks and complications. It is anticipated in these patients that cysts will remain essentially stable or slowly enlarge over time. In contrast to this expectation, we report here on the case of a patient with an incidentally discovered colloid cyst who was found to have cyst regression 4 years after his initial scan.

CASE REPORT

A 67-year-old man presented to the emergency room after the acute onset of neurologic deficits. The patient arose from bed with new-onset dizziness, left leg paresthesia, and gait abnormalities. His gait was described as “left-leaning” and ambulating was associated with the feeling of imminent syncope, although no syncopal episodes were reported. The patient also endorsed a frontal headache, in which he described as similar in intensity and quality to previous headaches. No symptoms were present the previous day or evening before bed, and the patient denied any previous reports of these symptoms, with the exception of chronic headaches. Medical history was significant for hypertension and hepatitis C; he was being treated with ledipasvir/sofosbuvir at the time of evaluation. Family history revealed a brother who died suddenly from a brain aneurysm.

In the emergency room, there were no significant physical examination findings, including no focal neurologic deficits. CT brain revealed a 5 mm hyperdensity in the third ventricle, concerning for hemorrhage or neoplasm. MRI brain confirmed the presence of a cystic lesion in the third ventricle, which appeared to arise from the roof of the third ventricle posterior to the foramen of Monro. The foramen appeared patent bilaterally, and consistent with this, there was no associated ventriculomegaly. DWI did not reveal areas of restricted diffusion, making a cerebrovascular event unlikely, and MR angiogram was normal with the exception of a fetal posterior cerebral artery. There were no aneurysms, or arteriovenous malformations appreciated on MRA. The patient was determined to be neurologically stable, with likely an incidental finding of a colloid cyst. It was, therefore, recommended that he be expectantly managed with follow-up scans and was advised to seek immediate care if there was an abrupt change in neurologic status.

The patient was seen in the clinic for follow-up at 3 months at which point repeat imaging revealed the same cystic lesion

unchanged in size, appearance, and location [Figure 1a]. He remained neurologically stable, and his examination was unremarkable. One and 2 years later, he was seen in follow-up again with similar results [Figure 1b]. His surveillance was extended to 2 years at which point his imaging revealed a lesion 2.5–3 mm in size, with a hyperintense appearance consistent with involution of the colloid cyst [Figure 1c].

DISCUSSION

Management of colloid cysts has typically been described in three different ways: definitive resection of the tumor, treatment of symptoms through a shunt and expectant management with regular imaging surveillance. Given the benign nature of this tumor type, with smaller, asymptomatic lesions, it is reasonable to choose surveillance over intervention and avoid the risks and complications associated with surgery. However, the risk of sudden death, which has been reported in cases of the untreated colloid cyst, along with improved surgical techniques with decreased risk, has caused some to favor intervention,^[3,12] while the criteria directing the decision to intervene or observe continue to be evaluated, what is clear, are the need to understand these tumors and their natural progression, which will aid in decision-making regarding treatment.

Previous to this case report, there have been five other reports of patients observed to have had regression/involution of a colloid cyst. The first report, published in 2002, described an 83-year-old man with symptoms similar to normal pressure hydrocephalus, with imaging revealing obstructive hydrocephalus due to a hyperdense lesion in the third ventricle.^[8] Imaging just 10 days later revealed that the cyst had regressed, with remnants of the cyst still visible on MRI. A report published in 2008 described that a 35-year-old man found to have an incidental colloid cyst, discovered while imaging for neurotrauma.^[1] The decision was made to manage expectantly and repeat imaging 15 months later showed no evidence of a cyst or cyst remnants, presumably because it had resolved. In 2011, a report of a 65-year-old man discovered to have a colloid cyst after undergoing diagnostic MRI for headaches was found to have spontaneous resolution of the cyst 19 months later.^[4] In the first case, the cyst resolved before any intervention could be performed; in the second, the patient was asymptomatic and so surveillance was favored, and in the third, symptoms were mild and already improved from the initial presentation; therefore, conservative management was favored as well.

A fourth report published in 2016 described a 46-year-old woman with an incidental colloid cyst, initially asymptomatic, with planned intervention when she became symptomatic with headaches and cognitive deficits 3 years later.^[11] Instead, the intervention was aborted because imaging revealed spontaneous regression of the cystic lesion

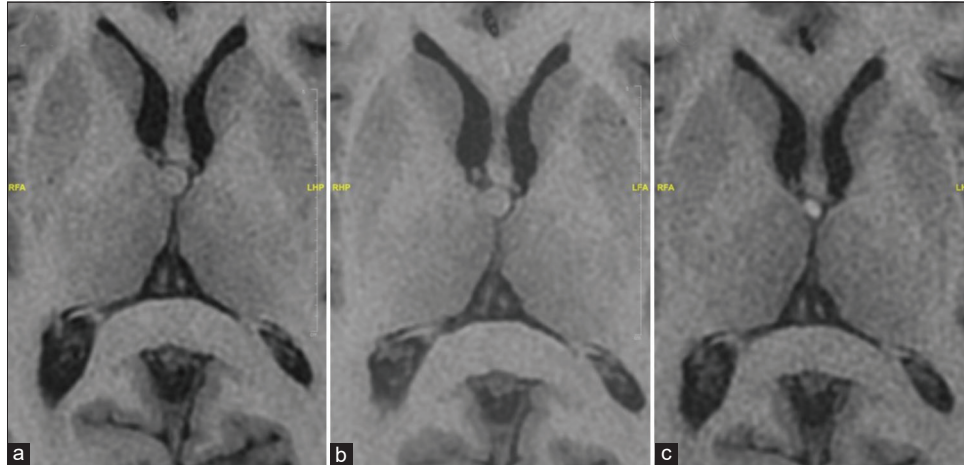


Figure 1: T1 MRI axial images show the stability of the colloid cyst within the third ventricle, followed by regression images were acquired in July 2015 (a), August 2017 (b), and August 2019 (c). The cyst measured 5 mm initially and at follow-up scans 2 years later, and 2.5–3 mm at his follow-up scan in 2019. The 2019 scan also shows hyperintense signal in the cyst, suggesting colloid cyst involution.

just prior to her scheduled surgery. Finally, most recently, in 2020, a report described a 51-year-old man with von Hippel-Lindau disease, discovered to have a colloid cyst and observed to have subsequent regression and resolution over a period of 9 years.^[9]

These five reports demonstrate that it is possible to have spontaneous resolution of a colloid cyst and suggest that conservative management is a viable approach to managing patients, particularly with asymptomatic colloid cysts identified incidentally. Here, we add to this fund of knowledge, demonstrating that without intervention, this tumor can remain stable for years and then begin to regress spontaneously. The cause of cyst initiation and regression is still incompletely understood. The previous reports suggest that cyst rupture may contribute to its resolution; however, other reports deny imaging findings suggestive of rupture but indeed show resolution. It is possible that rupture was missed, given the time spaced between imaging studies, or another mechanism of involution, still unknown, was responsible.

Some would argue that in this case, the patient presented with neurologic deficits and, therefore, cannot be classified as “asymptomatic.” On examination, the patient was consistently neurologically stable and remained that way throughout years of surveillance. He experienced chronic headaches, potentially caused by his ledipasvir/sofosbuvir treatment for hepatitis C.^[13] Transient neurologic deficits would normally be concerning for transient ischemia, and although DWI did not show evidence of ischemia, a transient ischemic attack cannot be definitively ruled out. In the absence of sustained neurologic symptoms, signs of increased intracranial pressure, and ventriculomegaly on imaging, this case demonstrates one that qualifies for expectant management.

Indeed, in the case of this patient, expectant management proved to be sufficient and arguably, superior, given that eventually, the patient experienced a regression in cyst size. In the future, it will be important to study the evolution of colloid cyst development, from initiation to either tumor growth or regression and the factors that influence growth and regression, to determine in which patients are more suited to surgery and which can be carefully monitored without intervention.

CONCLUSION

Colloid cysts are benign lesions, most commonly located within the third ventricle. They become symptomatic when cerebrospinal fluid (CSF) is occluded and intracranial pressure is raised. Fortunately, patients with symptomatic lesions can often be cured with surgical intervention with either cyst removal or shunting of the CSF. Uncertainty arises when patients are discovered to have colloid cysts incidentally; should the neurosurgeon intervene and remove the cyst or is a more conservative approach sufficient? This uncertainty is derived from our lack of understanding of these colloid cysts, their initiation, growth, and resolution. This case report demonstrates that colloid cysts can regress, which supports conservative management in patients who are asymptomatic at the discovery.

Declaration of patient consent

Patient’s consent not required as patients identity is not disclosed or compromised.

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Conflicts of interest

There are no conflicts of interest.

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