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Case Report

Hemorrhagic cavum vergae colloid cyst: A presentation of anterograde amnesia without hydrocephalus

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ABSTRACT

Background: Colloid cysts characteristically arise from the roof of the third ventricle near the foramen of Monro, causing symptoms from obstructive hydrocephalus. However, atypical locations have been reported with various clinical presentations, growth patterns, and displacement of surrounding anatomic structures.

Case Description: Here, we describe the interesting case of a patient with a large hemorrhagic cavum vergae colloid cyst presenting with anterograde amnesia soon after starting antiplatelet therapy. The patient did not have hydrocephalus on presentation and his amnesia persisted after complete removal of the hemorrhagic mass through transcallosal interforniceal approach.

Conclusion: To the best of our knowledge, this is the only reported instance of a colloid cyst presenting with amnesia in the absence of hydrocephalus. Pathophysiology as well as diagnostic and management strategies of hemorrhagic colloid cysts are discussed.

Keywords: Cavum vergae, Colloid cyst, Microsurgery

INTRODUCTION

Colloid cysts are unusual entities, with an annual incidence of 3.2 cases/1 million.[10] While they most often arise from the rostral portion of the third ventricle, they have also been found to occur in other areas of the ventricular system, basal cisterns, and even within brain parenchyma.[3,6] Prior studies have attributed atypical intraventricular locations to variations of the anatomical relationship between the fornices and lateral ventricles.[3] Cavum septum pellucidum and vergae are two anatomical variations that occur if the leaflets of the septum pellucidum fail to fuse during development, resulting in a potential space anterior or posterior to the columns of the fornix, respectively. Given their distance from the foramen of Monro, lesions within these spaces are often able to grow considerably large before the development of symptoms.[3] Hemorrhage within a colloid cyst is also quite rare, but can cause rapid expansion.[9,10] Here, we report an interesting clinical presentation of a patient found to have a hemorrhagic colloid cyst within the cavum vergae and discuss its unusual symptomatology and implications for clinical management.

CASE REPORT

A 65-year-old male presented to the emergency center with 2 weeks of anterograde amnesia and related confusion, one episode of urinary incontinence, and gradual functional decline including worsening of his baseline ataxic gait. His medical history included obesity, hypertension, nonalcoholic fatty liver disease, diabetes mellitus type II, congestive heart failure, and coronary artery disease with a recent coronary stent placement and start of dual antiplatelet therapy 3 weeks before presentation. Other than impaired word recall, he had no focal deficits on neurological examination. However, initial CT imaging of the head revealed a heterogeneously hyperdense, lobulated mass in the area of the posterior septum pellucidum measuring 2.8 cm in diameter without any evidence of hydrocephalus [Figure 1a]. A subsequent MRI demonstrated a hemorrhagic mass lesion within the cavum vergae [Figure 1b], posterior to the columns of fornix and foramen of Monro [Figures 1c and d], and displacing the internal cerebral veins laterally. The contour of the mass was irregular, with asymmetric extension posteriorly and inferiorly, resulting in mass effect on the thalami bilaterally [Figure 1e]. Differential diagnoses included a hemorrhagic metastasis, colloid cyst, central neurocytoma, subependymoma, or subependymal giant cell astrocytoma. His antiplatelet medications were held and one unit of platelets was transfused for reversal. CT imaging of the body was negative for any primary malignancy. Given the presence of intralesional hemorrhage and symptoms likely related to mass effect on the fornix, in addition to obtaining a diagnosis, surgical resection was recommended. Following cardiac clearance, the patient underwent a right frontal craniotomy and an interhemispheric, transcallosal, and interforniceal approach for resection.

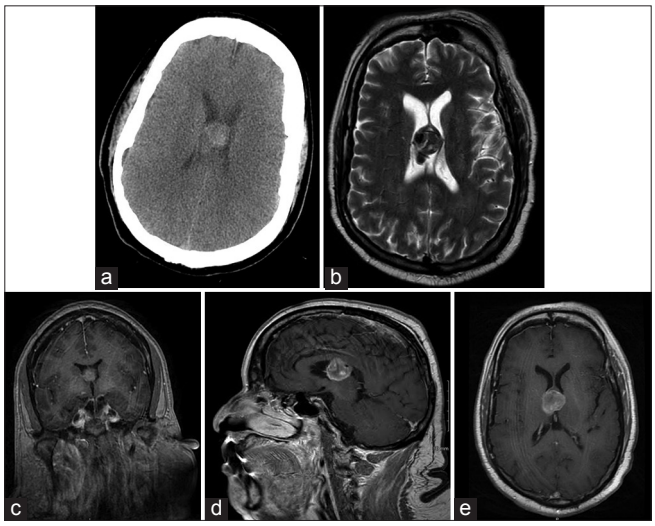

Figure 1: Noncontrast axial CT image demonstrates heterogeneously hyperdense mass within the septum pellucidum (a). Axial T2-weighted MRI image demonstrates location of the hemorrhagic lesion posterior to the columns of the fornix within the cavum vergae (b). Coronal (c) and sagittal contrasted T1-weighted MRI images demonstrate patent foramen of Monro (d) lateral displacement of internal cerebral veins (e) and thalami bilaterally.

The cystic mass was encountered immediately after the callosotomy. It displaced the fornices laterally but did not extend into the third ventricle [Figure 2a]. The fornices appeared thin and we tried to minimize their manipulation during surgery. The cyst contained xanthochromatic and mucinous debris with evidence of recent as well as chronic hemorrhage [Figure 2b]. The capsule was densely adherent to bilateral internal cerebral veins, requiring careful microsurgical dissection [Figure 2c]. Before closure, an external ventricular drain was placed. Postoperatively, the patient was transferred to the intensive care unit. The external ventriculostomy drain was successfully weaned and removed after 4 days. Aspirin was restarted on postoperative day 4 and clopidogrel on postoperative day 6. Given persistent confusion following surgery, CT head, EEG, and infectious work-up were obtained, but no acute etiology was immediately identified. MRI brain revealed gross total resection with no unexpected findings. The patient's hospital stay was complicated by hyperglycemia requiring an insulin drip, urinary tract infection treated with antibiotics, and dysphagia for which an upper endoscopy was performed revealing gastritis. Gradually, the patient's mentation improved and he was deemed appropriate for inpatient rehabilitation on postoperative day 15. At time of discharge, his neurologic status was at his preoperative baseline.

On pathology, the cyst was found to be lined by a simple layer of cuboidal cells which were sparsely ciliated and diffusely positive for epithelial markers epithelial membrane antigen and

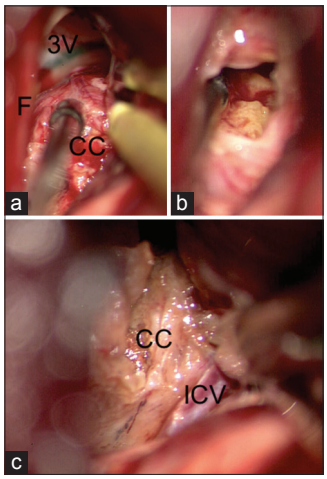

Figure 2: Colloid cyst displaced the fornices laterally and did not extend into the 3rd ventricle (a). Xanthochromic, mucinous contents of the colloid cyst (b). Adherence of the cyst wall to the internal cerebral vein (c). 3V: 3rd ventricle, CC: Colloid cyst, F: Fornix, and ICV: Internal cerebral vein.

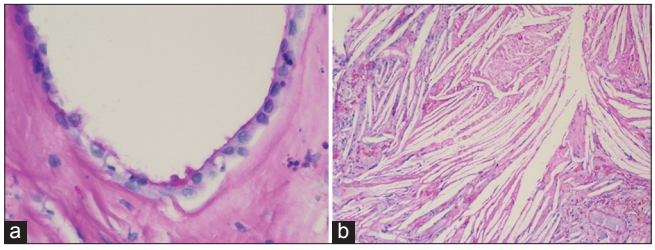

Figure 3: Periodic acid–Schiff stain of cavum vergae colloid cyst, which is lined with sparsely ciliated, simple cuboidal cells (a). Cholesterol clefts were also present (b).

cytokeratin [Figure 3]. Periodic acid–Schiff stain was negative. The cyst wall was thick, fibrous, and sclerotic with degenerative changes. No squamous metaplasia was appreciated. Cyst lining was negative for glial fibrillary acid protein. Contents included hemosiderin, mucus, and cholesterol clefts. Findings were consistent with a hemorrhagic colloid cyst.

At 6-month clinic follow-up, he was able to carry out routine self-care activities and conversation although his residual anterograde amnesia and baseline comorbidities kept him relatively sedentary and dependent on family for overall care.

DISCUSSION

Hemorrhagic colloid cysts are highly unusual, with <20 cases and five autopsy reports in the literature to date.[2] Each of these involved a cyst located within the roof of the third ventricle, where patients presented with symptoms of acute hydrocephalus. These included memory deficits, headaches, and/or cognitive disturbances accompanied by ventriculomegaly. In some cases, rapid neurologic deterioration and death ensued. While our patient presented with new short-term memory impairment, imaging on presentation did not reveal evidence of hydrocephalus such as dilated ventricles or transependymal flow. The patient's short-term memory deficits on presentation were consistent with the thin appearances of fornices noted intraoperatively. However, we could not rule out any damage from intraoperative manipulation of fornices playing a role in persistent postoperative deficits. To the best of our knowledge, this is the only report of a colloid cyst which presented with amnesia in the absence of hydrocephalus. We presume the forniceal injury resulted from a rapid expansion of the mass due to hemorrhage, causing rapid forniceal stretch without obstruction of the CSF passages.

Colloid cysts appear hyperdense on CT imaging, and therefore, hemorrhage cannot be ruled out until an MRI is obtained.[7] Expedited management due to the possibility for rapid decline and mortality is recommended. Prior reports recommend consideration of "bleeding tendencies" for hemorrhagic cysts.[1] These reports of hemorrhagic colloid cysts included a patient with a history of hypertension, another with leukemia and chronic thrombocytopenia, and another with recent warfarin use – however, INR, in this case, was found to be normal on presentation.[4,5,8] It is difficult to quantify the risk of hemorrhage in colloid cysts given the limited number of known instances. However, in patients with known colloid cysts, this risk of hemorrhage should be taken into consideration when weighing the risks and benefits of surgical resection or use of anticoagulation or antiplatelet medication.

CONCLUSION

This is the first report of a hemorrhagic cavum vergae colloid cyst presenting with anterograde amnesia without hydrocephalus. We hypothesize that the mass underwent accelerated hemorrhagic expansion after the recent initiation of dual antiplatelet therapy, and the resultant stretch injury on bilateral fornices in the absence of hydrocephalus was responsible for the anterograde amnesia on presentation.

Hemorrhagic colloid cysts are rare entities which can occur in unusual locations. Anterograde amnesia from forniceal stretch injury can occur from a rapidly increasing local mass effect or acute hydrocephalus. Expedited management and microsurgical approach are favored.

Declaration of patient consent

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

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Nil.

Conflicts of interest

There are no conflicts of interest.

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