Case Report

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

Rita Snyder¹, Sungho Lee¹, Kent Heck², Jacob J. Mandel³, Akash J. Patel¹, Ali Jalali¹

Departments of ¹Neurosurgery, ²Pathology and ³Neurology, Baylor College of Medicine, Houston, Texas, United States.

E-mail: *Rita Snyder - rita.snyder@bcm.edu; Sungho Lee - sungho.lee@bcm.edu; Kent Heck - heck@bcm.edu; Jacob J. Mandel - jacob.mandel@bcm.edu; Akash J. Patel - akash.patel@bcm.edu; Ali Jalali - ali.jalali@bcm.edu

*Corresponding author:
Rita Snyder,
Department of Neurosurgery,
Baylor College of Medicine,
Houston, Texas, United States.
rita.snyder@bcm.edu

Received : 02 September 2021
Accepted : 25 March 2022
Published : 15 April 2022

DOI
10.25259/SNI_886_2021

Quick Response Code:

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.[¹,³] 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 intrasional 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.

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 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.

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.
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. 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 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 fornical 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.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

REFERENCES
1. Al Abdulsalam HK, Ajlan AM. Hemorrhagic colloid cyst. Neurosciences 2018;23:326-33.
2. Al-Saiari SA, Abdoh MG, Farag AA, Al-Orabi KM, Rawah EA, Brinji ZS, et al. Atypical haemorrhagic colloid cyst: 2 case reports surgical management and review of literature. Int J Surg Case Rep 2020;76:435-40.
3. Azab WA, Salaheddin W, Alsheikh TM, Nasim K, Nasr MM. Colloid cysts posterior and anterior to the foramen of Monro: Anatomical features and implications for endoscopic excision. Surg Neurol Int 2014;5:124.
4. Carrasco R, Pasquel JM, Medina-López D, Burdaspal-Moratilla A. Acute hemorrhage in a colloid cyst of the third ventricle: A rare cause of sudden deterioration. Surg Neurol Int 2012;3:24.
5. Hadar EJ, Schmunk GA, Salamat MS. Hemorrhagic colloid...
cyst in a patient with leukemia. J Neurosurg 1999;91:516.
6. Inci S, Al-Rousan N, Söylemezoglu F, Gurçay O. Intrapontomesencephalic colloid cyst: An unusual location. J Neurosurg 2001;94:118-21.
7. Menon G, Kongwad LI, Nair RP, Kumar V. Hemorrhagic colloid cyst. Neurol India 2017;65:1164-7.
8. Ogbodo E, Kaliaperumal C, Bermingham N, O’Sullivan M. Spontaneous haemorrhage and rupture of third ventricular colloid cyst. BMJ Case Rep 2012;2012:bcr2012006863.
9. Sivakumaran R, Edwards RJ. Amnesia due to spontaneous haemorrhage into a colloid cyst. Br J Neurosurg 2015;29:110-1.
10. Tamura Y, Uesugi T, Tucker A, Ukita T, Tsuji M, Miyake H, et al. Hemorrhagic colloid cyst with intraventricular extension. J Neurosurg 2013;118:498-501.

How to cite this article: Snyder R, Lee S, Heck K, Mandel JJ, Patel AJ, Jalali A. Hemorrhagic cavum vergae colloid cyst: A presentation of anterograde amnesia without hydrocephalus. Surg Neurol Int 2022;13:148.