CASE REPORT

Colloid cyst of the third ventricle: imaging findings with pathologic correlation

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Abstract

Colloid cysts of the third ventricle are benign tumors but potentially dangerous, as they frequently undergo undiagnosed. Despite being histologically benign, colloid cysts of the third ventricle can obstruct the foramen of Monro and produce intense hydrocephaly. These lesions are known as a major cause of sudden death, underscoring the importance of establishing diagnosis as soon as possible. Computed tomography and Magnetic Resonance are important for diagnosing these cysts. In the present case report, the authors describe the clinical, diagnostic imaging and pathological findings of a 19-year old male, with a 3 cm colloid cyst of the third ventricle. Patient died within few days following complications of obstruction of the foramen of Monro.

Keywords: cerebral tumor; computerized tomography; third ventricle colloid cyst.

INTRODUCTION

Colloid cysts are uncommon intracranial benign lesions, which represent approximately 0.5 to 1% of primary brain tumors[1]. They mostly affect individuals within the second and fifth decades, with no gender predilection. Such lesions are followed by intermittent, self-resolved or nonspecific clinical symptoms. Colloid cysts may result in sudden onset hydrocephalus and, consequently, in sudden death[2,3]. In the following, we report on a case of colloid cyst located in the rostral aspect of the third ventricle, which presented symptomatology of the acute type and is restricted to cephalalgia followed by syncope.

The computed tomography revealed a hyperdense nodule of approximately 3.0 centimeters obstructing the foramen of Monro, an important factor in the dilatation of the lateral ventricles, and transependymal edema. Afterward, the digital angiography attested brain death. In which case was followed by an anatomic-pathology after death for evidence and study of tumor characteristics discussed so far, in order to establish the correlation between the radiological images meet and pathological aspects.

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MATERIAL AND METHODS

We researched in literature the terms "brain tumors" and "Colloid cyst of the third ventricle" in the PubMed digital database. Then, we describe one case of brain tumor of young man with important and intense sudden headache followed by syncope, presented in CT skull hyperdense nodule formation. Evolved quickly to death and, confirming, with anatomopathological and microscopic analysis, a colloid cyst of third ventricle.

CASE REPORT

The patient was a nineteen-year-old man, with no significant medical history, who presented intense and sudden headaches followed by syncope. Physical examination confirmed Glasgow 3T scale, pupils in fixed mydriasis and no response to light. He was intubated and sent to the brain CT without the administration of intravenous contrast medium.

The skull CT showed hyperdense nodule formation, circumscribed by approximately 3 centimeters, located in the rostral aspect of the third ventricle, obstructing the Monro's foramen. (Figure 1). Relevant dilatation of the side ventricles and transependimary edema (Figure 2) were observed. Encephalic death was diagnosed on digital angiography, featured by no progression of the contrast medium in the intra-skull segments of the four bodies studied.

The anatomic and pathologic studies reveal a cystic, tense and translucent lesion, in addition to frail vasculature in smooth and shiny covering (macroscopic Figure 3A-B), whereas the material under microscopic analysis presents cyst with thin fiber-conjunctive capsule, lining epithelium is columnar and ciliated and cystic content is colloid (Figure 4A-B).

Figure 1. Computed Tomography Imaging without contrast. 19-year-old male with a hyperdense nodule of 2.5 cm in the rostral aspect of the third ventricle.

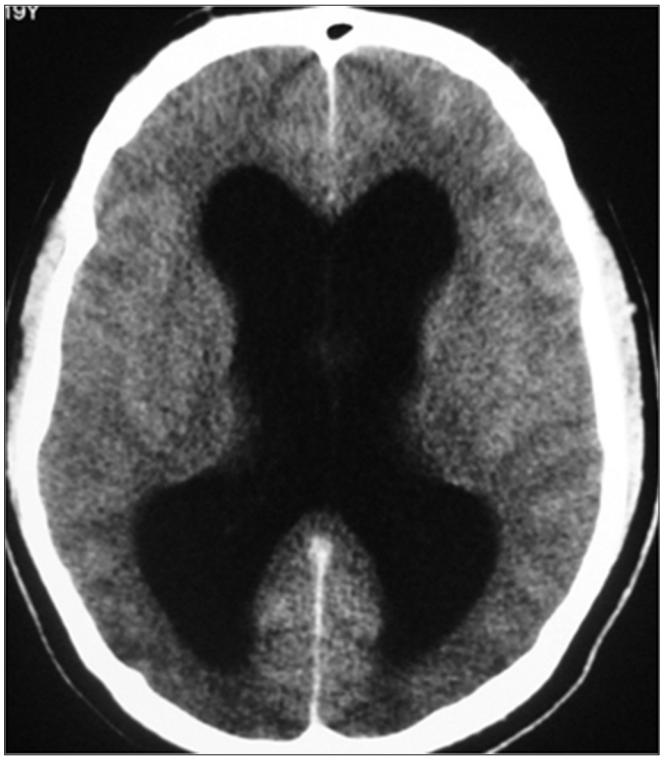

Figure 2. Computed Tomography Imaging without contrast. 19-year-old male with important dilatation of lateral ventricles.

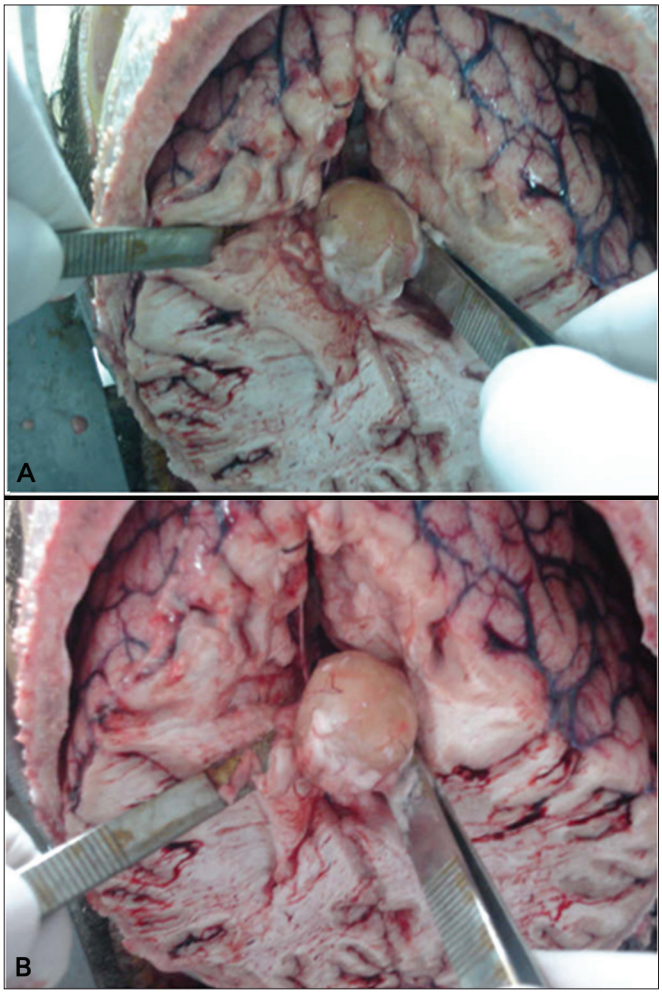

Figure 3. A-B: Macroscopic aspect. 19-year-old male presenting cystic lesion. Tense, translucent and delicate vasculature is revealed by smooth and shiny inner lining.

DISCUSSION

Colloid cysts of the third ventricle are benign tumors, rare lesions which correspond to 0.5-1% of the primary brains tumors[1], and are incidentally found at a rate of 1 in 1.000 CT[3]. The name reflects the typical content of colloid substance with variant viscosity. Most of the related cases occur between the third and fifth decades of life, without any gender predilection. They are potentially dangerous tumors, since they frequently generate undiagnosed symptoms and are also associated with sudden death, even among children[2,3]. Until 1994, only 37 cases had been described in kids[4]. The clinical symptoms can be intermittent, self limited and unspecific. They can also result in sudden hydrocephaly and, therefore, sudden death[1]. 68 to 100% of the patients suffer from headaches, which are generally brief, last from seconds to minutes and may be started or worsened by change of positions,

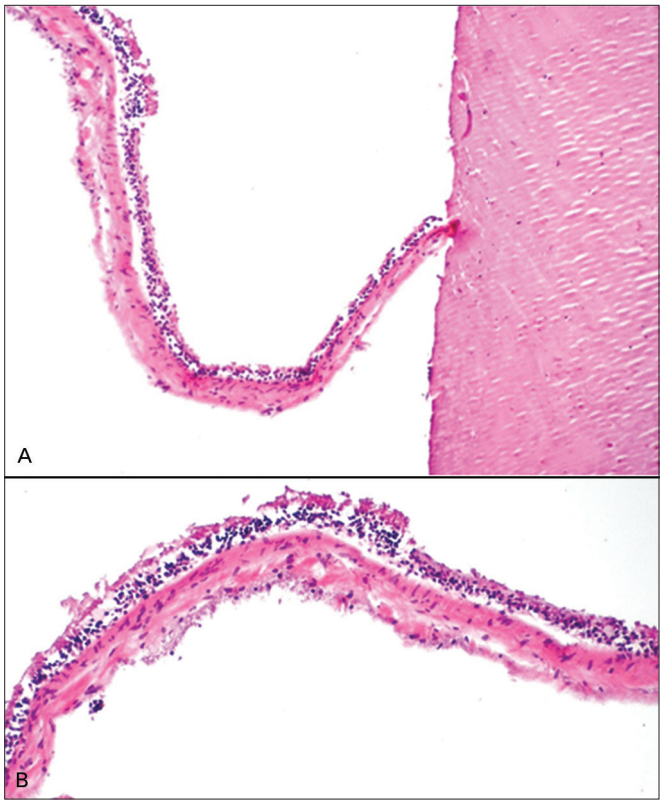

Figure 4. A: The cyst is filled with a viscous and mucoid substance (right); B: Colloid cyst is covered with cillated columnar epithelium and supporting by thin fibrous capsule.

sometimes associated with visual disturbs[5,6]. Despite being histologically benign, Colloid cysts of the third ventricle can obstruct the foramen of Monro and produce intense hydrocephaly. These lesions are known as a major cause of sudden death[7].

The round cysts of thin tissues vary from a 0.3 cm to 4.0 cm diameter. Although most of the cysts come from the third ventricle, rare examples have been described in the side ventricles or in the fourth ventricle[8-10]. Shuangshoti suggested that the colloid cysts of the third ventricle are derived from the neural epithelium, including ependima and choroid plexus, while favoring the term "neural epithelial cyst"[11]. In 1992, Tsuchida and cols.[12] demonstrated the neural epithelial origin of the colloid cyst and its similarity with the breath mucosa of the trachea and sphenoid breast.

Derived from the Greek, the word "kollodes" refers to the gelatinous, thick and strongly PAS positive content, resulted from outcome secretions of the epithelial layer's rupture[13].

The computed tomography (CT) and Magnetic Resonance (MR) can be employed for diagnosing the colloid cysts. On the CT images, most of the cysts are hyperdense, but they can occasionally be hypodense or isodense[14]. Most of the colloid cysts are oval or round. After the administration of the intravenous contrast medium, a thin distinction ring can be found and it represents the cyst capsule. Hypodense and isodense cysts on the CT are more favorable to the success of the suction, suggesting that low attenuation of the cyst content relates to low viscosity[15,16] (Table 1). Many theories have been proposed to explain the appearance of these cysts on the CT and MR. A hyperdense colloid cyst studied with spectrometry shown high levels of sodium, magnesium and ions of calcium which could explain the high attenuation[14].

Concerning the treatment (and disregarding how controversial it might be), in asymptomatic situations in which the patient presents a small cyst, wide foramen of Monro and absence of hydrocephalus, nonsurgical intervention and imaging follow up are indicated. In symptomatic cases, however, cerebrospinal fluid shunt, stereotactic aspiration, microsurgical removal, stereotactic-guided endoscopy, neuroendoscopy, stereotactically-guided craniotomy and neuronavigation-assisted endoscopy stand as feasible choices[17].

Table 1. Clarifying table - the main points concerning colloid cysts.

Etiology	Unknown
Incidence	0.5 to 1% of primary brain tumors. 1:1000 CT
Gender Ratio	Same incidence in both men and women.
Age Predilection	Between the third and fifth decades of life.
Risk Factors	Undefined
Treatment	In asymptomatic situations which present a small cyst, unblocked foramen of Monro and absence of hydrocephalus, nonsurgical intervention and imaging follow up are indicated. In symptomatic situations, invasive methods are feasible choices.
Prognosis	Depends on the stage in which the cyst was found. The diagnosis is often late, what makes prognosis deficient.
Imaging findings	In CT figures, the usual images are of oval or round hyperdense cysts, although they may occasionally be hypo or isodense.

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