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ARACHNOID CYST OF THE CAVUM SEPTUM PELLUCIDUM: A CASE REPORT AND REVIEW OF LITERATURE

Radiodiagnosis

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ABSTRACT

BACKGROUND: The cavum septum pellucidum is a potential space between the two leaflets of septum pellucidum. It is a normal anatomical variant seen in premature and newborn infants and usually disappears with brain maturation. Although moderate cystic dilatation of the cavum septum pellucidum may sometimes be observed, a true cyst is extremely rare with only a handful of reported cases, mostly in children and adolescents.

CASE REPORT: We present a case of arachnoid cyst of the cavum septum pellucidum diagnosed on MRI in a 10 year old girl with the complaint of headache and decreased scholastic performance.

CONCLUSION: Accurate diagnosis of the arachnoid cysts of the cavum septum pellucidum is important as they may cause serious symptoms which can be reversed by surgical treatment.

KEYWORDS

Arachnoid Cyst, Septum Pellucidum, Cavum Septum Pellucidum, MRI

INTRODUCTION

The cavum septum pellucidum (CSP), along with the cavum vergae (CV) is a persistence of the embryological fluid-filled space between the leaflets of the septum pellucidum and is considered a normal variant (Figure 1). The cavum septum pellucidum and cavum vergae normally close in sixth intrauterine week, but may persist in 30% of term infants and 15% of adults [1].

Arachnoid cyst of the cavum septum pellucidum is rare and may cause symptoms due to hydrocephalus caused by obstruction of CSF flow at the interventricular foramina or due to direct compression over the adjacent neural structures [2].

We report a case of arachnoid cyst of the cavum septum pellucidum in a 10 year old girl who presented with headache and decrease scholastic performance.

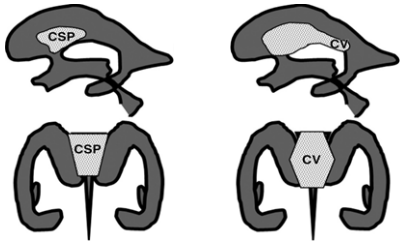

Figure 1. Diagram shows the position of cavum septum pellucidum (CSP) (1a) and cavum vergae (CV) (1b) in the sagittal (top) and coronal plane (bottom).

CASE REPORT

A 10-year-old girl with complaints of headache (for three months) and decreased scholastic performance (long term), was referred to the Department of Radiology for magnetic resonance imaging (MRI) examination of the brain. Her neurological examination was otherwise unremarkable. MRI study revealed a 35×25×20 mm sized, well demarcated, thin-walled cystic lesion lying between the frontal horn and body of lateral ventricles. It was limited superiorly by anterior portion of the corpus callosum and inferiorly by the body of the fornix (Figure 2). It was isointense to cerebrospinal fluid (CSF) on all sequences including FLAIR and DWI (Figure 3). These findings were compatible with an arachnoid cyst of the cavum septum pellucidum.

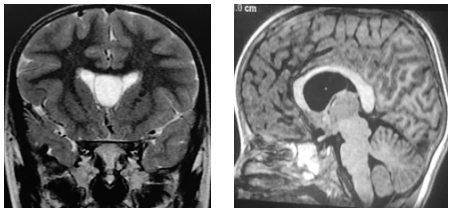

Figure 2. Arachnoid cyst of the cavum septum pellucidum. 2a.Coronal T2-weighted MR image shows lateral bowing of cyst walls. 2b.Sagittal FLAIR MR image shows that cyst is limited superiorly by anterior portion of corpus callosum and inferiorly by the body of the fornix.

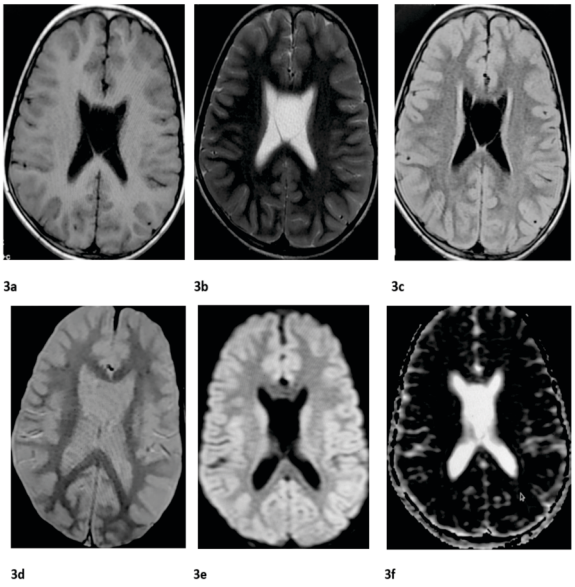

Figure 3. Arachnoid cyst of the cavum septum pellucidum. The cyst appears isointense to cerebrospinal fluid on all sequences. 3a.T1-weighted image, 3b.T2-weighted image, 3c.FLAIR image, 3d.Susceptibility weighted image, 3e.Diffusion weighted image and 3f.ADC map.

DISCUSSION

The septum pellucidum is a thin translucent (Pellucidum = translucent) plate consists of two thin laminae of white matter surrounded by gray matter with a potential intervening space [3]. The leaves are separated in utero but fuse from back to front as the fetus approaches term or in the first few weeks after birth. The septum pellucidum forms the medial walls of the lateral ventricles and extends from the corpus callosum to the columns of the fornix. The septum pellucidum is part of the limbic system; although its exact function is not completely understood, it seems to moderate behaviors such as rage and arousal [4, 5].

The cavum septum pellucidum persists when the two leaves fail to fuse. It is considered a normal variant due to its frequent appearance and because a specific clinical syndrome has not yet been identified with its occurrence. However, recent studies suggest that an enlarged cavum septum pellucidum serves as a significant marker of cerebral dysfunction [6, 7] and has been described in various neuropsychiatric and posttraumatic conditions [8].

The cavum septum pellucidum and the more posterior (often interconnecting) cavum vergae are often incorrectly called the fifth and sixth ventricles. They are not, however, part of the ventricular systems as they have a different embryological origin and are not lined by ependymal or choroid plexus cells [9].

True cysts of cavum septum pellucidum are defined as a as a fluid-containing structure between the lateral ventricles , whose walls exhibit lateral bowing instead of being parallel and are 10 mm apart or greater [10]. These cysts are relatively rare, with prevalence among patients undergoing imaging studies of approximately 0.04% [11]. There is no agreement regarding the clinical importance of these lesions. Often, they are diagnosed during brain imaging performed for headaches, and thus have been associated with headaches. However, in the absence of hydrocephalus, this association, and whether there is a cause-effect relationship, is not clear [12].

The location of this cyst is unusual. Supratentorially, arachnoid cysts are most commonly situated in the middle cranial fossa. Other locations are over the convexity of the brain parasagittally, with less frequent locations being the suprasellar region and the interhemispheric fissure. Arachnoid cysts lying in the posterior fossa are more commonly noted behind the cerebellum in the midline and in the cerebellopontine angles. Less likely locations are laterally about the cerebellar hemispheres, behind the clivus, and in the quadrigeminal plate cistern [13-18].

The imaging characteristic of an arachnoid cyst of the cavum septum pellucidum is a well delineated midline cyst located between the lateral ventricles [10]. On imaging, the main differentials of this cyst are; cystic dilatation of the cavum septum pellucidum, epidermoid cyst and various neoplastic lesions such as tumors of the lateral ventricle or the septum pellucidum [19]. The major characteristic of the cystic dilatation of the cavum septum pellucidum is that, it is <1 cm in width and the septal leaflets are parallel in orientation [10]. An epidermoid cyst of any location can easily be differentiated from an arachnoid cyst by diffusion weighted imaging. Epidermoid cysts show diffusion restriction, whereas arachnoid cysts do not [20].

Arachnoid cysts of the cavum septum pellucidum should be treated if they become symptomatic. A communication between the cyst and the ventricular system is provided by endoscopic ventricular fenestration in order to reduce the mass effect of the large cyst [21, 22, 23].

CONCLUSION

The cavum septum pellucidum is a rare location for the arachnoid cysts. Accurate diagnosis of the arachnoid cysts of the cavum septum pellucidum is important as they cause symptoms similar to those of a lateral ventricular mass, and these symptoms can be reversed by surgical treatment.

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