INTRODUCTION

December 25, 2011 — As a single midline structure, the septum pellucidum separates the two anterior horns of the lateral ventricles. The Cavum septum pellucidum (CSP) is demarcated by the genu of the corpus callosum anteriorly, by the columns and body of the fornix posteriorly, by the body of the corpus callosum superiorly, and by the rostrum of the corpus callosum inferiorly. It consists of an ependymal lining toward the ventricles and contains neuronal and glial cell elements. These cell elements have connections to the hypothalamus and the hippocampus. At birth, the two layers of the septum pellucidum are separate and enclose a cavum. Later in life, these two layers typically fuse into a single septum. Autopsy and imaging studies have shown that all premature infants and 97% of term infants have a Cavum septum pellucidum (CSP), with the incidence dropping to 41% by 3 months of age and to 15% by 6 months of age [1,2,3,4].

Figure 1. Cavum septum pellucidum (Click on figure to magnify..Online)

The Cavum septum pellucidum (CSP) may remain dilated in the context of some congenital disorders with arrest of normal brain development or may secondarily enlarge with repetitive brain trauma, such as in boxers. In such instances, obstructive hydrocephalus results from compression at the foramina of Monro and may require neurosurgical treatment.
Figure 2. A, Cavum septum pellucidum (CVP) and cavum velum interpositum (CVI). (A) Axial T2-weighted image demonstrates the CVP anteriorly (arrow) and CVI posteriorly (open arrow). (B) Sagittal T1-weighted image demonstrates anterior and superior displacement of the fornix (open arrow) distinguishing the CVI from the cavum vergae. Note characteristic inferior displacement of the internal cerebral veins (arrow). (Click on figure to magnify..Online)

- **Cavum vergae**

If the layers of the septum pellucidum posterior to the columns of the fornix do not merge, they leave a cavum vergae, which is commonly seen in combination with a Cavum septum pellucidum (CSP) [2]. It is not clear whether the cavum vergae is the posterior portion of the Cavum septum pellucidum (CSP) or whether it develops independently and communicates with the Cavum septum pellucidum (CSP). The cavum vergae is bordered by the body of the corpus callosum superiorly, by the hippocampal fissure inferiorly, by the crus of the fornices laterally, and by the splenium of the corpus callosum posteriorly.

This anatomic variant is present in about one third of newborns and persists only rarely until adulthood. Interestingly, the cavum vergae disappears before the Cavum septum pellucidum (CSP). Cystic enlargement of the cavum vergae may cause hydrocephalus by obstruction of either the foramen of Monro or the body of the lateral ventricle.
Cavum veli interpositi (Arachnoid cyst of the velum interpositum)

The velum interpositum is the potential subarachnoid space between the fornix and its attached choroid above and the choroid forming the roof of the 3rd ventricle inferiorly, and is an anterior extension of the quadrigeminal plate cistern just located superior to the pineal gland. If this potential space is simply prominent, it is known as cavum velum interpositum. However, if there is mass effect such as inferior displacement of the internal cerebral veins or the pineal gland, arachnoid cyst is the most likely explanation. Arachnoid cysts are more commonly seen in boys and may present with seizures, headache, or focal neurologic deficit. There is no enhancement in the contents of arachnoid cysts and they follow CSF on all pulse sequences. Over half are located in the middle cranial fossa while up to 10% are located in the suprasellar region and another 10% in the quadrigeminal plate region.

The general differential of a non-enhancing CSF containing lesion in this location includes cavum velum interpositum, arachnoid cyst, and epidermoid. Presence of mass effect mitigates strongly against cavum velum interpositum. Likewise, epidermoids tend to engulf surrounding structures rather than produce mass effect making it less likely as well.
Cavum veli interpositi develops through an anterior extension of the pia–arachnoid membrane that arises from the quadrigeminal plate cistern. The CVI is situated between the crus of the fornices and lies inferior to the hippocampal commissure and the corpus callosum and superior to the roof of the third ventricle [3]. The CVI may extend as far as the columns of the fornix. It is formed from a double layer of pia mater, the tela choroidea, which covers the ependymal roof of the third ventricle, and results in fluid accumulation within the potential space of these two layers when the posterior end of the tela choroidea remains open. The internal cerebral veins and the medial posterior choroidal artery lie within the two layers and can be displaced by cystic expansion of the CVI inferolaterally. Cystic enlargement of the CVI requiring treatment is exceptional, with only a few case reports in the literature [4,5].

Figure 5. Cavum veli interpositi (Click on figure to magnify..Online)

References


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