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Case Report

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Coexistent intracranial midline cysts: Persistent cavum septum pellucidum, cavum vergae, cavum velum interpositum, and a pineal cyst

Mehtap TIRYAKIOGLU

Department of Anatomy, School of Medicine, Near East University, Nicosia, TRNC Mersin 10, Turkey.

Corresponding Author: Mehtap TIRYAKIOGLU
E-mail: mehtap.tiryakioglu@neu.edu.tr

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ABSTRACT

This case is presented after a concurrent cavum septum pellucidum, cavum vergae, cavum velum interpositum, and a pineal cyst prevailed following a magnetic resonance imaging evaluation for a temporary blindness the patient reported that she recently had.
Keywords: Cavum septum pellucidum, Cavum vergae, Cavum velum interpositum, Congenital, Midline cranial cysts, Pineal cyst

1. INTRODUCTION

Persistent cavum septum pellucidum, cavum vergae, and cavum velum interpositum are considered as normal variants of the ventricular system. These anterior midline intracranial cysts may be asymptomatic, however, they may lead to cysts in considerable size that compress surrounding parts causing neuropathological conditions.

Septum pellucidum is a two-layered transparent membrane in the midline stretching vertically between the corpus callosum and the fornix. It separates the anterior horns and bodies of the lateral ventricles [1]. The cavity between two septa is known as cavum septum pellucidum (CSP). The two septa usually fuse within three to six months of postnatal life and CSP disappears [2], however, it may persist after 3-6 months of postnatal life by either remaining asymptomatic or leading to complications such as compression to surrounding structures, obstructive hydrocephalus, schizophrenia, post-traumatic disorder, or chronic brain trauma depending the size of the cavity [1,2]. Persistent CSP is at least 1mm in width and occurs about 15% of adults [3]. It is bounded superiorly by the body of the corpus callosum; anteriorly by the genu of the corpus callosum; inferiorly by the rostrum of the corpus callosum and anterior commissure; posteriorly by the anterior limbs of fornix, and laterally by the two layers of the septum pellucidum [3]. It is important to assess CSP during the embryonic development of fetus, as it can be a good monitor to observe any congenital malformations of the central forebrain during the early stage of development [4]. Failure to observe CSP can be associated with brain malformations [5] as it normally presents in all fetuses.

The cavum vergae (CV) is a posterior extension of the CSP and bounded superiorly and posteriorly by the body and splenium corpus callosum, respectively. Body of the fornix bounds it inferiorly, and the septum pellucidum bounds it, laterally (Figure 1). The CV is persistent in less than 1% of adults [3]. CSP and CV are located above the fornix.

The cavum velum interpositum (CVI) is a space located vertically in between the fornix and the choroid plexus of the third ventricle within the tela choroidea. It may or may not be connected to the cistern of the great cerebral vein (CGCV) (also known as cisterna ambiens or quadrigeminal cistern) [1, 3] (Fig. 1). It is situated superior to the internal cerebral veins and if connected to CGCV, it may be considered as an anterior extension of the CGCV [3]. Leucio and Dossani have reported prevalence of CVI as 5.54% of the population who is older than 2 years old [6].

Neither of these variants (CSP, CV, CVI) is included within the ventricular system of the brain, as they do not have choroid plexus, however they are filled with the cerebrospinal fluid (CSF) transferred from the ventricles [2].

The pineal cysts (PC) are rarely symptomatic intracranial findings and they are usually found incidentally [7]; mostly

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they are smaller than 1 cm [1] with a prevalence of 1% of the population, however the size might increase by the time (particularly in the age group 6-12 years) and may become a surgical indication depending the underlying reasons [8].

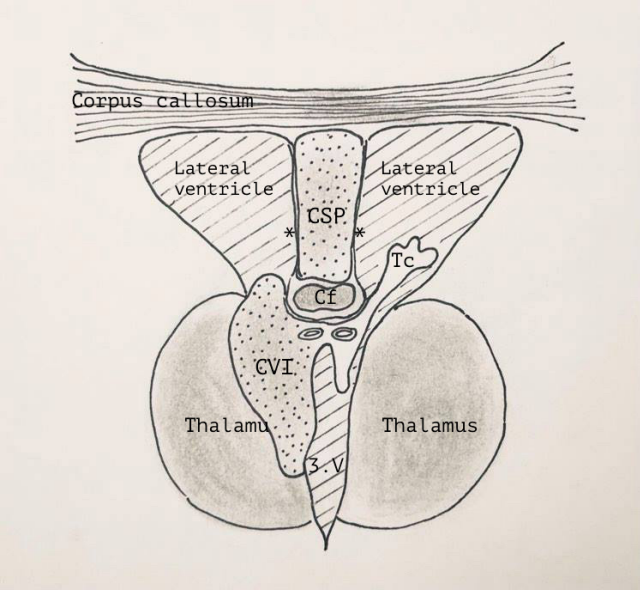

Figure 1. *Presented case illustrated in coronal section*
*CSP: Cavum septum pellucidum, CVI: Cavum velum interpositum, *: Septum pellucidum, 3.V: Third ventricle, Tc: Tela choroidea, Cf: Columns of fornix*

2. CASE REPORT

After 10-15 min of a partially blackened visual area on the left lower quadrant, 58 years old female patient went through some tests for evaluating the short episode of blindness she had. While, there was not any particular reason diagnosed for it, the radiology results stated that she had CSP, CV, CVI, and PC as normal variants after the performed magnetic resonance imaging (Figures 2, 3, 4, 5). The CSP and CV were about 5-10 mm wide depending on their exact location, while the CVI was seen on the right side to the midline and it was about 9-10 mm in width (Figures 1, 4). The widest transverse diameter of the PC was about 14 mm.

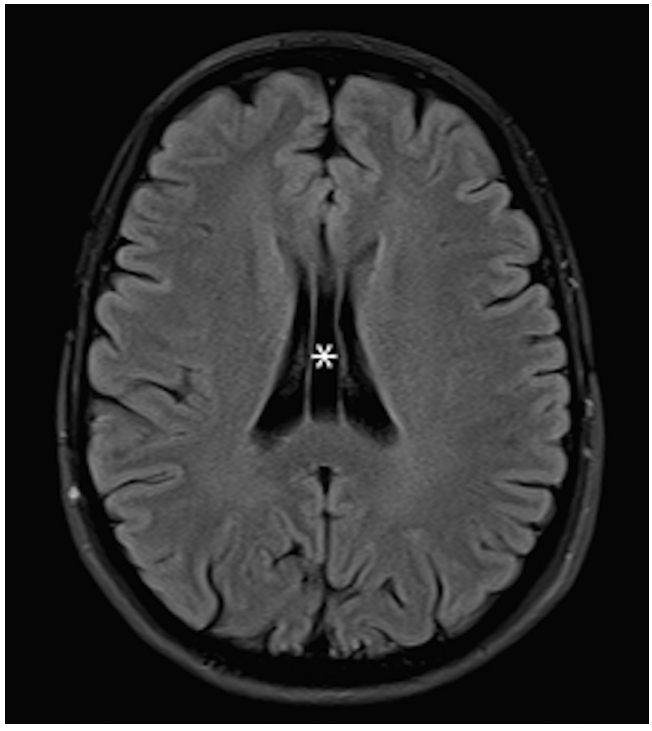

Figure 2. *CSP and CV in transverse section*

Figure 3. *CSP, CV, and PC in sagittal section*

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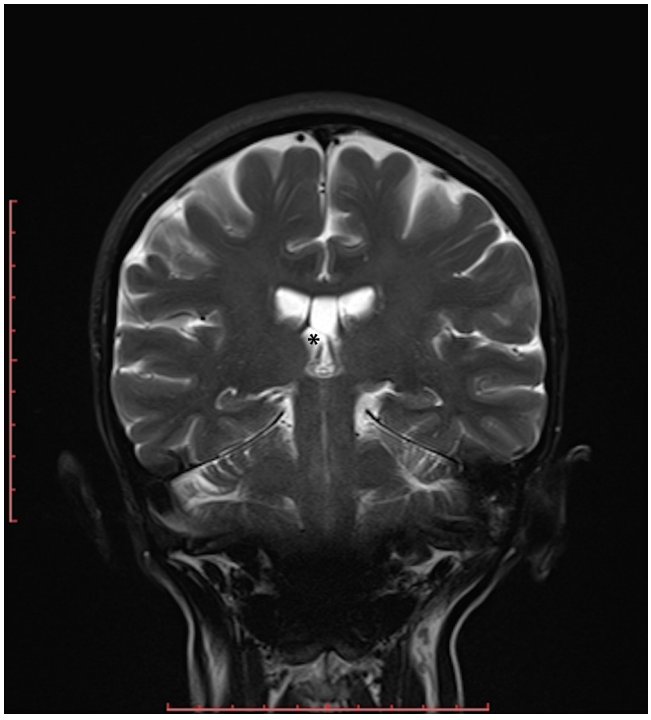

Figure 4. *CVI on the right side of the coronal section*

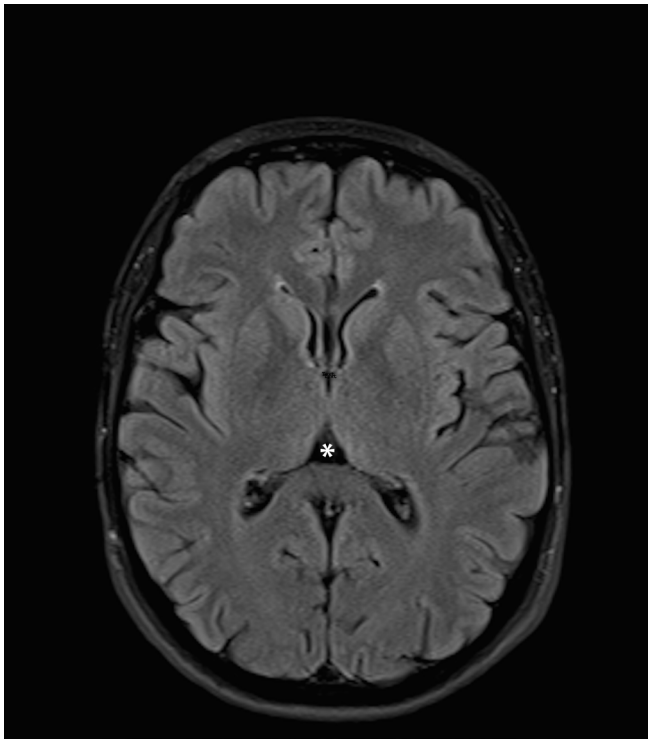

Figure 5. *CVI in the transvers section*

3. DISCUSSION

The CSP and CV develop from a common cavity under the corpus callosum, yet they may persist individually with a much wider occurrence of individual CSP (15%) than an individual CV (1%) [6]. They usually are asymptomatic except for rare situations such as cysts, obstructive hydrocephalus, and compression of surrounding structures that can cause psychiatric disorders and/or compression of optic chiasm and related tracts [1, 2, 9]. In the presented case, the patient was told that these normal variants are not susceptible to cause the patient's symptoms.

De Leucio and Dossani have reported the CVI with a prevalence of 5.54% of the population older than 2 years old. It is usually asymptomatic unless it is rarely large enough to push surrounding structures [6].

In this case, the patient had a history of migraine episodes since her childhood, yet the episodes became ocular only with no headaches as of the age of late 40s. She has never been diagnosed with any other potential symptoms of the concurrent persistent CSP, CV, CVI, and PC she had. They have been detected by coincidence after a brain MRI performed to evaluate the symptoms the patient had and there is not any similar case reported with these cysts to be found, concurrently.

These normal variants may remain with some questions to be followed to figure whether there is a possibility to relate the migraine attacks to these variants the patient has been having since her childhood [10] or the recent patient history with partial and temporary blindness after bending forward for a while is related to these variants.

These questions may find less subtle answers if the cysts would be reevaluated to see whether there is a change in the size of them.

The case suggests a consideration of the prevalence of coexisting midline cranial variants to be studied, as there is not any information yet to be found.

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