Trapped fourth ventricle

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CLINICAL CASE

A 62 year old woman with antecedent of breast cancer and meningeal carcinomatosis treated with chemotherapy and radiotherapy, which developed hydrocephaly, treated with the placement of a ventricular-peritoneal shunt. After a period of clinical improvement the patient reported headaches, neck stiffness and alterations of consciousness. Using magnetic resonance imaging (MRI) an important dilatation of the fourth ventricle and hidrocephaly with transependimary migration of cerebospinal fluid was observed (Figure 1).

The cerebrospinal fluid (CFS) is produced in the choroid plexus of the lateral and third ventricles. From the lateral ventricles the CFS circulates to the third ventricle through the Monro Foramen, and then through the aqueduct of Sylvius to the fourth ventricle, from where it circulates through a central orifice (foramina of Magendie) and two lateral orifices (foramina of Luschka) to the subarachnoid space over the brain and spinal cord[1] (Figure 2).

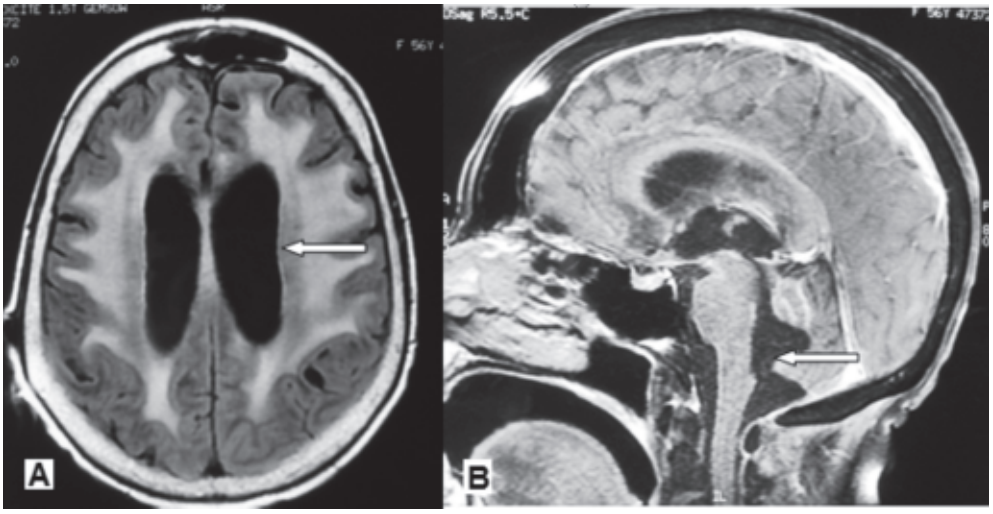

Figure 1. Image of MRI, to observe: **A.** Hidrocephaly and transependimary migration of CSF (arrow). **B.** Trapped fourth ventricle, characterized by dilation of the structure (arrow).

Table 1. Etiology of trapped fourth ventricle.

Inflammatory processes	Meningitis, encephalitis, tuberculosis.
Congenital anomalies	Dandy-Walker syndrome, Arnold Chiari malformation
Mechanical	VP shunt
Idiopathic	

VP: Ventricular-peritoneal.

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Figure 2. Circulation of CSF. **1.** Lateral ventricles. **2.** Third ventricle. **3.** Fourth ventricle. **4.** Subarachnoid space.

The trapped fourth ventricle is defined as the lack of communication between the fourth ventricle and the interpeduncular cistern. Blockage of the foramina of Luschka and Magendie results in a Trapped fourth ventricle was described for the first time in 1877 by Hilton, in the authopsy of a patient with intracraneal hypertension after the obstruction of the fourth ventricle.[2]

The etiology of the obstruction of the ventricular drainage can be secondary to different conditions (Table 1). The etiopathogenesis of the trapped fourth ventricle is the formation of clots or fibrosis wich obstruct the foramina of Luschka and Magendie. The accumulation of the CSF leads to the increase of the intracranial pressure and the dilation of the ventricular system.[3]

The clinical symptoms are related with the increase of intracranial pressure above the point of the obstruction, those symptoms are headaches, nausea or vomiting, paralysis of lower cranial nerves, ataxia and alterations of consciousness.

The treatment for trapped fourth ventricle consists of the drainage of the CSF. The development of the neuroendoscopy and different types of derivation tubes to drain the CSF ensure a better technique, treatment and recuperation of the patients.[4]

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