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Case Report

A case of aqueductal obstruction by web with no sign except a headache☆

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ABSTRACT

Aqueductal stenosis can be a silent disease that can present in a patient for years without any signs and symptoms. This silence can occur due to CSF flow dynamics compensation, and it can continue until the increase in CSF production so that the symptoms may appear during adolescence or even later. In this study, we report an aqueduct obstruction by web, who had no symptoms except a headache and was referred for MRI in his early thirty. The patient was referred to find the cause of his episodes of headaches. If he did not follow up on his headache, he might never know about his disorder.

Introduction

Since 1842, there have been some reports of observing the cases with occlusion of the aqueduct of Sylvius [1,2]. However, they were not taken seriously and considered just as rare until 1920, when the previous literature was gathered by Walter et al., who had previously researched hydrocephalus patients. They published some reports regarding hydrocephalus patients and subdivided this disease into communicating and obstructive groups [3,4]. Since then, numerous studies have been published on aqueductal obstruction and its diagnosis's importance [5–9].

The third and the fourth ventricle of the brain connect through the aqueduct of Sylvius. This channel, with a cross-section area of 0.5 mm^2 and 0.8 mm^2 in children and adults, respectively, is the narrowest part of the Cerebrospinal fluid (CSF) path. As a result of its small size, there is a significant possibility of its blockage, which leads to increased brain ventricle volumes because the CSF accumulates in the brain ventricles that can, in turn, cause an increase in ventricle pressure [10,11].

This disease can be congenital or extrinsically/intrinsically acquired. As a congenital disease, it is rare, with an estimated incidence of 1:5000 births. In these cases, there can be an

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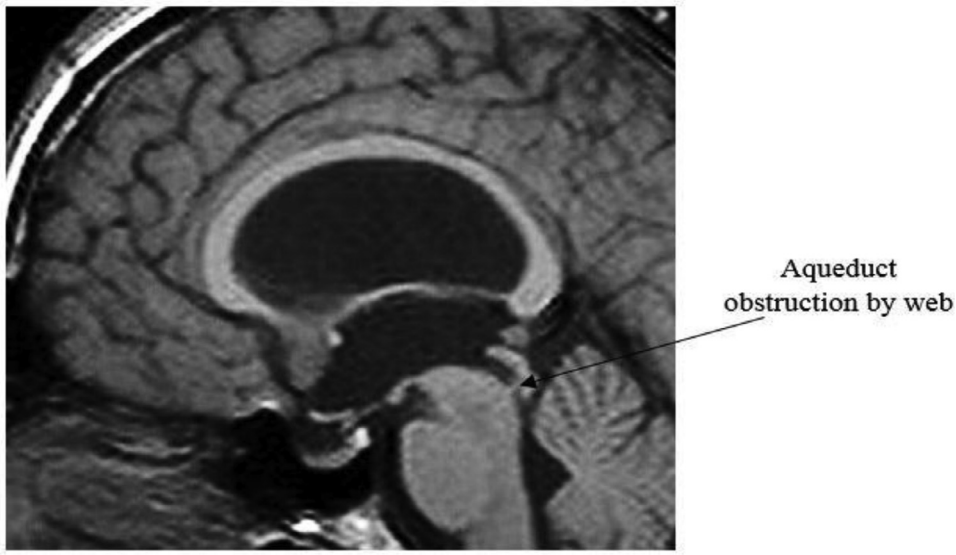

Fig. 1 – T1 sagittal of a 30-year-old man which shows dilation of third and lateral ventricles. A thin membrane can be seen in the distal part of the aqueduct.

aqueductal web, or it may produce as a result of gliosis. Tectal plate glioma, Pineal or posterior fossa tumor, or cerebral vascular malformations are the compressive causes that can extrinsically obscure this channel. Different infections such as meningitis or ventriculitis and subarachnoid hemorrhage are the intrinsic cause of this disease.

Aqueductal stenosis can be a silent disease that can present in a patient for years without any signs and symptoms. This silence can occur due to CSF flow dynamics compensation, and it can continue until the increase in CSF production so that the symptoms may appear during adolescence or even later.

In addition, head trauma or hemorrhage can also intensify the obstruction and result in the appearance of the symptoms because the disease increases the intracranial pressure so that the symptoms include: a headache, nausea, and vomiting.

In this study, we report an aqueduct obstruction by web, who did not have symptoms except headache and was referred for magnetic resonance spectroscopy (MRI) in his early thirty.

Case report

A 30-year-old man presented with a long history of headache episodes was referred for an MRI. He had no history of other symptoms such as nausea, vomiting, blurry vision, or other disorders such as meningitis.

Sagittal and transverse cross-sections of the brain were assessed using a Siemens-Avanto 1.5 T MRI with T1 and T2 weighted pulse sequences. A dilatation was found in the third and lateral ventricles, while the fourth ventricle was normal in size. Corpus callosum and splenium pushed upward due to the dilation of the lateral ventricle. A thin membrane was observed at the distal part of the aqueduct. There was no other remarkable finding in the MR images. Sagittal T1 image (Fig. 1) shows the web, which leads to aqueductal stenosis. Axial T1 and T2 images (Fig. 2) show the dilation of brain ventricles.

The patient did not accept any treatment such as lumbar puncture or surgery because he believed the headaches were not that serious and needed further follow-up.

Discussion and conclusion

This report introduced a case of aqueduct obstruction by the web; a 30-year-old man was referred to the MRI section with a history of headaches. The MR images revealed that he is a case of hydrocephalus due to aqueduct obstruction by the web. Since he did not have any other severe symptoms besides episodes of headache, he was categorized as compensated aqueductal obstruction case.

Previously there were some reports about aqueductal stenosis patients without severe symptoms who were diagnosed as compensated aqueductal obstruction by web [12–14]. Most patients with this disorder who do not have severe symptoms are referred before the age of 30.

The mechanism of compensation is not precise so far; however, some studies have described 3 probable reasons such as the presence of a partially patent aqueduct that allows normal passage of CSF fluid, the presence of a substitute CSF passageway, or alteration of CSF production in these patients [15,16].

Routinely, these patients have an exacerbated headache following a trauma that led to intraventricular or subarachnoid hemorrhages or a viral infection. Some studies declared that these incidents could worsen these patients' headaches [17–19]. Also, it is believed that there is a possibility of completing the partial stenosis of the aqueduct [18].

In this case, no trauma or infection happened, and the headache had not been worsening. The patient was referred just to find the cause of his episodes of headaches. If he did

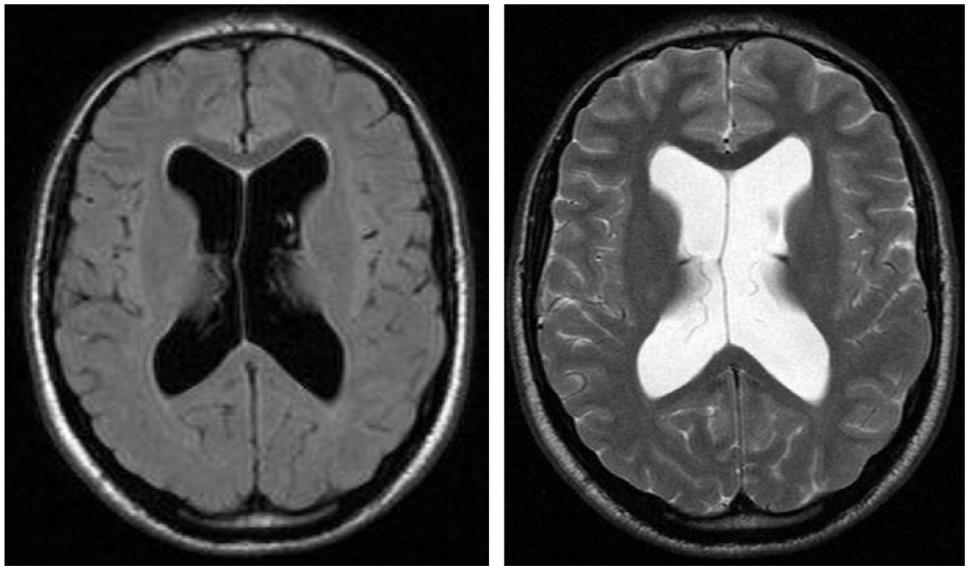

Fig. 2 – Right) T2 transverse, Left) T1 transverse of the brain which show the dilation of brain ventricles.

not follow up on his headaches, he might never know about his disorder.

Patient consent

The authors have obtained a written informed consent from the patient to publish his case (including publication of images).

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