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Case report

Navigator system-assisted endoscopic fenestration of a symptomatic cyst in the septum pellucidum—technique and cases report

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Abstract

Expanding cysts of the septum pellucidum are rare and frequently manifest as intermittent headaches. Although the technique of endoscopic fenestration has been used since 1999, only a limited number of cases have been reported. We have added the use of a navigator system to guide keyhole creation and endoscopic access. To provide experience in navigator endoscopic treatment of symptomatic cyst of septum pellucidum and long-term follow-up of the surgical result. Under the guidance of the navigator system, a burr hole was made and rigid endoscope was inserted into the lateral ventricle through a working sheath. With direct visualization, only one side of the lateral wall of the cyst was fenestrated. And a grasping basket was used to further dilate the perforated hole. Patient A, a 14-year-old male adolescent, had an acute onset of severe headache with increased intracranial pressure. Patient B was a 37-year-old woman with a diagnosis of medically intractable migraine. Both patients experienced dramatic symptomatic relief after surgery at 4.5- and 2-year follow-up exams, respectively. The technique of navigator-assisted endoscopic fenestration in the treatment of a symptomatic cyst of the septum pellucidum might be a safe and effective method. It achieved satisfactory results in our two patients.

Keywords: Endoscopic fenestration; Fifth ventricle; Navigator; Septum pellucidum

1. Introduction

Anatomically, the septum pellucidum is a thin, vertical partition that rostrally separates the bodies of the lateral ventricles. By definition, the cleft-like space between the septum pellucidum, named the cavum septum pellucidum (CSP), is more commonly found in infants and usually obliterated before adulthood [1]. The incidence of the CSP is 19.6% and greater in males than in females, with a mean CSP width of 7.5 mm [2,3]. The well-accepted definition of a cyst of the septum pellucidum is a dilated cystic structure between the lateral ventricles, with walls that exhibit lateral bowing and separation by 10 mm or more [4].

Expanding cysts of the septum pellucidum can be symptomatic; some patients usually present with the symptoms of increased intracranial pressure, such as headache, emesis, syncope, or papilledema. Some patients may present with behavior or autonomic symptoms, such as emotional labiality, bizarre behavior, memory loss, psychosis, or disturbance of sleep [5–8]. Increased intracranial pressure is considered to result from the obstruction of interventricular foramina by the cyst [9]. In contrast, the compression of the hypothalamoseptal triangle which includes the specific septal, periseptal nuclei and associated projection pathways is believed to be related to neuropsychiatic symptoms [5–9]. Fewer than 20 examples of true septum pellucidum cysts with neuroimaging confirmation and the resolution of symptoms after treatment have been reported [10–17]. The interventions are diverse and include craniotomy with fenestration of the cyst [9,11–13,17–21], cystoventricular shunt

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placement, cystoperitoneal shunt placement, stereotactic fenestration [15–17], and endoscopic fenestration [22,23].

We performed successful navigator-guided endoscopic fenestration of a cyst of the CSP in two patients with intractable headaches, achieving satisfactory results.

2. Materials and methods

Patient A was a 14-year-old male adolescent who had intermittent dizziness and mild headaches since childhood. He did not notice an aura or aggravating factors. The symptoms could not be controlled with painkillers, but they always resolved spontaneously. Three weeks before his hospital admission, his headaches increased in frequency and intensity, changing from two to three times a month to two times a week. One morning, he awoke with the most severe headache of his life, with attendant nausea and vomiting. At our emergency department, neurologic examination showed normal findings, except for bilateral papilledema. With the clinical impression of increased intracranial pressure, brain computed tomography was performed, and the scans revealed a dilated cyst in the CSP (Fig. 1A). During his admission, the severity of his headache increased, even after oral diclofenac potassium treatment for 2 weeks. Brain magnetic resonance imaging (MRI) was performed 2 weeks after symptom onset, and the images showed further dilatation of the cyst. The maximum diameter increased from 17 to 20 mm (Fig. 1B). With the clinical impression of cyst expansion resulting in intractable headache, surgical intervention was undertaken without delay.

Patient B was a 37-year-old woman who had chronic headaches since she was 18 years old. Her headaches occurred several times a week at first and were exacerbated premenstrually. They had been treated with nonsteroidal anti-inflammatory drugs. The headaches had occurred daily after she gave birth to her second son when she was 24 years of age. Flashing lights in the visual field, which lasted several seconds, preceded the headache attacks. Bending or leaning backward aggravated the pain. In addition, she had been identified as having symptoms of major depression and panic disorders. MRI performed 10 days before surgery showed a dilated cyst in the septum pellucidum with walls 20 mm apart (Fig. 2A). Despite the use of many migraine-preventive agents, her headaches were still intractable and she was disabled with both headache and neuropsychiatric symptoms. As the dilated cyst was the only abnormal and correctable finding in the neuroimaging studies, she was then transferred

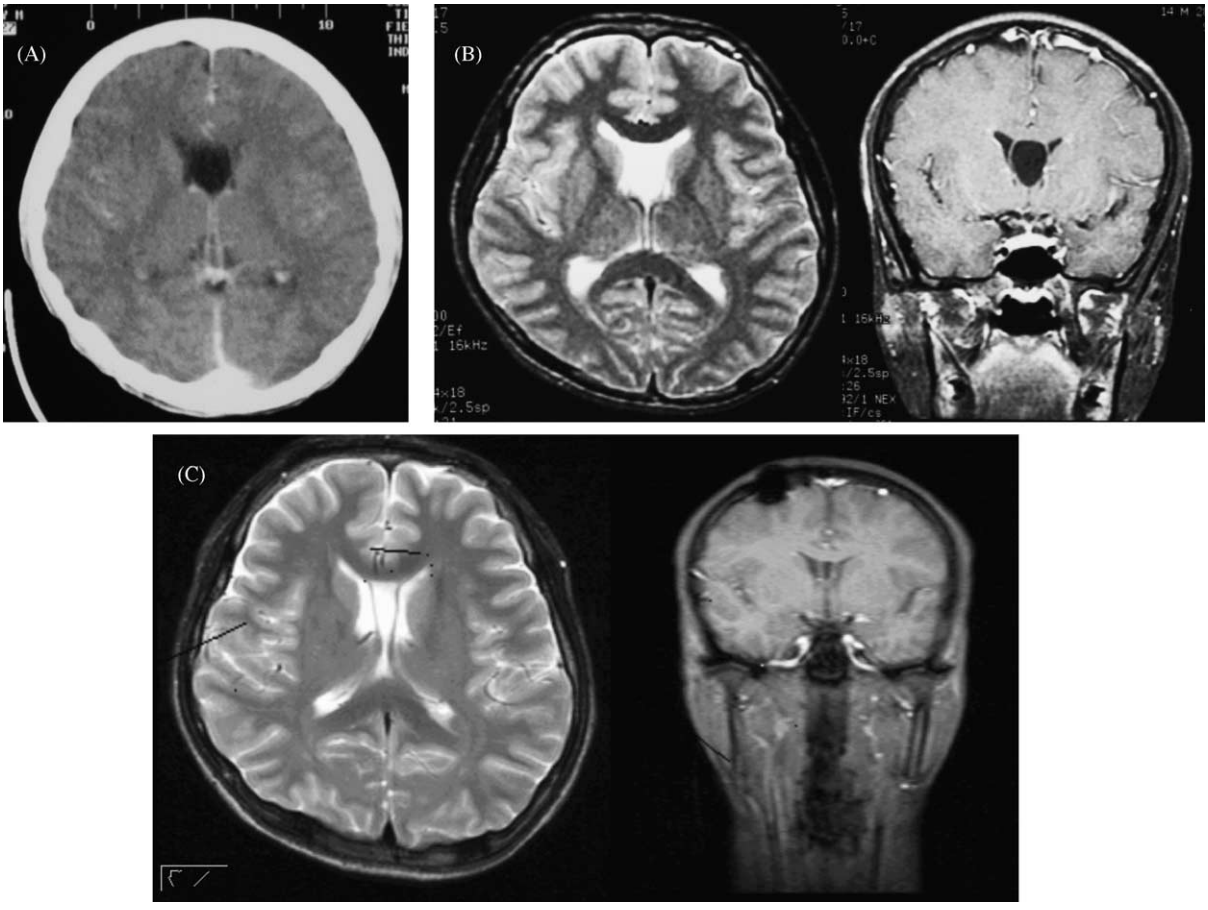

Fig. 1. Patient A, a 14-year-old male adolescent with a cyst of the septum pellucidum. Serial images show changes in the width of the cyst, which is 17 mm at 2 weeks before surgery (A), 20 mm at 1 day before surgery (B), and 10 mm at 3 years after surgery (C).