

CASE REPORTS

CHRONIC DAILY HEADACHE IN A PATIENT WITH CAVUM SEPTUM PELLUCIDUM AND CAVUM VERGE

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Conflict of Interest: None Declared

SUMMARY

Cavum septum pellucidum (CSP) and cavum Vergae (CV) are unusual variants and usually asymptomatic, but their expansion or inside lesions can produce symptoms by mass effect. A 46-year-old female Taiwanese worker presented with chronic daily headaches for eight years. Magnetic resonance imaging revealed coexistent CSP and CV. She declined surgical drainage recommended by a neurosurgeon and thus visited our clinic for a second opinion. Physical examination did not show any abnormality. With the help of the patient's one-month headache diary, she was diagnosed with chronic migraine according to the International Classification of Headache Disorders, 2nd edition, with further modification in 2006. In addition, hypertension was also identified. Over the following week, taking a daily selective β 1-antagonist relieved the headache and hypertension. The medication was continued and the following year was uneventful. Therefore, the chronic daily headache was ascribed to chronic migraine, rather than symptomatic CSP and CV.

Key words: cavum septum pellucidum, cavum Vergae, chronic migraine, selective β 1-antagonist, hypertension

INTRODUCTION

The cavum septum pellucidum (CSP) is defined as a crevice-like space of variable width between the left and right transparent septum. If CSP extends posteriorly above the third ventricle and is bounded by the splenium posteriorly, it is called a cavum Vergae (CV),¹ which is defined as a horizontal cleft between the commissura fornicis (or psalterium) and the corpus callosum.²

CSP and CV are normal incident variants and are sometimes called the 5th and 6th cerebral ventricles.³ These are now incorrect as the cava is apart from the adjacent ventricles and does not have normal ependymal lining or choroid plexus cells.⁴

A review of 1,000 computed tomographies of British boxers showed that CSP had a prevalence of 5.5%; both CSP and CV occurred at a rate of 0.5%.³ In a review of 9,074 Chinese computed tomographies, CSP had a prevalence of 0.51%; CV had a prevalence of 0.08%, and cases of coexistent CSP and CV account for 0.65%.⁵

Apparently, coexistent CSP and CV has been considered an unusual curiosity in the literature published over ten years ago, but such incidental findings are not uncommon in currently day-to-day radiology. In 2009, we encountered such a patient with chronic daily headache, which comprises a group of headache disorders where the headache occurs at a frequency greater than 15 days per month and lasts more than four hours per day over a three months period, and the prevalence is about 4% to 5% in the general Taiwan population.⁶

This compelled us to discuss whether or not the neuro-radiological finding accounted for the clinical symptoms in the unusual patient.

CASE REPORT

A 46-year-old female Taiwanese worker with a height of 171 cm, a body weight of 60 kg and a body mass index of 20.5 kg/m², did not suffer from diabetic mellitus, heart disease or other systemic diseases. She did not smoke cigarettes, drink alcohol or consume areca nut, but drank one cup (250 mL) of coffee every morning.

She has been bothered with daily headache since 2001. All kinds of non-steroidal anti-inflammatory drugs failed to provide relief, and even dihydroergotamine (5mg) could not reverse the course. On May 2009, she visited our hospital where magnetic resonance imaging (1.5 Tesla system, Picker Edge Eclipse, Picker 98 International, USA) demonstrated CSP, 18.2×8.9mm (Figure, arrow-head 1), and CV, 32.8×5.5mm, with inside cavum velum interpositum (Figure, arrow-head

2). Symptomatic CSP and CV were suspected and surgical drainage was recommended by a neurosurgeon, but she declined.

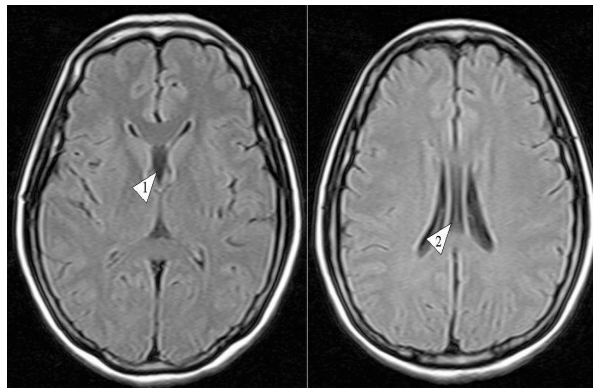


Figure 1 Magnetic resonance scan of patient's brain

Then, she visited our clinic for a second opinion. Neurological and otorhinolaryngologic physical examinations did not show any remarkable abnormality. When she was symptomatic, the blood pressure was 141/86 mmHg with a heart rate of 67/min. Then, she was invited to fill in a one-month headache diary and record blood pressure daily.

Over the following month, the average blood pressure was 141.8±3.3/87.2±3.7 (average±SD) mmHg with an average heart rate of 65.8±2.1/min. The headache diary (Table 1) revealed she had daily mild-to-moderate left throbbing hemi-cephalgia, and twelve attacks fulfilled criteria for migraine without aura.

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
The degree of headache (1=mild 2=moderate 3=severe)																															
Morning	1	1	1	1	1	1	1	1	2	2	1	1		1	1	1	1	1	1	1	2	1	1	2	1	1	1	1	1	1	
Afternoon	2	2	1	2	2	1	2	2	1	2	1	1						1		1	2	2	2	1	2	2	2	2	2	2	
Evening	2	2	1	1	1				1	2	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	
Sleep time	2	1	1	1	1				1	1				1	1															2	2
Symptom accompanied, please mark "√"																															
Nausea	√	√	√	√					√	√	√					√	√	√	√		√			√	√	√	√		√	√	
Vomiting																															
Photophobia	√	√	√	√	√	√	√	√	√		√	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
Phonophobia	√	√		√										√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
Throbbing pain	√	√	√	√	√				√			√	√	√	√					√	√			√	√	√	√	√	√	√	
Unilateral headache*	√	√	√			√	√			√	√			√	√					√	√			√	√		√	√	√	√	
Activity intolerance	√	√	√	√	√				√	√	√										√			√	√	√	√	√	√	√	
Paresthesia**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
Aura, please mark "√"																															
Flash light																															
Visual field defect	√	√	√	√			√																								
Attack duration (hour)																															
	24	12	10	8	8	2	2	4	8	8	8	4	2	2	2	2	3	3	4	6	8	5	6	8	8	12	12	12	18	24	
Analgesics and the dose																															
	Daily four tablet of acetaminophen 500mg and four tablets of ibuprofen 400mg																														
The effect of analgesics (0=none 1=some effect 2=good effect 3=very good effect)																															
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period of menses, please mark "√"																															
	√	√	√	√																									√	√	√

Table 1 A 30-day diary of episodes of headaches

This interfered with her work and life, and could be exacerbated by exercise and head rotation. The accompanied symptoms were dysarthria, blurred vision, nausea, vomiting, phonophobia, photophobia and hemifacial paraesthesia. Headaches began in the morning, peaked at noon and remitted in the afternoon out the time of menstruation, but remitted till sleep at the time of menstruation. The daily symptomatic duration was 7.8 ± 5.8 hours.

According to the International Classification of Headache Disorders, 2nd edition, with further modification in 2006 (ICHD-IIR),⁷ she was diagnosed with chronic migraine and hypertension. Therefore, a daily 0.25 tablet of selective β 1-antagonist atenolol (100mg) was recommended. Over the following week, the headache with accompanied symptoms did not recur. The weekly average blood pressure was 123/77 mmHg with an average heart rate of 63/min. Thus long-term therapy with a daily 25mg tablet of atenolol was continued. The following year was uneventful.

DISCUSSION

The embryologic origins of CSP and CV differ from that of the ventricular system.⁴ In the fourth embryologic month, a pellucid space develops in the pellucid septum and is expected to degenerate in the infant stage, but a few cases persist as they grow, resulting in CSP and/or CV.⁵ CSP and/or CV are usually asymptomatic but may be occasionally symptomatic.

There have been studies in relation to headaches, seizures, dementia, personality changes, and schizophrenia.^{5,8} Additionally, expansion or inside lesions of the cava can produce symptoms by distorting the vessels, compressing the hypothalamo-septal triangle, or compressing the optic pathways.^{1,9,10} Fenestration to the lateral ventricles, cystoventriculoatrial shunts or cystoperitoneal shunts have been recommended in symptomatic cases because spontaneous regressions have only occurred in three cases reported in the literature.^{1,12-14}

The width of CSP is between 6 mm and 20 mm, and that of CV is between 6 mm and 19 mm.⁵ The width of the patient's CSP was within the usual range, but that of the CV was smaller than the usual range; therefore, the size of the cava was unlikely to become symptomatic by mass effect, and the neurosurgeon's opinion was controversial. However, the non-observed expanding of the cava had potential to become causative, and the neurosurgeon's opinion merited consideration.

In order to make a convincing diagnosis and to clarify the doubt, it was necessary to know what sort of headache the patient was suffering from. We suggested that she write a structured headache diary.

This method has been widely used in research and clinical practice to provide full-view prospective data that may not be noticed retrospectively.

According to the ICHD-IIR, chronic migraine is confirmed if the chronic daily headache fulfils the following four criteria:⁷

- (A) headache (tension-type and/or migraine) on at least 15 days per month for at least three months,
- (B) occurring in a patient who has had at least five attacks fulfilling criteria for migraine without aura,
- (C) headaches on at least eight days/month for at least three months, fulfilling C1 and/or C2, that is, meeting criteria for pain and associated symptoms of migraine without aura. C1 has at least two of the below factors: unilateral location, pulsating quality, moderate or severe pain intensity, aggravated by or caused by routine physical activity (e.g. walking or climbing stairs), nausea and/or vomiting, photophobia and phonophobia. C2 is treatable and relieved by triptan(s) or ergot before the expected development of C1 above,
- (D) no medication overuse is present and it is not attributed to another causative disorder.

With the help of the patient's headache diary (Table), she was thus diagnosed with chronic migraine by matching the criteria A, B, C, C1 and D.

Dihydroergotamine mesylate is a migraine-specific agent¹⁵ but it failed to cure her. Preventive medication is recommended for chronic migraine. The first is β -antagonist, followed by anti-depressants, calcium channel blockers, anticonvulsants, or others, in order to improve the sufferer's life quality and lower the cerebral and cardiovascular risk.¹⁶

Since hypertension was concomitantly present, a selective β 1-antagonist was recommended and just 25 mg per day to control her hypertension and cure the chronic migraine over the following week. The medication was continued and the following year was uneventful. Therefore, the chronic daily headache was ascribed to chronic migraine, rather than symptomatic CSP and CV. The CSP and CV were incidental asymptomatic findings.

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