

# Cavum vergae and psychiatric illness: substantive or serendipity?

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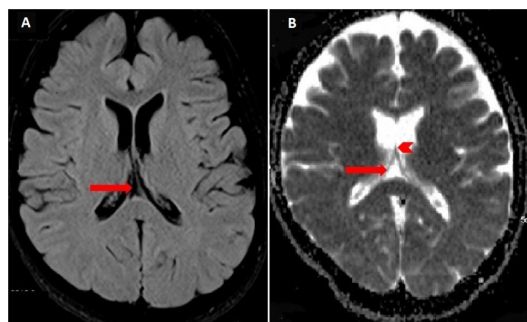
## DESCRIPTION

A 38-year-old woman presented with 1-month history of restlessness, decreased sleep, religious song auditory hallucination and delusion of persecution and reference. She had no insight into her illness. She was not on any long-term medications. There was no history of head trauma or exposure to toxins. She suffered from postpartum psychosis during both her pregnancies (8 and 11 years ago) which warranted inpatient treatment with antipsychotics and mood stabilisers. She defaulted treatment both times once she got better and did not experience any recurrence of symptoms until current episode. She had no other comorbidities or significant family history. Her general medical and neurological examination findings were within normal limits. Routine laboratory tests did not reveal any abnormality. A brain MRI diffusion weighted imaging sequence demonstrated cavum vergae (CV, [figure 1A](#)) and MRI brain apparent diffusion coefficient sequence showing CV and thinned out cavum septum pellucidum (CSP, [figure 1B](#)). She was initially put on risperidone to which she did not respond, hence quetiapine was started and up-titrated to a dose of 200 mg. All her symptoms abated with 4–6 weeks of treatment. At 6 months of follow-up, delusions re-emerged on attempted reduction of drug dosage and is now maintained on quetiapine 150 mg without symptoms.

Septum pellucidum is a dual membrane structure separating the lateral ventricles of the brain. The opposing leaflets of the membrane enclose a cavity which gradually becomes thinner and completely obliterates during late fetal life or

early infancy. The failure in fusion results in a gap called CSP. CV is the posterior extension of CSP lying in front of the splenium of corpus callosum and behind the anterior columns of fornix. Obliteration of these spaces occurs posteroanteriorly during embryological development. Thus, CSP almost always accompanies CV making an isolated CV very rare finding.

Although CV and CSP may be separately present as a normal variation without clinical significance in some individuals, several epidemiological studies have suggested that their prolonged presence in the brain might lead to developmental abnormalities of midline structures and limbic system of brain and diverse neuropsychiatric disorders.<sup>1</sup> The increased size of these cavities may reflect spatial compensation for the lack of growth of midline forebrain structures like corpus callosum and hippocampus in infants or age-related brain atrophy in adults. Patients with mental illnesses, notably schizophrenia and mood spectrum disorders, have increased prevalence of midline structural abnormalities of brain.<sup>2</sup> The largest collection of subjects to date with mental disorders and CV persisting into adulthood by Landin-Romero *et al* revealed the presence of CV in a range of psychiatric disorders with none identified in the healthy control group. Patients with CV were identified to suffer from an older age of onset, lower IQ and more deterioration in executive function and memory.<sup>3</sup> Wolf *et al* described a case where a young boy with treatment-resistant schizophrenia had isolated CV on imaging.<sup>4</sup> Acharia *et al* reported a woman with late-onset schizophrenia having isolated CV.<sup>5</sup> Apart from these there is little literature to state the psychopathological significance of an isolated CV. Further studies are warranted to establish



**Figure 1** (A) MRI brain diffusion weighted imaging sequence demonstrating cavum vergae (red arrow). (B) MRI brain apparent diffusion coefficient (ADC) sequence showing cavum vergae (red arrow) and thinned out cavum septum pellucidum (arrowhead).

## Learning points

- ▶ Midline structural abnormalities like cavum septum pellucidum (CSP) and cavum vergae (CV) are associated with a wide range of psychiatric illnesses with persistent CSP being the most common.
- ▶ CSP and CV are thought to be associated with earlier onset of mental illness, poor response to treatment, and their presence may indicate the increased risk of major psychiatric illness across the lifespan of an individual.



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whether isolated CV is a benign and incidental finding versus a biological risk factor for major mental illnesses.

**Contributors** CR was the primary physician who admitted, investigated and planned strategies of management, conceived the idea of writing up the manuscript and getting informed consent from the patient. VK, MH and SL were equally responsible for making the preliminary draft, revising the manuscript, and editing images and collecting references. All the authors participated in revising again the manuscript.

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