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Arachnoid cysts and headaches

Title: Episodic headache and arachnoid cyst related subdural hematoma**Authors:** Salman Rashid, MD ^{a,b,c*}; Carla Watson, MD ^{a,b,c}; Rajkumar Agarwal, MD ^{a,b,c}

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Conflict of interest disclosure: Dr. Rashid reports no conflicts relevant to the manuscript. Dr. Watson reports no conflicts relevant to the manuscript. Dr. Agarwal reports no conflicts relevant to the manuscript.**Key words:** Headache; Cysts, Arachnoid; Hemorrhages, Subdural**Financial support:** No targeted financial support reported.**Abbreviations:**

Magnetic resonance imaging (MRI); Fluid-attenuated inversion recovery (FLAIR);

Chronic subdural hematoma (CSDH)

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Methodology:

- No honorarium or grant was given to produce the manuscript.
- There is no potential, perceived or real conflict of interest as below.
- All authors have access to all the study data.
- All have contributed significantly to the manuscript and have reviewed and approved the manuscript in its final format.
- Image file supplied (Figure 1) has not been altered or enhanced.
- The authors had a clinical relationship with the patient and no identifiable information is being published; hence, a formal approval from the Institutional Review Board or other ethics committee was not sought. For the same reason, a written informed consent of the family was not obtained.
- There are no prior publications or submissions with any overlapping information, including studies and patients. The manuscript has not been and will not be submitted to any other journal while under consideration by *Headache*.

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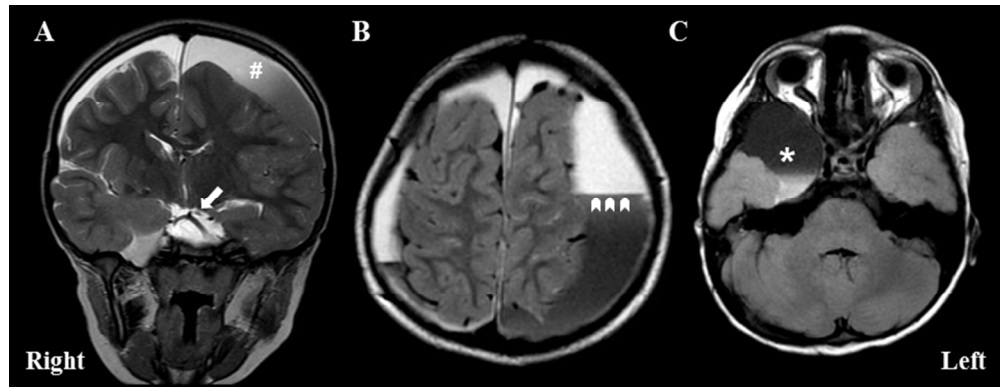


Figure 1 Legend:

- A: Coronal T2 weighted MRI showing a large extra-axial hemorrhagic collection within the left frontal parietal region (white pound sign) causing transtentorial herniation (the white arrow marks the asymmetric compression of the perimesencephalic space on the left side). Right frontal parietal and temporal extra-axial fluid collections can also be seen.
- B: Axial fluid-attenuated inversion recovery (FLAIR) sequence MRI showing a large left-sided frontal parietal hemorrhage and arachnoid cyst. Associated blood fluid level (white arrowheads) is indicative of hemorrhage within the cyst.
- C: Axial FLAIR sequence MRI showing right temporal arachnoid cyst (white asterisk). A blood fluid level can also be seen.

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A 7-year-old boy presented with a 1-month history of episodic bifrontal throbbing headache associated with photophobia, bilateral painful arm paresthesias and intense agitation. Symptoms developed two weeks after a trivial trampoline fall causing blunt head trauma without loss of consciousness. Three interval emergency room visits led to transient improvement with intravenous analgesics. During this (fourth) visit, additional symptoms included binocular diplopia. Examination showed excessive irritability but was negative for focal neurological signs or obvious eye movement abnormalities. A brain magnetic resonance imaging (MRI) completed during this encounter showed bilateral arachnoid cysts with hemorrhage and evidence of transtentorial herniation (Figure 1). Surgical evacuation of hematomas resulted in dramatic recovery.

Chronic subdural hematoma (CSDH) is a rare complication of an arachnoid cyst reported in children as young as 3 years.¹ Although the pathogenesis is contentious, CSDH may occur due to a trivial or an unrecognized trauma.^{2,3} Patients may present with worsening headache and focal neurological deficits due to elevated intracranial pressure. Migraine-like headaches, likely related to cortical spreading depression triggered by the CSDH, have also been described.⁴ The presence of irritability, diplopia and recent head trauma constitute "red flags" in a child with new onset headache and should warrant further investigation.⁵

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