

## Subarachnoid or subdural effusion?

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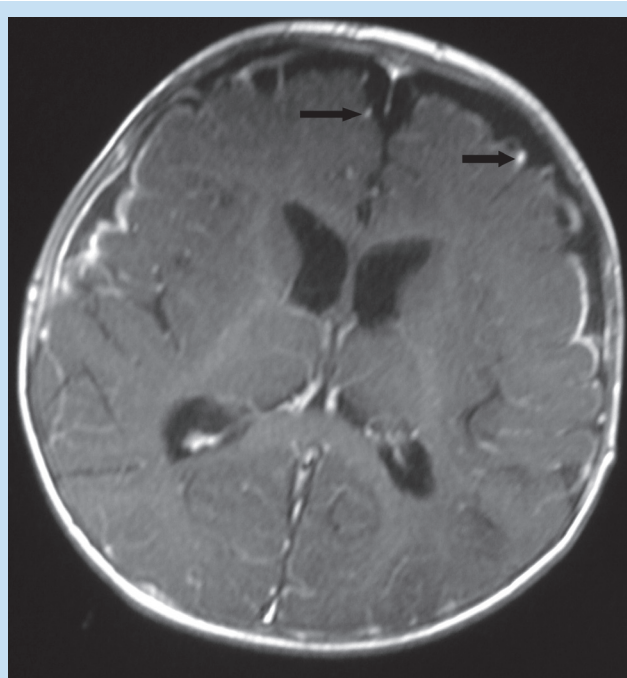
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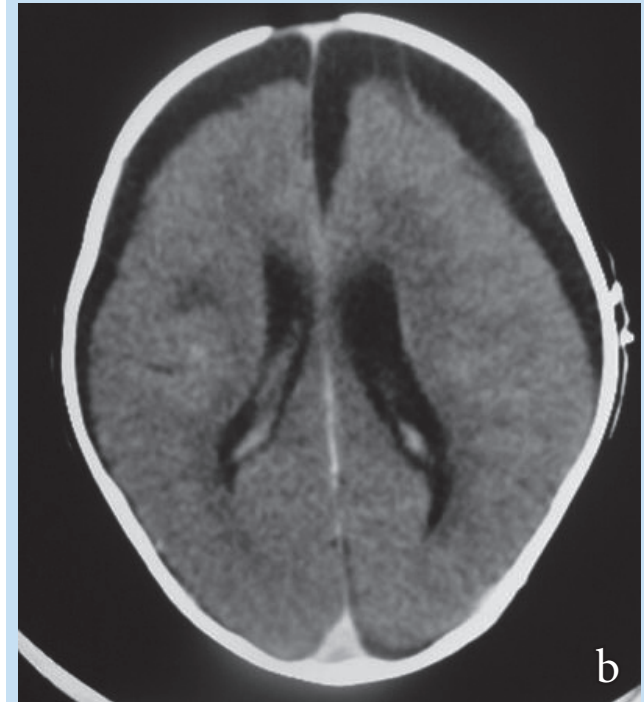
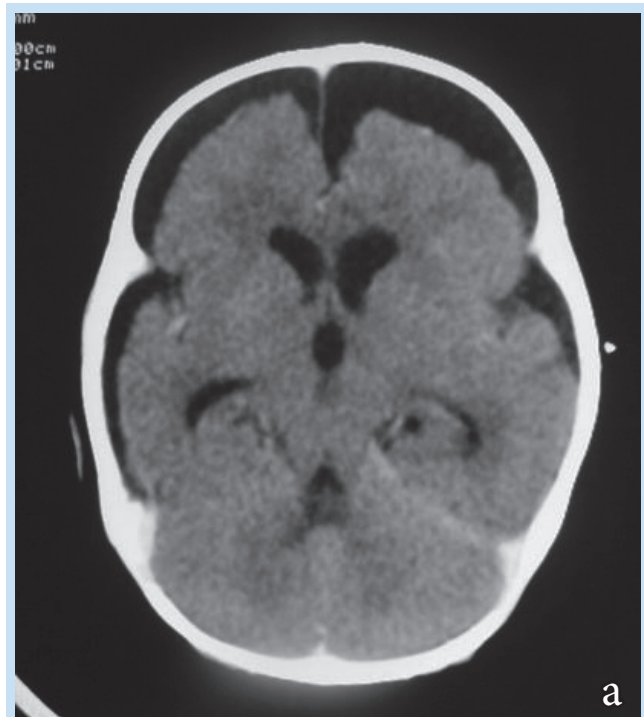
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Often one is confronted with an extracerebral fluid collection/effusion when interpreting computed tomography (CT) of the brain in children. To determine whether the effusion is subarachnoid or subdural, a few basic principles should be kept in mind.

Subdural effusions are crescent-shaped,<sup>1</sup> especially over the frontal and parietal lobes, with the vessels 'pasted' against the cerebral surface (Fig. 1).<sup>2</sup> The interhemispheric fissure anteriorly can be V-shaped or asymmetrical, as the hemisphere is displaced away from the falx at an angle (Figs 2a and b).<sup>2</sup>



*Fig. 1. Contrasted CT brain showing enhancing dura and meninges, with the contrast-filled vessels (arrows) compressed against an effaced cerebral surface in the presence of a subdural effusion.*



*Figs 2a and b. CT studies illustrating the brain surfaces at the interhemispheric fissure pushed away by subdural fluid from the falx, either bilaterally (a) or unilaterally (b). Note marked effacement of the gyri and sulci.*

Subarachnoid effusions emphasise the gyral outlines as the subarachnoid spaces enlarge, especially over the

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*Fig. 3. Uncontrasted CT study illustrating normal frontal enlarged subarachnoid spaces in an infant. The frontal lobes stay parallel to the interhemispheric fissure with subarachnoid effusions, in contrast to subdural effusions. The surface gyri and sulci are prominent, whereas in a subdural collection these would be effaced.*

frontal lobes and interhemispheric fissure when the patient lies supine (Fig. 3). It is important to note symmetry of the subarachnoid effusion.<sup>2</sup>

Clinical relevance of this determination is in the evaluation of collections in non-accidental injury (which are often hypodense – indicating chronic effusions). This is also important in pyogenic meningitides with subdural collections,<sup>3</sup> where these must be distinguished from the normal subarachnoid spaces in infants less than 1 year of age.<sup>2</sup>

1. Kirkwood JR. *Essentials of Neuroimaging*, 2nd ed. New York: Churchill Livingstone, 1995: 378.
2. Barkovich AJ. *Pediatric Neuroimaging*, 3rd ed. Philadelphia: Lippincott Williams & Wilkins, 2000: 606-609.
3. Barkovich AJ. *Pediatric Neuroimaging*, 3rd ed. Philadelphia: Lippincott Williams & Wilkins, 2000: 371.