

# Peculiar MRI findings of intracranial hypotension in patients with abducens nerve palsy

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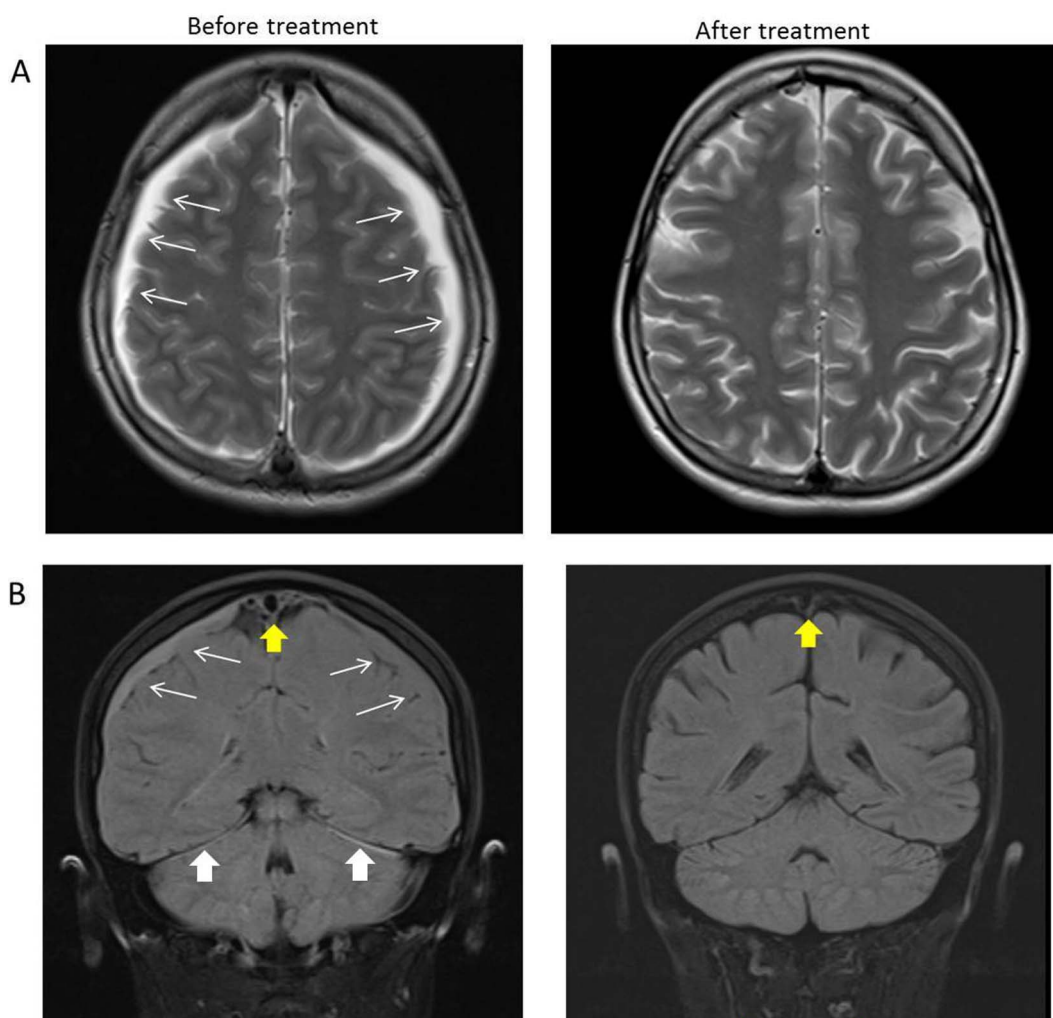
## DESCRIPTION

A 26-year-old female patient was admitted to our department with headache and diplopia. Her medical history revealed a caesarean section with epidural anaesthesia a week before the admission. Ophthalmological examination revealed right abducens paralysis with normal visual acuity, normal biomicroscopic findings, and normal fundi on fundoscopic examination, and normal intraocular tension in both eyes. A contrast-enhanced cranial MRI revealed bilateral subdural fluid collection, engorgement of venous structures, enlargement of the pituitary gland and diffuse tentorial thickening. All of these findings are consistent with early intracranial hypotension (figures 1 and 2). On MRI,

enhancement of the pachymeninges was seen following intravenous contrast administration (figure 3).

Conservative follow-up with increased fluid intake was offered and at the third month of follow-up her symptoms had improved, right abducens paralysis had ameliorated and control non-contrast-enhanced cranial MRI revealed normal findings. Our patient refused a contrast-enhanced MRI because she was breastfeeding.

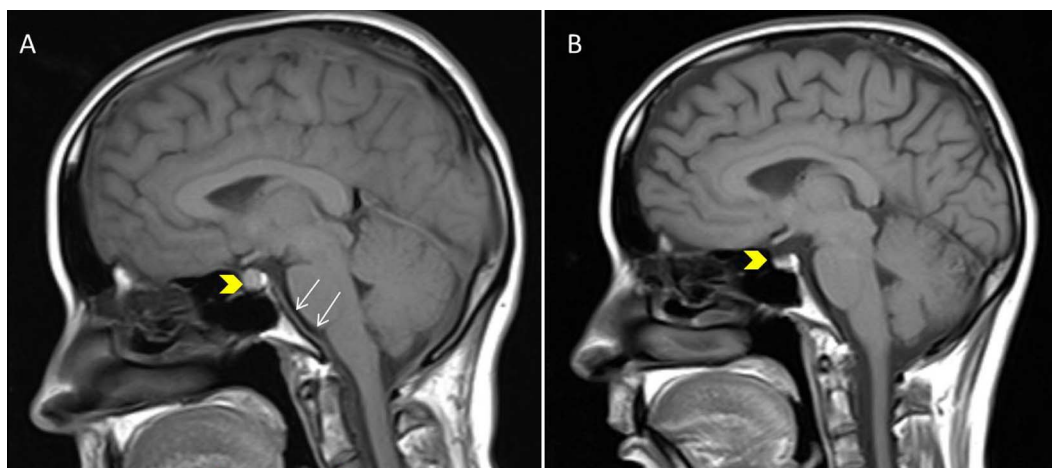
Cerebrospinal fluid (CSF) leakage is a well-known complication of epidural anaesthesia and thorough evaluation in symptomatic cases would help avoid the complications of intracranial hypotension.



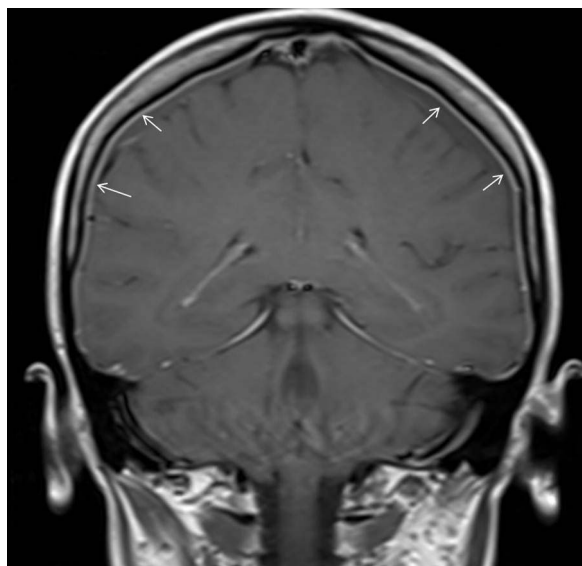
**Figure 1** Axial T2-weighted images (A) showing bilateral subdural fluid collections over the cerebral convexities (arrows). Coronal fluid-attenuated inversion recovery images (B) showing bilateral subdural fluid collections (arrows), engorgement of the superior sagittal sinus (yellow arrow) and diffuse tentorial thickening (broad white arrows). Findings improved after treatment.



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**Figure 2** Pretreatment sagittal T1-weighted image (A) showing obliteration of the prepontine cistern (arrows) and enlargement of the pituitary gland (yellow arrowheads). Post-treatment sagittal T1-weighted image (B) revealed normal findings.



**Figure 3** Coronal T1-weighted image after intravenous administration of gadolinium showing resolution of enhancement of the pachymeninges.

Changes in CSF pressure can commonly cause headache and neurological symptoms. Most of the time, headaches associated with low CSF pressure are orthostatic and develop after lumbar puncture. CSF fluid leakage is considered the most important aetiological factor occurring after lumbar puncture due to arachnoid membrane rupture.<sup>1</sup> Most of the MRI features of intracranial hypotension can be explained as compensatory changes related to the loss of CSF volume. Characteristic imaging features of intracranial hypotension on MRI are subdural fluid

collection, enhancement of the pachymeninges, engorgement of venous structures, enlargement of the pituitary gland and sagging of the brain.<sup>2</sup>

In these patients, dizziness, sweating, blurred vision and double vision can occur.<sup>2</sup>

Headaches at low CSF pressure may resolve spontaneously within 2 weeks. In some cases, it takes months or rarely years.<sup>3</sup>

#### Learning points

- ▶ Epidural anaesthesia should be queried in those with diplopia and headache, and a diagnosis of intracranial hypotension due to cerebrospinal fluid (CSF) leak age should be considered.
- ▶ Most of the MRI features of intracranial hypotension can be explained as compensatory changes related to the loss of CSF volume.
- ▶ The condition can be controlled with the intake of plenty of fluids and follow-up treatment.

**Competing interests** None.

**Patient consent** Obtained.

**Provenance and peer review** Not commissioned; externally peer reviewed.

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