

Transient bilateral third cranial nerve palsy following traumatic perimesencephalic subarachnoid haemorrhage

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A 76-year-old woman was admitted to the emergency department after experiencing a head trauma and was hospitalised. On the second day of admission, her pupils were bilaterally non-reactive. On the same day, magnetic resonance imaging demonstrated subarachnoid haemorrhage on the interpeduncular cisterns, the cerebellum and colliculus were oedematous, the adjacent subarachnoid spaces were completely closed and the pons was mildly displaced (**Figure 1**). Meanwhile, a magnetic resonance imaging scan that had been performed 6 months earlier was obtained which showed that the cerebellar hemispheres were atrophic and subarachnoid spaces were dilated (**Figure 2**). Pupil palsy disappeared on the seventh day of treatment.

The parasympathetic pupillary fibres are located peripherally in CN III and they are affected by external compression (Gaillard et al, 2022). The linear force of high-speed trauma results in the brainstem moving downward and straining CN III (Eisenhut et al, 2020). These two mechanisms together might have caused the transient pupillary palsy.

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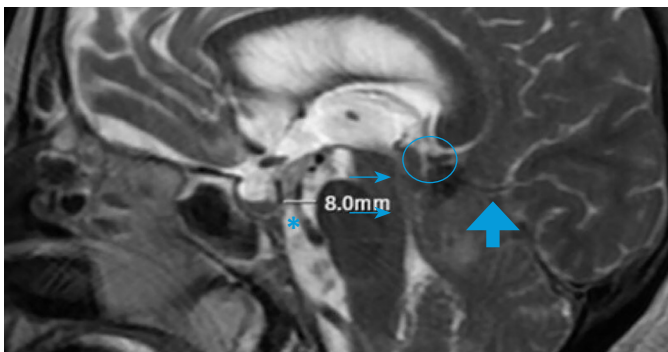


Figure 1. Magnetic resonance imaging from the second day of admission showed that the cerebellum and the superior and inferior colliculus were oedematous and subarachnoid spaces were completely closed (circle) by the mass effect of these structures. The ventral periaqueductal mid-brain was displaced anteriorly (short arrows). The tentorium was mildly elevated (thick arrow) and the prepontine distance was narrowed (asterisk).

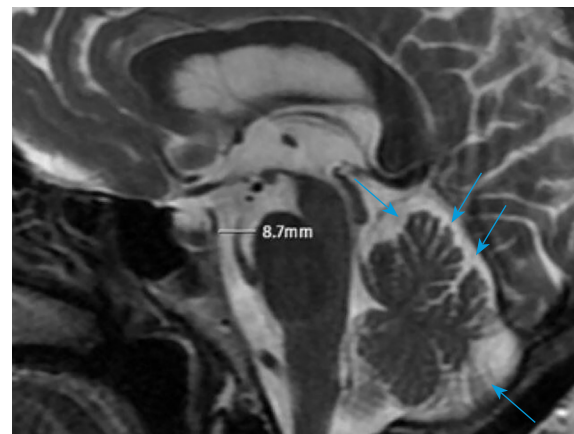


Figure 2. Magnetic resonance imaging performed 6 months earlier showed that the cerebellar hemispheres were atrophic and adjacent subarachnoid spaces were extensively dilated (arrows).