Several cases have been reported in which a patient with obstructive hydrocephalus has developed mesencephalic dysfunction after multiple revisions for shunt failures. The probable mechanism has been ascribed to rapid dilation of the third ventricle with maximum damage to the mesencephalon. In the present case, such a lesion is clearly demonstrated on magnetic resonance (MR) images.

This 12-year-old boy who had been treated for meningitis at a local hospital was referred to our department because of hydrocephalus. Neurological examination revealed only papilledema and MR images disclosed aqueductal stenosis. A ventriculoperitoneal (VP) shunt was placed and the patient was discharged without suffering any deficits. Three months later, the patient was readmitted to the hospital because of a malfunction of the VP shunt. The shunt was revised three times. Postoperatively, the patient was mute and his voluntary movements were bradykinetic. He fell asleep easily; prior to falling asleep he appeared immobile. He exhibited a blank stare and could not turn his eyes upward. Nine days after the last shunt revision T2-weighted MR images showed a hyperintense periaqueductal lesion extending to the tectum and tegmentum of the midbrain (Fig. 1). Addition of gadolinium diethylenetriamine pentaacetic acid produced no abnormal enhancement on T1-weighted images. The lesion could not be detected on a computerized tomography scan. Over the next 2 months all of the patient’s symptoms cleared slowly and the size of the lesion in the periaqueductal region also decreased on follow-up MR images. The patient was discharged and returned to his school.

This patient developed mesencephalic dysfunction caused by repeated malfunction of the VP shunt. Akinetic mutism and upward gaze paralysis, which are common in patients with acute hydrocephalus, were characteristic features in the patient’s convalescent stage. Segarra has reported that akinetic mutism of mesencephalic origin is characterized by hypersomnia; this was also noted in the present case and it was caused by disconnection of the thalamic nuclei from ascending midline mesencephalic reticular impulses. To my knowledge, this is the first case of obstructive hydrocephalus in which the lesion causing akinetic mutism has been demonstrated on MR imaging. This lesion involved the dorsal tegmentum of the midbrain, where the reticular formation is located.

References