Quadrigeminal Plate Cistern Lipoma

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Case History: 45-year-old female with complaint of occasional headache for three years, had normal neurological and systemic exams.

Case History: A 45-year-old female presented with complaint of occasional headache for last three years. Family and past history were unremarkable. Neurological and systemic examinations were normal. Blood analysis was within normal limits and EEG did not show abnormal discharges.

Figure 1. T2W axial (A) and sagittal (B) MRI image show well defined intermediate to high signal intensity lesion in quadrigeminal cistern on right side (large white arrow) abutting inferior colliculus. The lesion does not cause mass effect or obstruct hydrocephalous and normal corpus callosum (small white arrow) in sagittal image.
**Figure 2.** T1W axial MRI image shows high signal intensity lesion in quadrigeminal cistern on right side (arrow) which follow fat signal.
**Figure 3.** FLAIR coronal MRI images show high signal intensity lesion in quadrigeminal cistern (arrow).
Figure 4. Diffusion weighted MRI image shows no restricted diffusion within lesion (arrow).
Figure 5. T1W fat sat pre-contrast (A) axial MRI image shows hypointense signal, suggests suppression of fat signal of the lesion (arrow) and T1W fat sat post-contrast (B) axial image shows no enhancement within the lesion (arrow).

Patient was referred for MRI brain by neurophysician. MRI was performed using 1.5 Tesla Siemens Magnetom Essenga spin echo T2 weighted (T2WI), T1WI, fluid attenuation inversion recovery (FLAIR), diffusion weighted (DWI), pre-contrast T1W fat sat and post-contrast T1W fat sat with slice thickness 5 mm. On MRI, there was a lesion in quadrigeminal plate cistern on the right side which showed intermediate to high signal on T2WI (Figure 1), high signal on T1WI (Figure 2), FLAIR (Figure 3), no restriction on diffusion weighted imaging (Figure 4), low signal on pre-contrast T1 fat sat (Figure 5) and showed no enhancement on post-contrast T1W fat sat (Figure 6). Sagittal MR revealed a normal corpus callosum (Figure 7). The diagnosis lipoma in quadrigeminal plate cistern on right side was made. The patient was managed conservatively and the patient's headaches subsided with conservative management.

Diagnosis: Lipoma in quadrigeminal plate cistern on right side

Discussion: Intracranial lipomas (ICLs) are rare intracranial lesions. They represent a group of congenital malformations of the brain parenchyma, are located more frequently in the pericallosal cistern and associated with other parenchymal or brain vascular malformations in up to half of cases. Intracranial lipomas are slow growing benign congenital lesions accounting for 0.1-0.5 percent of all primary brain tumors and are usually detected as incidental findings. Intracranial lipomas are histologically benign lesions that are congenital hamartomatous malformations derived from the embryologic meninx primitiva. ICLs are usually an isolated finding, but, uncommonly, may be associated with other intracranial malformations such as callosal dysgenesis with pericallosal lipomas. Lipomas of the quadrigeminal plate are usually asymptomatic, but may cause significant symptoms of mass effect in about 20 percent of patients. Pressure on the ventricular system can result in consequent neurologic deficits, obstructive hydrocephalus or raised intracranial pressure. Radiological characteristics of quadrigeminal cistern lipoma is always definitive on imaging, hence histopathological confirmation is almost never required. On CT scan, the lipoma is characterized by attenuation values of fat density (-50 to -100 Hounsfield units) and absence of post-contrast enhancement. On MRI, the lipoma has short T1 and T2 and therefore, a hyperintense signal is present on T1-weighted images and a relatively low to moderate intensity signal on T2-weighted images. The differential diagnoses of lipomas in the quadrigeminal cistern include: arachnoid cysts, tectal plate cyst, tectal masses (gliomas), supracerebellar abscess, dermoid and epidermoid cysts, ruptured P4 segment aneurysm of the posterior cerebral artery and, rarely, pineal region mass. The lipoma can be differentiated with other negative attenuation value lesions (epidermoid or dermoid tumors) that two tumors will demonstrate heterogeneous attenuation values. Intracranial lipomas rarely become symptomatic and surgery is seldom required. The usual neurological symptoms are intracranial hypertension and hydrocephalus, which can be treated by shunt procedure. Incidental and asymptomatic lipoma of the quadrigeminal region do not require surgical intervention, as our patient also presented with headaches but it appeared to be unrelated to the lipoma, as no compressive, obstructive or evidence of raised intracranial pressure were seen, hence the patient was managed conservatively.

References

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