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Images in Medicine

Lipoma of the quadrigeminal plate cistern

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Introduction

Lipoma is regarded as the commonest benign mesenchymal tumor of the body and is ubiquitous in distribution. Although lipomas constitute approximately 4–5% of all benign tumors of the body, intracranial lipomas are rare and account for a mere 0.1% of all primary brain tumors.^{1,2} Although no age is exempt, the peak incidence is in the fifth and seventh decades with a male-female ratio of 2:1.³

Unlike their subcutaneous counterparts which attract attention due to their cosmetic effects, the intracranial lipomas usually remain asymptomatic unless they are large enough to produce symptoms due to mass effect. Intracranial lipomas are most often detected incidentally when imaging is performed for some other indication.

Case history

A 35-year-old male was advised magnetic resonance imaging (MRI) whole spine for backache not responding to medication. Screening image of cervical spine revealed a T1WI hyperintense lesion interposed between midbrain and cerebellum (Fig. 1).

MRI brain was performed to characterize the lesion further which revealed a 9 mm × 11 mm × 12 mm sized lesion in the quadrigeminal plate cistern to the left of midline. The lesion was hyperintense on both T1W and T2W images (Fig. 2a and b) and showed loss of signal on fat saturated T1WI (Fig. 3) confirming fatty nature of the lesion. No restriction of diffusion was observed in the lesion on DWI/ADC map. A further corroborative non-contrast computed tomography scan (CT scan) of the head revealed the lesion to be of uniform fat density (HU = −100) (Fig. 4).

Discussion

Lipomas are considered to be the result of abnormal differentiation of embryologic meninx primitive.¹ Intracranial lipomas are rare benign tumors which usually remain asymptomatic. They are usually detected on autopsy or incidentally during an imaging study performed for some other indication. Occasionally, when large, intracranial lipomas may produce symptoms such as headache, psychomotor retardation, abnormal cranial nerve function, or seizures due to local mass effect.²

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Fig. 1 – T1WI sagittal image of cervical spine showing hyperintense focal lesion (white arrow) in the region of quadrigeminal cistern.

Fig. 2 – (a, b) T1WI and T2WI axial images of brain demonstrate hyperintense focal lesion in the quadrigeminal cistern (white arrow).

Fig. 3 – T1WI (fat saturated) axial image of brain demonstrates loss of signal confirming fatty nature of the focal lesion.

Fig. 4 – NCCT head axial image demonstrates hypodense (–100 HU) lesion in the quadrigeminal cistern consistent with lipoma.

Although the intracranial lipomas can be found anywhere and no compartment is exempt, they have a predilection for some regions like (a) pericallosal (45%), (b) quadrigeminal cistern (25%), (c) suprasellar cistern (15%), (d) cerebellopontine angle cistern (10%), and (e) sylvian fissure (5%).² Agenesis of the corpus callosum and underdevelopment of inferior colliculus may be associated with the pericallosal and quadrigeminal plate cistern lipomas respectively.¹

On CT scan, lipoma is seen as a well-defined round to oval frequently lobulated extra-axial lesion of fat density (HU = –50 to –100). On MRI, these lesions are hyperintense on both T1 and T2 weighted images and are suppressed on T1 fat suppressed images. No enhancement of the lesion is observed after administration of intravenous gadolinium. The diagnosis of a lipoma is so certain on radiologic imaging that histopathologic correlation is almost never warranted. Asymptomatic lesions need no treatment. However, the larger lesions producing symptoms may require excision.

Besides lipoma, differential diagnosis of quadrigeminal plate cistern lesions includes arachnoid cysts, tectal plate gliomas, abscess, epidermoid cysts and occasionally aneurysm of the posterior cerebral artery or rarely a pineal region mass.

Awareness of quadrigeminal plate lipoma and its imaging appearance is important for the clinicians as well as radiologists to avoid potential diagnostic pitfalls and unnecessary interventions. Simple techniques like a fat saturated MRI sequence and/or a corroborative non-contrast CT scan as done in our case can confirm this benign entity with certainty.

Conflicts of interest

The authors have none to declare.

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