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Solitary Choroid Plexus Lipomas: CT and MR Appearance

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Summary: Using MR imaging, the authors detected 23 cases of intracranial lipomas, among which were three cases of solitary choroid plexus lipomas. All the lipomas were located in the choroid plexus at the trigone. One of the three solitary choroid plexus lipomas was very small and could not be detected using CT. The authors believe that solitary choroid plexus lipomas are not as rare as was previously thought.

Index terms: Choroid plexus, neoplasms; Lipoma; Brain neoplasms, Magnetic resonance

Intracranial lipomas are relatively rare and account for 0.34% of all intracranial tumors diagnosed by computed tomography (CT) (1). Lipomas of the choroid plexus of the lateral ventricle are usually associated with pericallosal lipomas (1–8). Here, we report three cases of choroid plexus lipomas that were evaluated using CT and magnetic resonance (MR), and which involved no other associated lipomas or developmental brain anomalies.

Cases Seen

From April 1987 through December 1991, we detected 23 intracranial lipomas using MR imaging. Among them were nine pericallosal lipomas, five lipomas in the quadrigeminal cistern, three at the choroid plexus of the lateral ventricle, three in the superior cerebellar cistern, two in the interpeduncular cistern, and one in the ambient cistern. These three cases of choroid plexus lipoma in three patients comprise the present study group: two were men and one was a woman; their ages were 62, 26, and 56 years, respectively. Their clinical symptoms and signs included transient right hemiparesis, vertigo, and visual disturbances.

Standard CT and MR imaging techniques for the brain were used. In 2 of the 3 cases, using a chemical presaturation technique (CHEM SAT), both fat saturation and water saturation images were also obtained.

Findings

Two of the three lipomas were identified through CT as masses of fat density at the choroid plexus of the lateral ventricle (Fig. 1A); however, even in retrospect, the single remaining lipoma could not be identified (Fig. 2A).

On T1-weighted MR images, all three lipomas were characteristically hyperintense and were clearly shown to be located in the choroid plexus at the trigone of the lateral ventricle (Figs. 1B and 2B). These masses were hyperintense on the proton density-weighted images, and were mildly hypointense on the T2-weighted images with chemical-shift artifacts. On fat saturation images, the masses were completely suppressed, and could not be identified (Fig. 1C). On water saturation images, the masses were characteristically hyperintense and similar to subcutaneous fat (Fig. 2C).

The masses ranged from 3–7 mm in diameter. No associated intracranial lipomas or developmental brain anomalies were detected in any of these cases.

Histologic verifications were not obtained in any of these cases, since surgery was not performed and all the patients are alive.

Discussion

Intracranial lipomas are neither hamartomas nor true neoplasms; rather, they are congenital malformations that are the product of abnormal persistence and maldifferentiation of the meninx primitiva (6). Intracranial lipomas are usually asymptomatic, and most reported cases have been incidentally detected during autopsies or—as in our patients—during CT or MR imaging.

These lipomas are usually detected at or near the midsagittal plane, and are most frequently in the pericallosal cistern. Lipomas of the choroid plexus of the lateral ventricle are nearly always associated with pericallosal lipomas (1–8). In their literature review, Tart et al (7) collected 99 cases of pericallosal lipomas and found associated choroid plexus lipomas in 54 cases (55%). We failed...
Fig. 1. Case 2, 26-year-old man.
A, Plain CT shows a mass of fat density at the trigone of the right lateral ventricle (arrow).
B, On a conventional T1-weighted image (spin-echo 600/20), the mass is homogeneously hyperintense, indicative of a choroid plexus lipoma.
C, The mass is completely suppressed on the fat saturation pulse sequences, using a chemical presaturation technique (CHEM SAT).

Fig. 2. Case 3, 56-year-old woman.
A, Postcontrast CT cannot detect a mass of fat density at the choroid plexus, even in the images rescaled.
B, T1-weighted conventional image shows a hyperintense minute mass at the trigone of the left lateral ventricle, indicative of a choroid plexus lipoma.
C, On the water saturation pulse sequences, the mass is characteristically bright, similar to subcutaneous fat tissue.

to identify reports of cases of choroid plexus lipomas without associated intracranial lipomas.

We believe that the characteristic location of the choroid plexus lipoma is at the trigone, because all of the intraventricular meningiomas arise at the trigone. Lipomas and meningiomas are lesions that relate to meningeal tissue. Although histologic verifications were not obtainable in the present study, we believe that the three masses of fat intensity that we identified at the
choroid plexus of the lateral ventricle are lipomas. However, we agree that the possibility of other tumors with fatty degeneration cannot be completely excluded.

Minute lipomas such as that found in our patient 3 may be overlooked using CT, because both the lipoma and the surrounding cerebrospinal fluid are hypodense relative to the brain parenchyma. On T1-weighted MR images, however, a lipoma is hyperintense and the surrounding cerebrospinal fluid is hypointense. Thus, MR imaging, especially using T1-weighted images, is more useful for identifying minute intracranial lipomas than is CT. Using fat saturation techniques, the nature of the mass as mature fat tissue can be verified without histologic examinations.

Because choroid plexus lipomas are small, they may have been overlooked on CT. If the lipomas are located in the intersection gaps, they can escape detection by MR imaging. Since the choroid plexuses are markedly enhanced after injections of gadopentetate dimeglumine, choroid plexus lipomas may be obscured on postcontrast MR. Therefore, choroid plexus lipomas may have been missed, even on MR imaging. We believe that minute solitary choroid plexus lipomas are not as rare as previously considered.

References