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Case Report

Corpus callosal lipoma in a young adult with extracranial extension, presenting as a frontal scalp swelling: A rare case report☆,☆☆

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ABSTRACT

Intracranial lipomas are rare congenital lesions of the pediatric age group and incidental findings in neuroimaging studies, but some are associated with other congenital malformations. They are usually located in the interhemispheric fissure, often in the vicinity of the corpus callosum.

Most of the intracranial lipomas are asymptomatic and require no therapy. The diagnosis is usually made based on the imaging findings and doesn't need histologic conformation.

The author presents here the imaging findings of a corpus callosal lipoma with unusual extracranial extension in a 30-year-old male, highlighting the need for a complete evaluation of each patient presenting with a scalp lesion before any intervention, irrespective of the age group.

Background

Intracranial lipomas are very rare tumors that account for less than 0.1% of diagnosed brain tumors and no more than 0.08% found on autopsy [1]. They are usually located in the midsagittal region of the brain mostly in the vicinity of the corpus callosum, quadrigeminal cistern, suprasellar cistern, cerebellopontine angle cistern, and Sylvian cistern [2,3]. Most of the intracranial lipomas are asymptomatic and incidental findings on brain imaging studies for other conditions, but some are associated with congenital brain malformations, headache, vertigo, and seizure depending on their location [1,4,5]. Both CT and MRI can be used for the diagnosis of intracranial lipoma. However, MRI is the gold standard of imaging to accurately characterize these lesions [6,7]. We present here the multimodality approach of such a case in a 30-year-old male.

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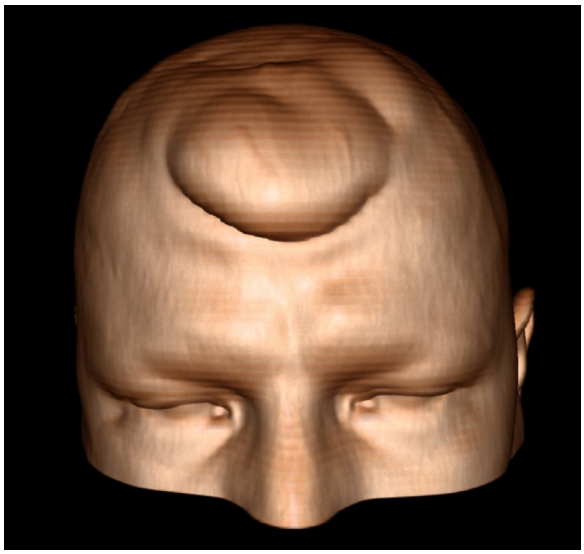

Fig. 1 – 3D Volume rendering technique reformatted coronal CT image, showing forehead scalp swelling.

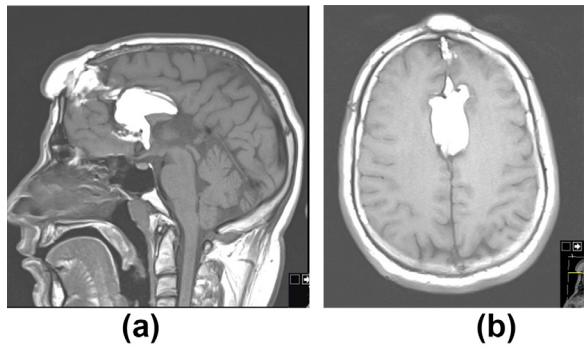

Fig. 3 – (a) T1-Weighted sagittal brain MRI image shows a large hyperintense lesion on the Corpus callosum, extending to extracranial subcutaneous tissues of the forehead through a cranial defect. Hypoplastic Corpus Callosum. (b) T1-Weighted axial brain MRI image shows a large hyperintense lesion on the Corpus callosum, extending to extracranial subcutaneous tissues of the forehead through a cranial defect.

Case presentation

A 30-year-old male presented to our hospital for the excision of a painless and soft swelling over his forehead that he had since birth (Fig. 1).On physical exam, a smooth scalp swelling was noted in the midline on his forehead, other findings were unremarkable. He did not give any history of food or drug allergy and psychosocial problems. His routine blood exam was normal. The patient was referred to the neuroradiology for imaging studies. The noncontrast brain CT showed a fat density mass on the Corpus callosum, extended to extracranial subcutaneous tissues of the forehead through a cranial defect (Fig. 2a-c). For further evaluation and better approvement, his brain MRI was also obtained that revealed a large hyperintense lesion on T1 and T2-weighted images and low signal on T1 fat-saturated sequence without postcontrast enhancement in the callosal region extended to the scalp of the forehead through a cranial defect, consistent with lipoma (Figs. 3–5). The Corpus callosum was hypoplastic (Fig. 3a).

Discussion

Intracranial lipomas are congenital malformations that conceptualize to result from abnormal persistence of the meninx Primitiva, the mesenchymal tissue that gives rise to the meninges, and its subsequent abnormal differentiation into adipose tissue [8]. They are usually found in the midsagittal region of the brain mostly in the vicinity of the corpus callosum and half of them are associated with Corpus callosum dysgenesis, resulting from connatal infection with

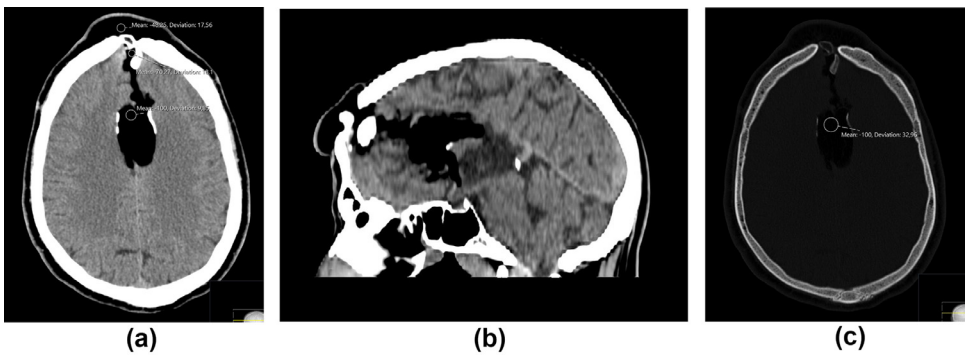

Fig. 2 – (a) Noncontrast axial brain CT image shows a fat density mass (–100 HU) with subtle peripheral calcification on the Corpus callosum, extending to extracranial subcutaneous tissues of the forehead through a frontal defect. (b) Noncontrast Sagittal brain CT image shows a fat density mass on the Corpus callosum, extending to extracranial subcutaneous tissues of the forehead through a frontal defect. Hypoplastic Corpus Callosum. (c) Axial bone window, skull CT image shows a defect in the frontal bone.

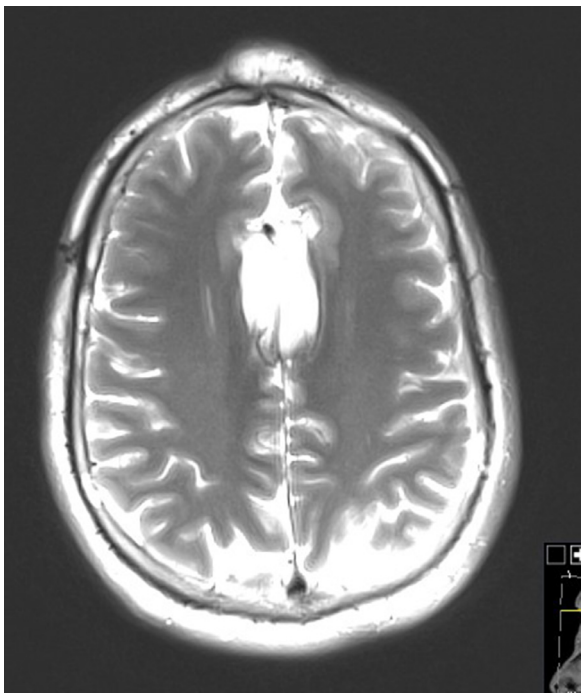

Fig. 4 – T2-Weighted axial brain image MRI shows a large hyperintense lesion on the Corpus callosum, extending to extracranial subcutaneous tissues of the forehead through a cranial defect.

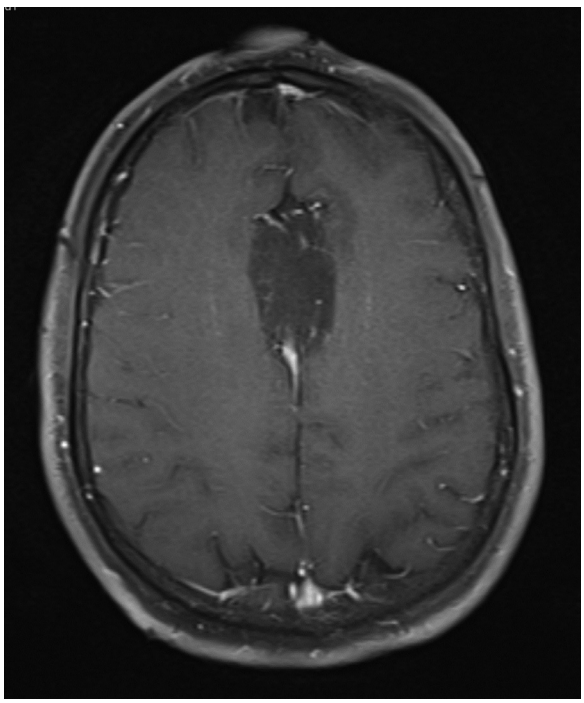

Fig. 5 – Fat saturated and postcontrast T1-Weighted axial brain MRI image shows a large hypointense lesion without postcontrast enhancement on the Corpus callosum, extending to extracranial subcutaneous tissues of the forehead through a cranial defect.

cytomegalovirus or X chromosome deletion, although most are idiopathic [2,9,10]. A normal corpus callosum indicates lipoma formation at a late embryonic stage, while agenesis or dysgenesis of corpus callosum implies insult at an early stage [11]. In our case, there was corpus callosal dysgenesis, as the corpus and splenium of the corpus callosum were absent.

Most of the intracranial lipomas are asymptomatic and an incidental finding on brain imaging studies for other conditions, but some are associated with congenital malformations, headache, vertigo, and seizures depending on their location [1,4,5]. Our patient was presented with forehead scalp swelling that he had since birth and he wanted to remove the lesion with surgical intervention.

The corpus callosal lipoma with extracranial extension is a rare case and only a few cases are reported in the literature yet. There are 2 types of pericallosal lipomas, the curvilinear and tubulonodular types. The curvilinear lipoma is small, linear, and tends to be posterior, while the tubulonodular type tends to be anterior, larger, and mostly connected to the frontal subcutaneous tissues through a cranial defect [12]. Our patient had the tubulonodular type corpus callosal lipoma with extracranial extension, presenting as a forehead scalp swelling.

Both CT and MRI can be used for the diagnosis of intracranial lipomas. However, MRI is the gold standard of imaging to accurately characterize these lesions [6,7]. At CT scanning, intracranial lipoma appears as a homogenous low-density mass with attenuation characteristics similar to adipose tissue (–50 to –100 HU) [13]. On MRI, a typical fat signal can be observed and fat-saturated images are very helpful to prove the presence of fat. After administration of contrast medium, both on CT scan and MRI, the lesion shows no enhancement, while sometimes peripheral calcifications may be present [7]. In our case on brain CT images, a density of –100 HU in the corpus callosal region with extracranial extension was detected. The lesion was hyperintense on T1 and T2-weighted MRI images and had a low signal intensity on T1 fat-saturated sequence with no postcontrast enhancement, consistent with lipoma.

Intracranial lipomas are usually asymptomatic and require no therapy. However, the extracranial mass can be partially removed if the cosmesis is an issue [11]. As both vessels and nerves typically course through lipoma, making the surgical approach technically difficult and hazardous, therefore the risks of surgical intervention typically outweigh potential benefits [2,14].

Conclusion

Corpus callosal lipomas are rare congenital lesions of the pediatric age group and mostly asymptomatic. However, some may extend extracranially and present as a scalp swelling. Thus, each patient with a scalp lesion should be thoroughly evaluated before any intervention, irrespective of the age group.

Ethics approval and consent to participate

The manuscript has got ethical review exemption from the Ethical Review Committee (ERC) of our institution, as case

reports are exempted from review according to the institutional ethical review committee's policy.

Consent for publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the editor of this journal.

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