

Temporal Dermoid Cyst with Unusual Imaging Appearance: Case Report

Farklı Görüntüleme Özellikleri Olan Temporal Dermoid Kist: Olgu Sunumu

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ABSTRACT

Intracranial dermoid cysts are benign, slow growing tumors derived from ectopic inclusions of epithelial cells during closure of neural tube. These lesions, accounting for less than 1% of intracranial tumors, have characteristic computed tomography (CT) and magnetic resonance imaging (MRI) appearances that generally permits preoperative diagnosis. However, the radiologic features are uncommon and the cyst can be easily misdiagnosed with other tumors in rare cases. Herein, we report a case of a left temporo-parietal dermoid cyst in a 48-year-old woman that was preoperatively and histopathologically proven but not advocated on CT and MRI imaging. Clinical, radiological and histopathological features of a dermoid cyst are reviewed.

KEYWORDS: Dermoid cyst, Brain, Magnetic resonance imaging

ÖZ

Intrakranial dermoid kistler benign, yavaş büyüyen, nöral tüpün kapanması sırasında epitelyal hücrelerin ektopik kalıntılarında gelişen tümörlerdir. Bu lezyonlar tüm intrakranial tümörlerin %1'den azını oluştururlar ve tipik bilgisayarlı tomografi (BT) ve manyetik rezonans görüntüleme (MRG) özellikleri ameliyat öncesi tanı konulmasını sağlar. Ancak bazı olgularda radyolojik özellikleri farklı olabilir ve diğer tümörlerle karışabilir. Makalede 48 yaşında kadın hastada BT ve MRG'de farklı düşünülen ancak cerrahi ve histopatolojik olarak ispatlanmış bir sol temporoparietal dermoid kist olgusunu sunuyoruz. Dermoid kistin klinik, radyolojik ve histopatolojik özelliklerini gözden geçiriyoruz.

ANAHTAR SÖZCÜKLER: Dermoid kist, Beyin, Manyetik rezonans görüntüleme

INTRODUCTION

Dermoid cysts are benign dysembryogenic tumors originating from ectopic inclusions of epithelial cells during closure of neural tube. They account for about 0.04 to 0.7% of all intracranial tumors (20) with a predilection in the cranial midline, the parasellar and sylvian cisterns (2, 9, 27). Commonly dermoid cysts have characteristic computed tomography (CT) and magnetic resonance imaging (MRI) features making their preoperative diagnosis straightforward although this was not possible in our case.

CASE REPORT

A 48-year-old female, with no past medical history, was referred to our department with complaints of headache, vomiting and visual disturbances that started six months prior to admission.

On presentation, the patient was having no neurological deficit. Her general physical and systemic examinations were also normal. A CT of the brain showed a heterogeneous isohypodense left temporo-parietal lesion with an osteoma in front of it and some peripheral calcifications. No surrounding edema and no contrast enhancement were noted. There was

a mass effect in the form of effacement of the left occipital horn and moderate midline shift (Figure 1). On MRI study, the lesion appeared to be extra-axial and getting in touch with an osteoma. Mass, measuring 55 x 40 x 52 mm, displayed high signal intensity on T2 weighted images and a low signal intensity on T1 weighted images (Figure 2A-C). There were many peripheral low signal abnormalities on flash 2d images suggesting calcifications (Figure 3). T1 weighted images with Gadolinium showed peripheral enhancement. There was no surrounding edema. Radiologically, the mass does not resemble a special tumor and it was difficult to advocate a preoperative diagnosis (Figure 4).

At surgery, a left temporoparietal craniotomy was done. We first noted the osteoma at the inner surface of the bone that erodes the dura. The tumour was extra-axial, well circumscribed, pearly white in colour, soft in consistency and avascular. It was completely removed. The tumor capsule was also separated from normal brain and excised. The presence of hair and pultaceous material within the tumor could make the surgical diagnosis of a dermoid tumor and this was confirmed by histological studies. The patient postoperative course was uneventful and she was discharged three days



Figure 1: Axial CT scan with contrast, showing a well circumscribed iso- to hypodense left temporoparietal lesion having a calcified rim and an osteoma in front of it, there is no contrast enhancement and no surrounding edema.

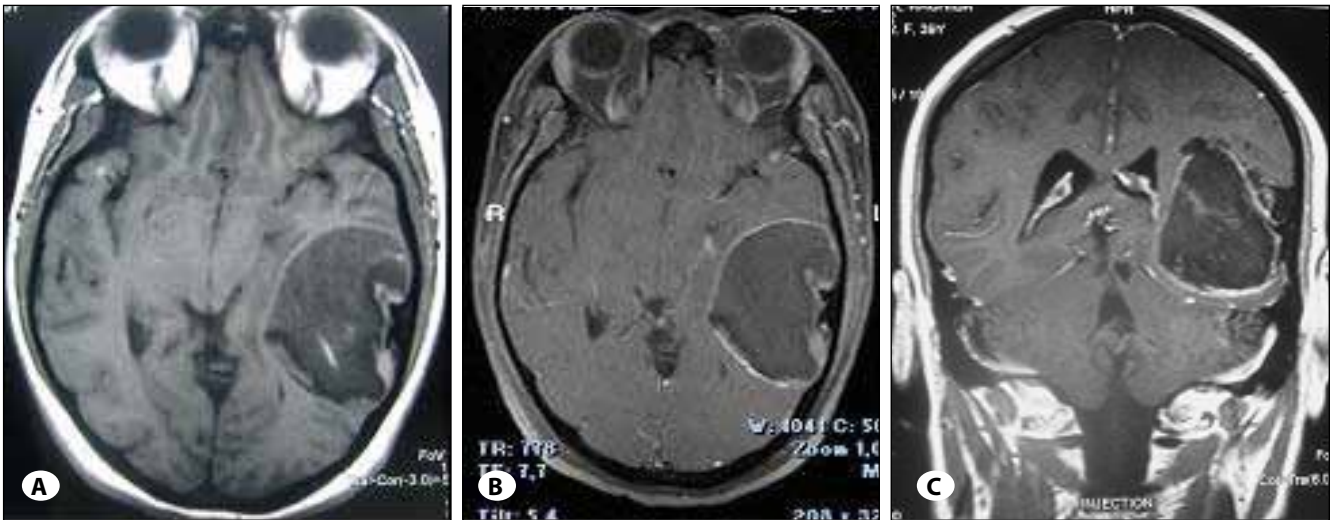


Figure 2: T1 weighted MRI images of A) axial, B) axial post-contrast and C) coronal post-contrast. The lesion displayed low signal intensity on T1 weighted images and showed a peripheral enhancement.



Figure 3: High signal intensity on T2 weighted images and many peripheral low signal abnormalities on flash 2d images suggesting calcifications.

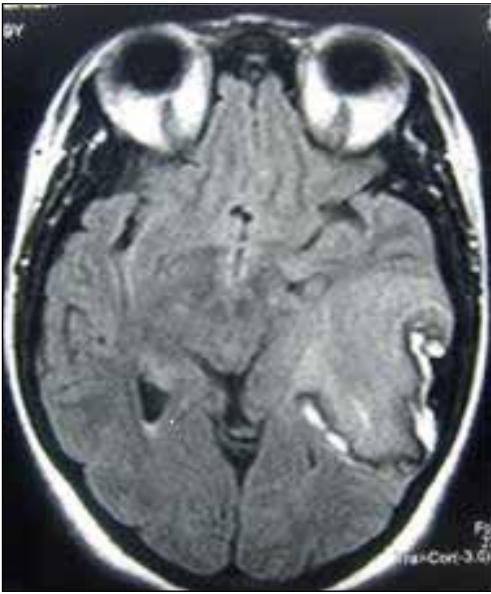


Figure 4: High signal intensity on FLAIR images.

after operation without neurological deficit. A CT scan done one month after surgery had confirmed the total removal of the mass. The patient was symptom free during a 10-month follow-up.

DISCUSSION

Dermoid cysts are regarded as dysembryogenic tumors that derive from ectodermal inclusions of primitive pluripotent cells into the neural tube at around the 5th week of fetal life (21). These lesions accounting for less than 1% of all intracranial tumors may occur at many levels with the most common sites in the midline but also in the parasellar and sylvian areas (2, 9, 27). Despite their congenital origin, intracranial dermoids commonly present in the third decade of life with a long history of vague symptoms predominated by headache. Some are associated with seizures, focal neurological deficits, and rarely the rupture of the cyst and the dissemination of intra-cystic contents can cause an aseptic meningitis or ventriculitis with sometimes a dramatic presentation, a more significant morbidity (5, 7, 16, 17, 24, 27) and even death (14). Nevertheless, dermoid cyst remains a benign tumor, arising from more than one germ layer at a later stage, thus it demonstrates on histological examinations both dermal and epidermal elements with a characteristic thick, stratified squamous epithelium cyst wall surrounding a mixed collection of fat, keratin, hair, bone, cartilage, sebaceous and sweat glands (5, 22). The accumulation of desquamation products and gland secretions inside the cyst explain its enlargement what means it is not a true neoplasm (28). All these variable contents of the cyst determine its radiological features. On CT scan, dermoids usually appear as a rounded well circumscribed fat density mass with no surrounding edema and typically no contrast enhancement (26). However, some have mixed density (16) and exceptionally they may appear hyper attenuating on CT scan (6, 8, 12). A thin rim

of calcification is frequently present (11, 12). Enhancement after contrast administration is rare but has been also reported (10, 12, 13, 23). In atypical cases, mainly once important differentials have been excluded, we emphasise the importance of certain radiological features that are the well circumscribed character of the lesion, its extra-axial site, the absence of surrounding edema and the peripheral site of calcifications if there are any. In those cases and with the goal of achieving a preoperative accurate diagnosis, MRI, with its newer imaging techniques like the use of fat suppression and diffusion images, remains the diagnostic tool of choice (18, 25). Typically, the MRI appearance includes high signal intensity on T1-weighted images due to the fat content and a variable signal intensity ranging from hypo to hyperintense on T2-weighted images (4, 26). The mixed composition of the tumor with the lipid and cholesterol which collect within the cyst gives it a characteristic non-homogenous appearance (22). The presence of cholesterol can often make them appear hypointense on T2 as well (23). The fat component is hypointense on T2-weighted images similar to subcutaneous fat (4, 11) nevertheless this fat content of a dermoid cyst varies widely (19). T2-weighted images are helpful to distinguish extra-axial from intra-axial lesions by detecting a hyperintense peripheral rim separating the tumor from the surrounding parenchyma. On DWI the dermoids are hyperintense to brain parenchyma but demonstrates an ADC that is similar to parenchyma (15). Fat-suppression techniques may be helpful to confirm the presence of fat in the lesion. We found in the literature several cases of dermoid cysts with an unusual imaging appearance mimicking hematoma (1), oligodendroglioma (25), hemangioblastoma with a mural nodule (12) and even thrombosed giant aneurysm (3). Our case is also unusual and resembles to that reported by Velho (25), even though it was an extremely rare intraaxial tumor in Velho's case.

CONCLUSION

The imaging characteristics of dermoid cysts depend on their contents that vary widely but they commonly appear as a rounded well circumscribed mass with fat characteristics. In rare atypical cases and in the goal to achieve an accurate pre operative diagnosis, we emphasize the importance of certain radiological features that are the character well circumscribed of the lesion, its extra-axial site, the absence of surrounding edema and the peripheral site of calcifications. MRI, with its newer imaging techniques remains the diagnostic tool of choice in those cases.

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