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Case Report

Pediatric Soft Tissue Melanoma: A Case Report

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Abstract: Melanoma is a potentially fatal form of skin cancer. Although it's the most common type of skin cancer in the pediatric population, it's rare, affecting around 0.4% of patients under the age of 20. We report a case of cutaneous melanoma in a 10-year-old female patient. At 48 days of age, he had presented with a nevus on the scalp, immunohistochemical analysis was in favor of a dysplastic nevus, the patient was lost to follow-up, he presented after 10 years with a voluminous mass on the scalp, which required brain MRI to objectify its extent, the signal was in favor of a melanoma. The patient also benefited from a cervico-thoraco-abdomino-pelvic CT scan, which came back without any notable abnormality.

Keywords: Melanoma, scalp, soft tissue, pediatrics, MRI.

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INTRODUCTION

Melanoma is a potentially fatal form of skin cancer. Although it's the most common type of skin cancer in the pediatric population, it's rare, affecting around 0.4% of patients under the age of 20. Soft tissue melanoma (STM) was first described in 1965 by Enzinger under the name of clear-cell sarcoma from a series of series of 21 patients, mostly young. We report the observation of a child who had an asymptomatic scalp lesion at birth, initially described as congenital nevus, but whose histology proved to be highly atypical, and who returned 10 years later with a voluminous scalp mass.

OBSERVATION

A 10-year-old child operated on for congenital scalp nevus with cervical adenectomy. Presenting for recurrence of scalp lesions progressively increasing in size.

The patient underwent ultrasound and brain CT in 2014, which revealed a parieto-occipital lesional process of the right scalp with bone lysis and periosteal reaction. An immunohistochemical study was necessary and showed a positivity of the S100 protein, Ki67 is expressed at 2% and it was an aspect in favor of a dysplastic nevoid lesion. Surveillance was proposed but the patient was lost to follow-up. 10 years later, he returned with multiple scalp lesions and a voluminous right parieto-occipital mass.

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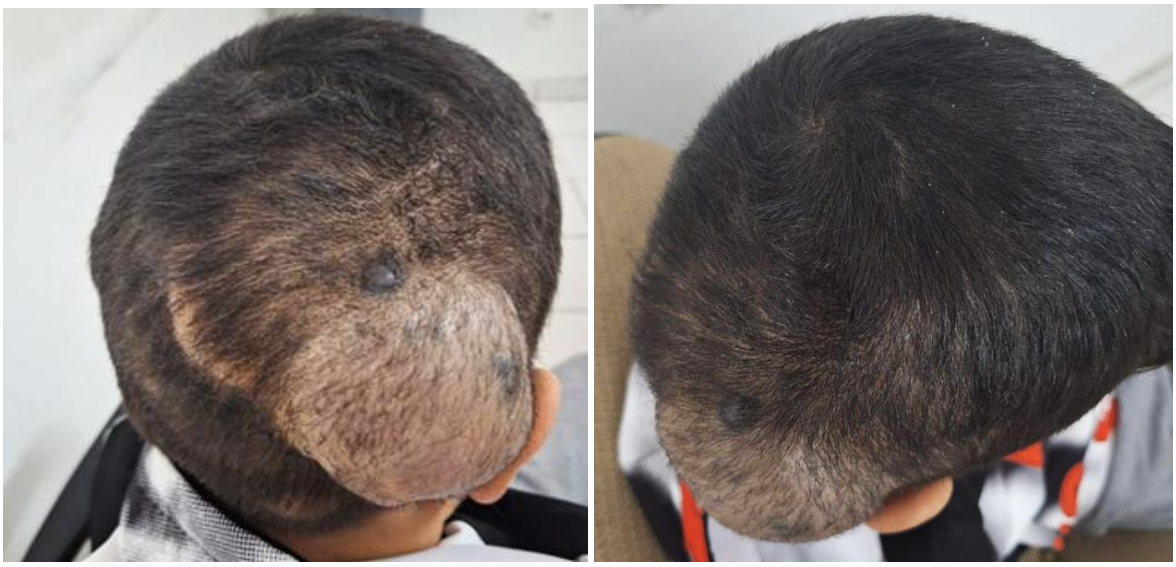

An MRI was ordered to better characterize the mass. MRI revealed a voluminous right parieto-occipital subgaleal soft tissue mass with T1 hypersignal, suggesting melanoma, associated with bone and epidural involvement, making biopsy or surgical exeresis difficult to perform.

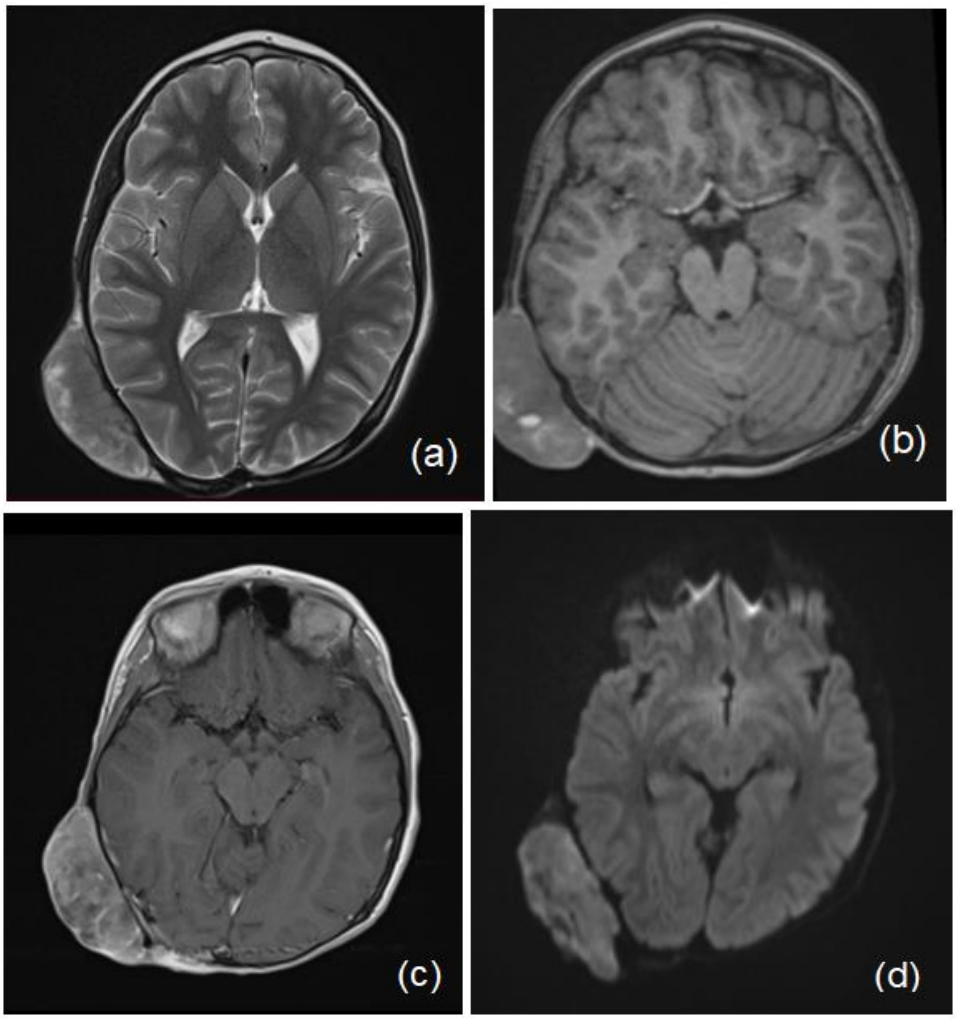

Figure 1: Axial T2 (a), axial T1 (b), Gadolinium-injected axial T1 ES (c) and axial diffusion (d) sequences showing a right parieto-occipital subgaleal soft tissue tumor with bone and epidural involvement

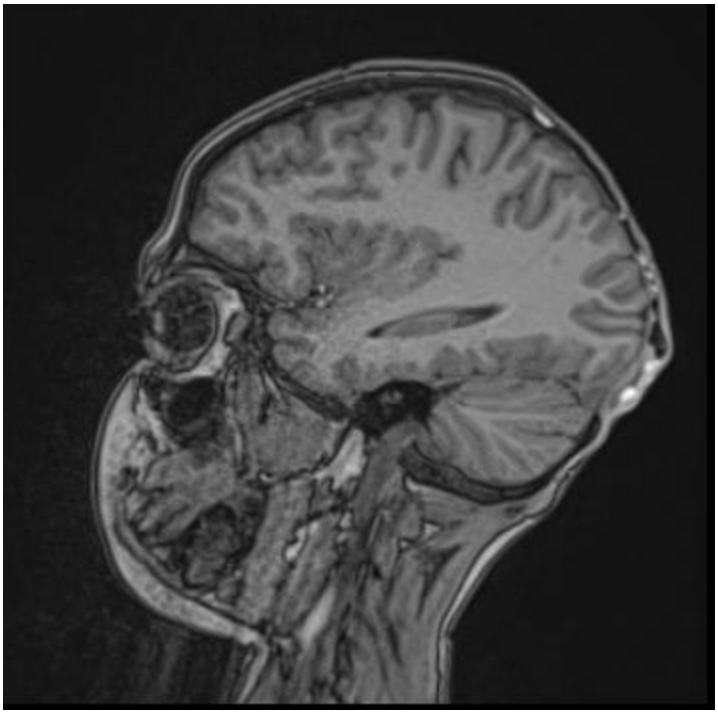

Figure 2: Sagittal T1 sequence showing multiple scattered scalp lesions of the same nature as the previous one

The patient subsequently underwent a cervico-thoraco-abdomino-pelvic CT scan, which revealed diffuse and regular parietal thickening of the cavum with effacement of its reliefs, as well as bilateral tonsillar hypertrophy. The ENT team performed a biopsy, which came back in favor of a secondary origin. The patient has started immunotherapy treatment.

DISCUSSION

Pediatric melanoma is a malignant melanocytic lesion occurring in children from birth to age 18-21, depending on the threshold used to define adulthood [1]. It's very rare, although it is the most common skin cancer in the paediatric population [2]. In children under 15, the estimated annual incidence rates are 1 per million for children aged 1-4 years; 2 per million for children aged 5-9 years; and 3 per million for adolescents aged 10-14 years, in the US pediatric population [3].

Risk factors for pediatric melanoma include congenital, dysplastic or more numerous nevi like our case, inability to tan, blue eyes, freckles on the face, family history of melanoma, DNA excision repair disorders such as xeroderma pigmentosum, acquired or congenital immunosuppression and history of malignancy [4]. Patients with pediatric melanoma present with clinical, epidemiological and histopathological entities distinct from those of the adult population. Melanoma in the paediatric population can be difficult to diagnose due to the many other diseases that look alike clinically and on histology [5].

These tumors are derived from melanocytes, cells of neuro-ectodermal origin (6). They have a distinctive appearance on MRI and CT; typically, melanin has a paramagnetic effect derived from the presence of free radicals, producing T1 hyperintensity and T2 hypointensity, and intra-tumoral hemorrhage produces a heterogeneous signal in T1 and T2.

Pediatric melanoma is a rare but aggressive skin cancer that requires careful imaging to assess its extent and potential metastasis. Imaging modalities, including ultrasonography, computed tomography (CT), and magnetic resonance imaging (MRI), are essential in the staging and follow-up of these tumors. On ultrasound, melanoma may appear as a hypoechoic lesion with irregular borders and increased vascularity, suggesting malignancy. CT scans are used to evaluate regional lymph node involvement and distant metastasis, revealing enlarged lymph nodes or abnormal lesions in organs such as the lungs, liver, or brain. MRI is particularly useful for assessing soft tissue involvement, especially in areas where melanoma may be less accessible to biopsy or palpation. Advanced imaging techniques, such as positron emission tomography (PET) scans, may be considered in certain cases to detect metastatic disease. Early and accurate imaging plays a crucial role in guiding treatment decisions, as pediatric melanomas can behave more aggressively than their adult counterparts.

On initial evaluation, melanoma lesions may appear as hyperintense or heterogeneous masses on MRI or as irregularly shaped, well-defined nodules with varying degrees of contrast enhancement on CT scans. In pediatric cases, melanoma often presents with atypical characteristics, such as a more aggressive growth pattern or early lymphatic involvement, making imaging particularly important for staging.

HMB 45 is an antibody with a higher specificity for melanocytic tumors in the literature of 86-97% positivity, however the S-100 protein is found in almost all melanocytes but also found in other neural crest derived tumors [7]. In this case, the tumor was typically S100 positive.

CONCLUSION

Pediatric melanoma is difficult to manage because of the rarity of diagnosis in this population, but also because of a low index of suspicion and similarities in presentation with other more common pediatric skin lesions. Diagnosis is generally delayed, and patients often present with advanced stages.

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