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A Pimple-like Lesion on the Cheek of a 5-year-old Girl

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Presentation

A healthy-appearing 5-year-old girl comes to the dermatology clinic for evaluation of a lesion on her face that has been present for at least 3 years. The lesion started as a pimple-like growth on her left superior cheek near the lower eyelid, subsequently grew in size, but has been stable in size for the past 1 to 2 years. The lesion is only occasionally tender when bumped, but the patient and parents report no precipitating trauma to the area. The lesion previously was believed to be a wart and was treated with imiquimod (a topical immune response modifier used to treat superficial basal cell carcinoma, actinic keratosis, and external genital and perianal warts), but no significant change was seen after approximately 2 weeks of use. Later, a primary care physician applied liquid nitrogen cryotherapy to the lesion, resulting in only some superficial sloughing. The patient was seen by another dermatologist, who again prescribed imiquimod for the presumed wart, but the parents chose to get another opinion.

The patient’s past medical and surgical history includes prior eustachian tube dysfunction requiring pressure-equalization tubes and a severe reaction to chickenpox requiring hospitalization. Her perinatal history is unremarkable. She is taking no medications.

On physical examination, the lesion is a 6-mm, raised, erythematous papule that is semifirm to palpation (Figs. 1 and 2). No underlying dermal component is appreciated; under epiluminescence microscopy (also known as dermoscopy), the lesion appears to have prominent vascularity. No other lesions are noted on the face, neck, and scalp.

Because of the location of the lesion on the face, the patient is referred to the plastic surgery department for removal. The lesion is excised, and on the basis of pathologic findings, a diagnosis is suspected.

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Diagnosis: Malignant Melanoma (Spitzoid and Nodular Type)

Histopathologic analysis showed a malignant melanoma without ulceration, spitzoid type, and nodular type (Figs. 3 and 4). The tumor was Clark level IV and 2.6 mm in Breslow thickness (T classification: T3a). Immunohistochemical studies showed tumor cells that were S-100 positive and weakly Melan-A-positive. An HMB-45 immunostain highlighted focal deep nodules of tumor cells, and an MIB-1 immunostain highlighted increased proliferative activity throughout the dermis within the tumor cells. S-100 normally is found in cells derived from the neural crest, such as melanocytes. HMB-45 is a monoclonal antibody against an antigen present in melanocytic tumors. S-100 is highly sensitive for melanomas, and HMB-45 is highly specific for these tumors.

Melan-A (also known as MART-1) is a protein antigen found on melanocytes, and although it is a useful marker for melanocytic tumors, it also can be found in benign nevi.

The tumor also was found to involve the lateral inked margins of the biopsy specimen. Therefore, a complete re-excision of the lesion with clinically appropriate margins was recommended. Subsequently, the patient underwent whole body positron emission tomography, which showed no evidence of metastases. A wide local re-excision was performed as well as a sentinel lymph node biopsy. Pathologic and immunohistochemical analysis showed no residual melanoma and documented the sentinel node to be negative for Melan-A, S-100 protein, and tyrosinase. Additional biopsies showed multiple lymph nodes to be negative for tumor.

Discussion

The American Cancer Society reports that 59,940 new cases of melanoma were reported in 2007, along with 8,110 deaths attributable to the disease. The Centers for Disease Control and Prevention estimated the occurrence of 506 new cases of melanoma in the United States in 2004 in persons ages 19 years and younger and 55 new cases in children younger than 10 years of age (1). Although pediatric melanoma may be rare, its incidence has been reported to be increasing. In the United States, the incidence of pediatric melanoma increased 46% per year of age and 2.9% per year from 1973 to 2001. (2)

As in adult melanoma, most pediatric melanomas are cutaneous, but they present differently in the pediatric population. In 2005, one study showed that compared with adult melanoma, pediatric melanomas have a higher frequency of atypical features, thicker lesions at diagnosis, a higher proportion of the nodular histotype, and a higher frequency of developing in particular sites. (3) In children, as opposed to adults, there is a disproportionate number of amelanocytic melanomas. Many childhood melanomas have features of both nodular and amelanocytic melanomas. Many melanomas in children are misdiagnosed as pyogenic granulomas.

Risk factors for pediatric melanoma include white race, female sex, increasing age, and environmental ultraviolet (UV) exposure. Because the only modifiable risk factor is UV exposure, it is important to educate parents and younger patients about the importance of sun protection very early in life. Case-control studies of adults have shown that increased UV exposure (ie, blistering sunburns) confers a two- to fivefold increased risk of melanoma.

Pediatric melanoma is difficult to diagnose, and diag-
nostic concordance is variable, even among dermatopathologists. In this case of a patient who has a nodular melanoma, the differential diagnosis could include pigmented lesions such as the common nevus, blue nevus, pigmented Spitz nevus, and pigmented basal cell carcinoma. The differential diagnosis also includes amelanotic lesions such as basal cell carcinoma, hemangioma, pyogenic granuloma, and Merkel cell carcinoma. If the diagnosis is questionable, a biopsy must be obtained.

When diagnosing pediatric melanoma, clinicians should evaluate the lesion, employing the commonly used ABCDE (asymmetry, border, color, diameter, and evolution) criteria, just as in the adult population. Key features are asymmetry of the lesion, irregularity of its borders, and irregular distribution of color (or pigmentation) within the lesion. The size of the lesion also is important. Although Spitz and other benign nevi tend to be regular-appearing and less than 1 cm in diameter, melanomas tend to be larger and less uniform in clinical appearance. It should be noted, however, that many melanomas may be small, so if other clinical characteristics of the lesion are of concern, melanoma should stay in the differential diagnosis. The final key features are changes to any long-standing lesion. These changes could include an increase in size, a change in color or in distribution of color, bleeding, inflammation, swelling, or ulceration. When evaluating a suspicious lesion, clinicians always should palpate for underlying masses and examine for regional lymphadenopathy.

Existing studies of pediatric melanoma have been few. Currently, the diagnosis and treatment of these tumors is the same as for adults. Surgery continues to be the mainstay of initial treatment, with sentinel lymph node biopsy for lesions thicker than 1 mm. Positive sentinel lymph nodes are found more often in patients younger than 35 years of age, and that finding supports the recommendation that sentinel lymph node biopsy be performed for lesions thicker than 1 mm. Sentinel lymph node biopsy is performed for purposes of prognostication; the procedure does not seem to offer any survival benefit, and it remains a controversial technique. Adjunct therapy commonly is not used for those who have localized invasive or only regionally metastatic melanoma. The chemotherapeutic agents used to treat melanoma include dacarbazine, cisplatin, vinblastine, carbustine, interferon alpha, and tamoxifen. Chemotherapy rarely, if ever, results in a cure. Therefore, the best help for patients is prevention, early detection, and removal at an early stage.

**Patient Course**

The patient has fared well since excision of the melanoma, with no recurrence. A genetics evaluation determined that although the family history is notable for a melanoma in her paternal grandfather and Burkitt lymphoma in her father, her tumor most likely was sporadic. She is being followed by the departments of dermatology and pediatric hematology/oncology via serial positron emission tomography scans.

**Summary**

- Although melanoma is rare in the pediatric population and its diagnosis remains difficult, the possibility of this tumor cannot be ignored.
- Clinicians treating pediatric patients must recognize when a skin lesion warrants biopsy instead of simply considering the questionable lesion to be refractory to treatment and deferring additional investigation.
- Future studies must address whether a more specialized diagnostic and treatment approach to melanoma is necessary in the pediatric population.
- As in the adult population, early diagnosis is key, with the overall 5-year observed survival being strongly associated with initial summary stage.

**References**


**Suggested Reading**


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