Pediatric "STUMP" lesions: Evaluation and management of difficult atypical Spitzoid lesions in children

Wynnis L. Tom, MD, Jessica W. Hsu, BS, Lawrence F. Eichenfield, MD, and Sheila Fallon Friedlander, MD
San Diego, California

Spitz nevi represent a distinct type of melanocytic nevi more commonly seen in childhood. Although typically benign, a subset of Spitz lesions raise concern and create a diagnostic dilemma as a result of confusing histology that involves characteristics of classic Spitz nevi intermixed with features of cutaneous melanoma. Such atypical Spitz lesions, or Spitzoid tumors of uncertain malignant potential, are difficult to classify and their biologic potential is uncertain. Nonetheless, these are critical tasks for both prognosis and clinical management. New tools, such as immunohistochemical stains, comparative genomic hybridization, and fluorescence in situ hybridization, have been used to provide further insight into these controversial lesions and to aid in their evaluation. In this review, we present our experience managing 6 cases of Spitzoid tumor of uncertain malignant potential and discuss the potential use of various diagnostic modalities, including sentinel lymph node biopsy, immunostaining, and molecular analysis. (J Am Acad Dermatol 2011;64:559-72.)

Key words: atypical Spitz nevi; immunostaining; management; melanoma; molecular analysis; sentinel lymph node; Spitzoid tumor.

In 1948, Sophie Spitz characterized a series of melanocytic tumors in children and adolescents, noting that these "juvenile melanomas" or "melanomas of childhood" were less aggressive than the majority of adult melanomas.[1] Subsequently, these lesions were redesignated as Spitz nevi, a distinct type of melanocytic nevi predominantly noted in children and generally considered benign. However, a subset of Spitz nevi raise concern and pose a diagnostic challenge because of a confusing combination of histologic qualities: some features are consistent with classic Spitz nevi, but others suggest cutaneous melanoma, making it difficult to classify them as benign or malignant. Terms such as "markedly/severely atypical melanocytic proliferation with Spitzoid features," "atypical Spitzoid tumor," "malignant spindle and epithelioid cell nevus," "minimum deviation melanoma of the Spitz nevus-like type," "melanocytic tumor of unknown malignant potential (MELTUMP)," and "Spitzoid tumor of uncertain malignant potential (STUMP)" have all been used to describe these controversial lesions. At the extreme end of the spectrum, occasional lesions exhibit sufficient atypia to warrant the diagnosis of Spitzoid melanoma. Distinguishing between an atypical Spitz lesion that should behave less aggressively and a Spitzoid melanoma is a difficult but important task, as both prognosis and clinical management differ for these two entities.

Abbreviations used:

CGH:	comparative genomic hybridization
CT:	computed tomography
FISH:	fluorescent in situ hybridization
HMB:	human melanoma black
MART-1:	melanoma antigen recognized by T-cells
PET:	positron emission tomography
SLN:	sentinel lymph node
STUMP:	Spitzoid tumor of uncertain malignant potential

Recent advances in immunostaining and molecular analysis provide additional tools to potentially facilitate the evaluation and management of such lesions. Our center has used these techniques in a series of patients, as summarized in Table I. The following describes our experience and discusses our methodology and interpretation of such studies.

From the Rady Children's Hospital San Diego and the University of California, San Diego.
Funding sources: None.
Conflicts of interest: None declared.
Reprint requests: Sheila Fallon Friedlander, MD, University of California, San Diego, and Rady Children's Hospital San Diego, 8010 Frost St, Suite 602, San Diego, CA 92123. E-mail: sfriedlander@rchsd.org.
Published online January 21, 2011.
0190-9622/$36.00

doi:10.1016/j.jaad.2009.12.063

CASE REPORTS

Patient 1

In 2004, a 6-year-old Caucasian boy presented with a congenital nevus that had increased in size and changed color during the prior 6 months. The lesion was asymptomatic, and family history was negative for skin cancer. On the lower aspect of the right leg, a 10- × 8-mm firm, variegate-colored red-brown nodule with irregular borders was noted (Fig 1). No lymphadenopathy or hepatosplenomegaly was appreciated.

An excisional biopsy specimen demonstrated a tumor of numerous heavily pigmented, spindle-shaped melanocytes dispersed at the dermoepidermal junction, throughout the papillary and reticular dermis, and focally extending near the subcutaneous fat; the infiltrate was broader at the top than at the bottom of the lesion. Cells were predominantly arranged in nests and displayed marked cytologic atypia with enlarged pleomorphic nuclei and ample amounts of cytoplasm (Figs 2 and 3). Mitotic figures (approximately 0.27/mm^2) were noted in both the superficial and deep levels of the tumor. Histopathological diagnosis was initially uncertain, and further studies were performed. Ki-67 staining was positive at approximately 20% of the superficial cells, whereas 10% stained in the deeper portion. Human melanoma black-45 (HMB-45) expression was strongly positive at the junctional component and moderately positive at the deeper cells. The specimen and stains were reviewed by multiple dermatopathologists, who believed the lesion fell into the category of Spitzoid-type minimal deviation melanoma or atypical Spitzoid neoplasm of indeterminate biologic potential, but noted the controversial nature of these lesions.

Sentinel lymph node (SLN) biopsy and wide local excision were performed; the SLN contained small clusters of subcapsular cells interpreted to be consistent with metastatic melanoma. Complete right groin lymph node dissection was negative for further metastatic cells, as was nodal HMB-45 immunostaining. Positron emission tomography (PET) and staging computed tomography (CT) scans of the head, chest, abdomen, and pelvis did not exhibit abnormalities. After multidisciplinary evaluation, the patient was treated with interferon alfa for 1 year according to the Kirkwood regimen. During treatment, the patient was aggressively followed up at 3-month intervals by dermatology and hematology/oncology and with complete blood cell count and either chest radiographs or chest CTs. After completion of interferon therapy, clinical examination and whole-body PET/CT scans were performed every 6 months. He has done well to date, with no evidence of recurrence or metastasis at 5 years postexcision and 4 years post-interferon treatment.

CAPSULE SUMMARY

- A subset of atypical Spitzoid lesions pose diagnostic and therapeutic challenges as a result of histologic findings that include both benign and malignant features.
- Although metastasis and death have been reported, patients with positive sentinel lymph node findings tend to have better prognosis with these lesions than with conventional melanoma.
- Recent advances in immunostaining and molecular analysis may help facilitate the evaluation and management of these difficult lesions, but require further confirmatory studies.

Patient 2

A 4-year-old Caucasian boy presented with an enlarging, pruritic papule at the right temple that was first noted 8 months previously. Family history was negative for melanoma but positive for basal cell carcinoma. A 7- × 5-mm ovoid black papule with a surrounding eczematous plaque (attributed to bandage adhesive) was noted (Fig 4); asymmetric globules of varying size were appreciated on dermatoscopy. No lymphadenopathy or hepatosplenomegaly was present.

A full excision was performed; histology demonstrated a compound proliferation of large Spitzoid melanocytes. Dermal melanocytes had abundant amphophilic cytoplasm and oval vesicular nuclei and were in confluent and irregularly shaped nests (Fig 5). Pigmentation was irregular at different portions of the lesion, and maturation with descent was not apparent. Mitotic figures were rare. These findings were concerning for malignancy but not diagnostic, as determined by two dermatopathologists. Comparative genomic hybridization (CGH) was recommended and failed to reveal any chromosomal gains or losses, indicating that malignant melanoma was less likely. Sentinel node evaluation was discussed with the family but deferred by the parents after discussion of risks, benefits, and the histopathologic and molecular analysis results of the primary lesion. The patient remains well 17 months later, with close clinical follow-up.

Patient 3

A 4-year-old Caucasian boy presented with a congenital nevus on the right knee that was