

SLAM microscopic differential diagnosis

Atypical dermal spindle cell tumor "SLAMmed" up against the epidermis

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Diagnosis	Histopathologic features	Immunostaining profile	Histology image
S quamous cell carcinoma (sarcomatoid/spindle cell type SCC)	<ul style="list-style-type: none"> Spindle-shaped cells infiltrating the dermis with overlying epidermal keratinocytic atypia +/- epidermal connection 	<ul style="list-style-type: none"> Cytokeratin+ (CK5/6, CK903, and MNF-116), p63+, and p40+ (most specific marker for SCC vs. AFX) 	
L eiomyosarcoma	<ul style="list-style-type: none"> Fascicles of eosinophilic fusiform cells with blunt-ended nuclei (cigar-shaped) with perinuclear vacuoles (glycogen) Mitoses and nuclear atypia present 	<ul style="list-style-type: none"> Desmin+ and SMA+ (diffuse cytoplasmic staining vs. tram-track in AFX) If diagnostic dilemma, h-caldesmon+, calponin+, muscle actin (HHF35)+, SMM+ 	
A typical fibroxanthoma (AFX)	<ul style="list-style-type: none"> Dome-shaped dermal nodule comprised of a mixture of cell types (multinucleated giant cells, histiocyte-like cells, foam cells, and spindle cells) Numerous atypical mitotic figures present Some consider AFX to be a superficial variant of pleomorphic undifferentiated sarcoma* 	<p>AFX is a diagnosis of exclusion!</p> <ul style="list-style-type: none"> Negative stains = cytokeratin, p63, p40, S100, SOX-10, and Desmin Most useful positive stains = CD10, Procollagen-1 Other positive stains = S100A6, CD68, CD74, CD99, CD117 	
M elanoma (desmoplastic/spindle cell type)	<ul style="list-style-type: none"> Atypical junctional melanocytic proliferation (often subtle), spindle cells within fibromyxoid stroma, and nodular lymphoid aggregates +/- perineural extension 	<ul style="list-style-type: none"> S100+, SOX-10+ (differentiates from scar), and p75/nerve growth factor receptor+ (useful for S100- desmoplastic melanomas) HMB-45 is unreliable 	

*If an AFX demonstrates deep subcutaneous invasion, necrosis, and/or lymphovascular or perineural invasion, the tumor is considered a *pleomorphic dermal sarcoma* or *undifferentiated pleomorphic sarcoma (UPS)* — both of which have high-grade malignant potential and are associated with a poor prognosis.

Staining Panel

Diagnosis	CK5/6	Desmin	CD10	SOX-10/S100
S pindle cell SCC	+	-	+/-	-
L eiomyosarcoma	-	+	-	-
A FX/UPS	-	-	+	-
M elanoma (desmoplastic)	-	-	+/-	+

It is worth noting that any tumor with spindle cell morphology may show CD10 expression

References:

- Bolognia Jean LL, et al. *Dermatology*. 4th Ed. Elsevier Health Sciences, 2018; 2385-2392.
- Alikhan A, Hocker TL. *Review of Dermatology*. 2nd Ed. Elsevier Health Sciences, 2024; 375-427.
- Elston D, Ferringer T, et al. *Dermatopathology*. 3rd Ed. Elsevier Health Sciences, 2019.
- Hultgren, Tricia L., and Dominick J. DiMaio. "Immunohistochemical staining of CD10 in atypical fibroxanthomas." *Journal of cutaneous pathology* 34.5 (2007): 415-419 .

Histology slides courtesy of Sean Stephenson, DO, FAAD.