Dermatofibrosarcoma protuberans
Dermatofibrosarcoma protuberans
Storiform collagenoma

- AKA sclerotic fibroma
- Solitary nodule less than a centimeter in young to middle-aged adult
- If there are multiple - possibly Cowden syndrome
- Histology is distinctive with well-circumscribed nodule of hyalinized collagen in the dermis with clefting and bland spindle cells arranged in a storiform pattern
- Spindle cells may be positive for CD34 but are negative for SMA, S100 and EMA
Storiform collagenoma
Perineurioma

- Uncommon benign peripheral nerve sheath tumor composed of perineural cells in the dermis
- Painless nodule, peaks in middle aged adults; trunk and extremities up to 1.5 cm in diameter
- Histologically well-circumscribed but unencapsulated tumor composed of bland ovoid/spindle cells with a storiform architecture; the stroma may be collagenous or myxoid
- Positive for EMA and CD34; SMA may be focally positive occasionally
- S100, GFAP and desmin are negative
Lobulated plexiform: Dermal nerve sheath myxoma

• AKA myxoid neurothekeoma
• Schwann cell neoplasm
• Younger adult with small painless nodules on the distal extremities
• Histologically well circumscribed, between 0.5 and 2 cm primarily involving the dermis often with extension into the subcutaneous tissue
• Multilobulated growth; lobules separated by fibrous tissue
• Myxoid matrix with spindled and stellate neoplastic cells, rare mitoses
• Diffusely S100 positive and GFAP positive
Dermal nerve sheath myxoma
Superficial angiomyxoma

• Tumor of middle-aged adult
• Painless slow growing nodule, propensity for local recurrence
• Trunk or head and neck, the genitalia of female
• Small subset associated with Carney complex
• Histologically hypocellular with abundant myxoid stroma composed of ill-defined lobules of small spindled/stellate cells and numerous small blood vessels
• Approximately half of cases have a neutrophilic infiltrate
• Positive for CD34 and negative for S100, desmin and keratins
Superficial angiomyxoma
Dendritic cell neurofibroma

• Distinctive nerve sheath tumor in adults presenting with a painless nodule between 0.5 and 1 cm

• Histologically a well-circumscribed spindle cell lesion in the superficial dermis with a plexiform growth pattern

• Tumor cells are small, round and hyperchromatic with irregular nuclei and inconspicuous cytoplasm resembling lymphocytes and a minor second population of larger cells with abundant pale cytoplasm around which the small cells are arranged in a pseudorosette pattern

• No atypia or mitotic activity

• Diffusely positive for S100 (more intensely in the larger cells)

• Negative for GFAP, SMA, desmin and keratin
Dendritic cell neurofibromaa
Nuclear palisading Schwannoma

- Usually solitary asymptomatic nodule arising eccentrically on nerve
- Histologically a well-circumscribed encapsulated mass at the periphery of a nerve composed of spindle cells with abundant eosinophilic cytoplasm and indistinct cell borders
- Hypercellular (Antoni A) and hypocellular (Antoni B) areas
- Nuclear palisading in the Antoni A areas
- Strong diffuse S100 positivity; the capsule is positive for EMA
- Plexiform, cellular, epithelioid and melanotic variants exist
Schwannoma
Nuclear palasading

- Subset of leiomyomas and gastrointestinal stroma tumors (if considering met)
Nuclear Pleomorphism
Pleomorphic fibroma

• Hypocellular polyploid cutaneous nodule containing scattered atypical pleomorphic cells within a hypocellular collagenous background

• The cells are positive for CD34
Atypical fibrous histiocytoma

• AKA dermatofibroma with monster cells
• Extremities of young to middle-aged adults
• Histologically the appearance of a typical fibrous histiocytoma but with spindle cells showing nuclear hyperchromasia and often bizarre nuclei; pleomorphic multinucleated cells may be present
• Locally recurrent in 20% of cases, distant metastasis rarely
Atypical fibrous histiocytoma
Atypical fibroxanthoma

- Tumor of the sun exposed actinically damaged skin of the head and neck in the elderly; a few centimeters in diameter
- Often a short history of rapid growth, ulceration,
- Diagnoses of exclusion
- Histologically well demarcated tumor with a pushing border located in the dermis (occasionally with focal extension into the superficial subcutis in a pushing fashion)
- Pleomorphic spindled and epithelioid cells and multinucleated giant cells; +/- xanthomatous cells
- Spindle cell variant has less pleomorphism
- Tumor cells are positive for SMA, CD68 and CD10
- More importantly, tumor cells are negative for desmin, keratins, S100 (although there are some dendritic cells within the lesion) and CD31
Atypical fibroxanthoma
Collagenous stroma
Superficial acral fibromyxoma

• AKA digital fibromyxoma
• Painless nodules on the fingers and toes of a total, usually periungual
• Poorly circumscribed, unencapsulated dermal proliferation of uniform stellate cells and bland fibroblasts arranged in a haphazard pattern
• Collagenous or myxoid stroma
• CD34 positive, occasional EMA reactivity
Superficial acral fibromyxoma
Neurofibroma

- Common benign peripheral nerve sheath tumor composed of Schwann cells, fibroblasts and perineural cells with intermingled axons
- Sporadic or associated with NF1
- Histologically circumscribed, unencapsulated tumor located in the dermis or subcutaneous cutis
- Variety of appearance because of the different components but most typical form consists of elongated spindle cells with wavy nuclei, increased mast cells and a variable myxoid or collagenous stroma
- Positive for S100, CD34 and EMA in subsets of cells; neurofilament protein highlights the axons
Previously discussed, but these also have a collagenous stroma

• Storiform collagenoma
• Sclerotic perineurioma
Prominent inflammatory cells
Desmoplastic melanoma

- Older adults, particularly the head and neck area and upper back
- Spindle cells, sometimes quite delicate in a collagenous matrix
- Melanin typically absent
- Neurotropism common
- Characteristic lymphoid aggregates at the periphery
- S100 positive
- Typically Melan-A and HMB-45 negative
Angiomatoid fibrous histiocytoma

- Rare neoplasm of uncertain lineage
- Intermediate biologic potential
- Unrelated to high-grade pleomorphic sarcoma and the aneurysmal variant of fibrous histiocytoma
- Slowly growing painless mass of the deep dermis and subcutis usually on the extremities of children and young adults
- Often associated with systemic symptoms such as anemia, fever and weight loss
- Histologically multinodular lesion composed of ovoid histiocyte-like cells or short spindle myoid cells often surrounded by a thick fibrous capsule demonstrating a prominent peripheral lymphocytic inflammatory infiltrate
- Centrally often with areas of intralesional hemorrhage
- 50% express desmin and EMA, often SMA positive
- Negative for keratins, S100, CD34
- Most common translocation is t(2; 22) (q33;12) which creates an EWSR1–CREB1 fusion oncogene
Angiomatoid fibrous histiocytoma
Inflammatory myofibroblastic tumor

• Tumor of children and young adults typically presenting with systemic symptoms of fever, weight loss, anemia and elevated erythrocyte sedimentation rate

• Histologically composed of fascicles of uniform plump spindle cells with areas of myxoid stroma and prominent vessels or hyalinized collagen

• About 50% of neoplasms contain ganglion-like myofibroblasts

• Prominent infiltrate of plasma cells and lymphocytes, less often eosinophils and neutrophils

• Positive for SMA in the majority of tumors, +/- desmin

• Keratins positive in 1/3 of cases

• ALK gene rearrangement (50% ALK positive by IHC)
Inflammatory myofibroblastic tumor
Adipocytic component
Spindle cell lipoma

- Painless subcutaneous mass less than 5 cm in diameter on the neck or upper back of middle aged men
- Sometimes composed almost exclusively of spindled cells
- Relatively well-circumscribed proliferation of bland spindle cells admixed with variable amounts of mature adipocytes
- Fibromyxoid stroma with ropey collagen fibers
- Diffuse positivity for CD34, CD10 positive as well
Spindle cell liposarcoma

• Neoplasm of the subcutaneous tissue of the extremities of middle-aged adult
• Poorly marginated proliferation of uniform ovoid spindle cells in a fibrous or myxoid stroma with variable adipocytic component
• Variation in the size of adipocytes and scattered atypical hyperchromatic stromal cells
• Occasional lipoblasts
• Positive for CD34
• S100 and desmin positive in up to 50%
• MDM2 and CDK4 essentially never overexpressed in benign lipomas but often negative in spindle cell liposarcoma
Spindle cell liposarcoma
Hemosiderotic fibrolipomatous tumor

• Occurs in the ankle region of older women most often
• Sometimes patients have a history of prior trauma at the site
• Tumor size ranges from 1- 20 cm
• Histologically composed of bland fibroblastic spindle cell in association with mature adipocytes
• Scattered inflammatory cells and iron deposition
• Spindle cell component is positive for CD34 and negative for SMA, desmin and S100
• t(1,10) translocation = TGFBR3-MGEA5 fusion gene
Hemosiderotic fibrolipomatous tumor
Prominent blood vessels
Kaposi sarcoma

- Multifocal virus induced vascular proliferation associated with HHV-8
- Well-formed irregular vascular channels and spindled endothelial cells in varying proportions
- Positive for CD31 and CD34, positive for HHV 8 and D2-40
Spindle cell hemangioma

• Mostly sporadic but 5-10% arise in the setting of Maffucci syndrome and Klippel-Trenaunay syndrome
• Often along clinical history first noted in childhood on the distal extremities
• Histologically multinodular tumor in the dermis or subcutaneous tissue with 3 classic histologic features in variable proportions
  • Widely dilated vascular spaces
  • Solid spindle cell areas
  • Polygonal endothelial cells with clear often vacuolated cytoplasm
Spindle cell hemangioma
Angiosarcoma

• Tumor of the head and neck of elderly patients, predominantly white men
• A subset arise in the setting of chronic lymphedema or radiation therapy
• At presentation nearly half of patients have multifocal disease
• Histologically irregular anastomosing thin-walled vessels with a dissecting growth pattern and an infiltrative margin
• Typically a grenz zone is present and extravasated red blood cells are seen
• Hyperchromatic enlarged endothelial nuclei
• Tumor cells are positive for CD31 and CD34
• Post radiation angiosarcoma is usually positive for MYC
• 50% express D2-40
Angiosarcoma
References

• Mentzel T, Schildhaus HU, Palmedo G, Buttner R, Kutzner H. Postradiation cutaneous angiosarcoma after treatment of breast carcinoma is characterized by MYC amplification in contrast to atypical vascular lesions after radiotherapy and control cases: clinicopathological, immunohistochemical and molecular analysis of 66 cases. Mod Pathol. 2012;25(1):75.


• Hornick, JL. Practical Soft Tissue Pathology. Elsevier Saunders, Philidelphia, PA. 2013