s0060

MULTINUCLEATE CELL ANGIOHISTIOCYTOMA

s0065 **Definition**

p0300 • A distinctive benign dermal proliferation composed of thin-walled capillaries and veins, admixed with scattered multinucleated cells

s0070 **Clinical features**

s0075 Epidemiology

p0310 • Female predominance (F:M = 3:1)

u0275 • Middle-aged adult patients

s0080 Presentation

p0325 • Slowly growing single or multiple firm, red-brown to violaceous papules

u0285 • Multiple lesions usually distributed over the same area, occasionally bilateral

u0290 • Surface is usually smooth, occasionally scaly

u0295 • Size less than 1 cm in diameter

u0300 • Most common over distal extremities, particularly dorsum of hands, wrists, thighs, and legs, with less frequent involvement of the face and trunk

u0305 • Mucosal sites distinctly uncommon (oral cavity)

u0310 • Usually symptomatic, pruritic lesions rare

u0315 • Clinical variants

u0320 • Linear

u0325 • Eruptive

u0330 • Plaquelike

u0335 • Disseminated/generalized

s0085 Prognosis and treatment

p0390 • Spontaneous regression possible, but rare

u0345 • Association with mycosis fungoides, diabetes mellitus, or vitiligo most likely coincidental

s0090 **Pathology**

s0095 Histology

p0405 • Vascular proliferation, composed predominantly of thin-walled capillaries and veins

u0355 • Lumina dilated or narrow

u0360 • Lined by a single layer of bland endothelial cells

u0365 • Each vessel surrounded by layer of pericytes

u0370 • Scattered multinucleated cells

u0375 • Bizarre shaped

u0380 • Hyperchromatic nuclei

u0385 • Angulated cytoplasm

u0390 • Fibroblast-like and histiocyte-like mononuclear cells

u0395 • Thickened collagen bundles, frequently hyalinized

u0400 • Occasional inflammatory cells, predominantly lymphocytes

u0405 • Hemorrhage absent, no hemosiderin deposition

u0410 • Decreased elastic fibers in the dermis can be observed

u0415 • Overlying epidermis normal, but can also be hyperplastic

u0420 • Proliferation restricted to upper and middermis

Immunopathology/special stains s0100

p0485 • Multinucleated cells display variable CD68 positivity

u0430 • Vascular markers delineate endothelial cells

Main differential diagnoses s0105

p0500 • Atrophic dermatofibroma

u0440 • Microvenular hemangioma

u0445 • Angiofibroma

u0450 • Kaposi sarcoma

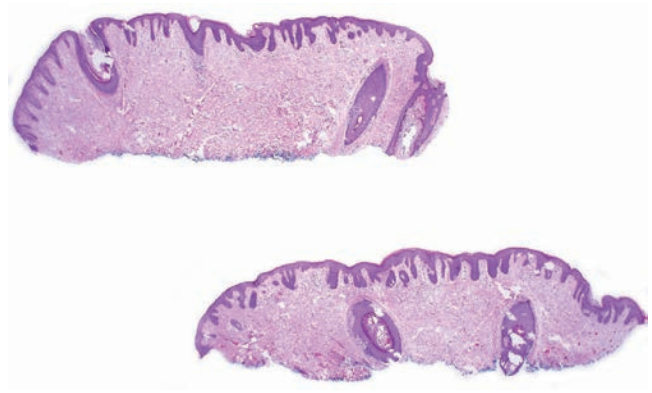

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Fig. 1. Multinucleate cell angiohistiocytoma. Acral skin with a slight increase in the number of blood vessels, mild dermal fibrosis, and scattered multunicleated giant cells. Note also mild perivascular inflammatory cell infiltrate.

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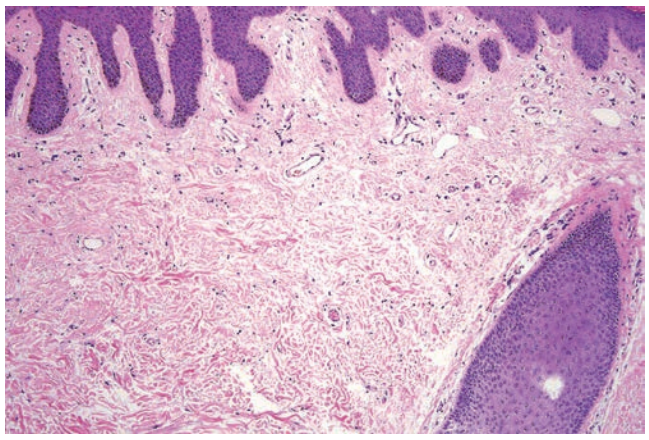

Fig. 2. Multinucleate cell angiohistiocytoma. Another area featuring distinctive multinucleated giant cells in the dermis, proliferation of small blood vessels, mild fibrosis, and perivascular inflammation.

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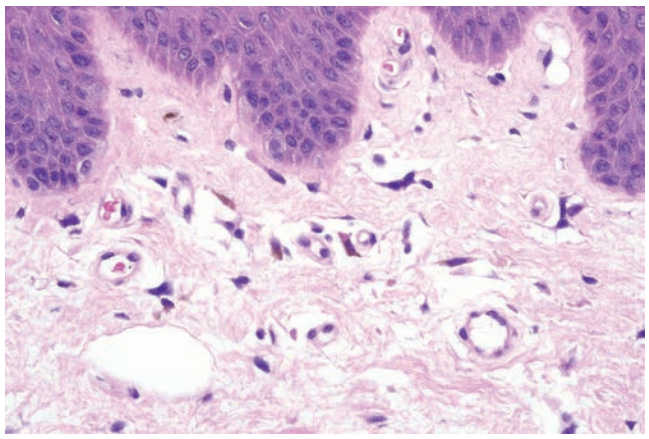

Fig. 3. Multinucleate cell angiohistiocytoma—higher magnification.

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s0110

BENIGN FIBROUS HISTIOCYTOMA (DERMATOFIBROMA)

s0115 Definition

p0525 • One of the most common benign soft tissue proliferations in the skin

u0460 • Neoplastic process is favored over a reactive condition due to the absence of spontaneous regression, tendency for local recurrence(s), extremely rare locoregional and distant metastases, as well as the recent detection of fusions in protein kinase C and membrane-associated proteins in some fibrous histiocytomas

u0465 • Represents a group of morphologically diverse proliferations with different clinical presentations and biological potential

s0120 Clinical features

s0125 Epidemiology

p0545 • Broad age distribution, most common in middle-aged adults

u0475 • Slight female predominance

s0130 Presentation

p0560 • Virtually any site of skin can be affected

u0485 • Most commonly on the limbs (about 70%), followed by the trunk

u0490 • Slowly growing, firm solitary nodule, round to oval

u0495 • Overlying skin often reddish-brown to darkly pigmented and scaly

u0500 • Size of the lesion is usually less than 10 mm

u0505 • Central dimple formation on lateral compression or squeezing is a common clinical sign

u0510 • History of previous trauma occasionally present

u0515 • Clinical variants

u0520 • Giant variant, including plaquelike, measuring from 35 to 300 mm

u0525 • Eruptive variant, usually related to immunosuppression, HIV infection, and highly active antiretroviral therapy

s0135 Prognosis and treatment

p0615 • Simple excision is curative

u0535 • Recurrences after incomplete or marginal excision have been estimated to develop in less than 2% of cases.

u0540 • Lesions occurring on the face and certain morphological variants (cellular, aneurysmal, atypical) are associated with a higher recurrence rate (up to 26%)

u0545 • Rare metastases have been reported in particular variants of fibrous histiocytoma (cellular, aneurysmal, atypical); however, no histological features have been detected to predict metastatic potential

s0140 Pathology

s0145 Histology

p0640 • Epidermis above the lesion is usually hyperplastic

u0555 • Elongation and broadening of rete ridges associated with hyperpigmentation of basal keratinocytes especially over the tips of rete ridges (so-called *dirty fingers*)

• Proliferation of immature hair-follicle structures above the dermal proliferation is frequently seen and can mimic a basal cell carcinoma or an adnexal tumor u0560

• Papillary dermis is usually, but not always, spared (so-called *grenz zone*) u0565

• Defining histological features include u0570

  • Spindle cells growing in a haphazard, vague, storiform or short intersecting fascicular pattern u0575

  • Histiocytes in variable proportions, including multinucleated giant cells (touton and foreign body type), siderophages, and foamy cells u0580

  • Inflammatory cells in variable proportions, usually lymphocytes u0585

  • Delicate collagenous or loosely myxoid stroma containing thin-walled blood vessels u0590

• Ill-defined nonencapsulated proliferation in the dermis/superficial subcutis u0595

  • Growth into subcutis usually in the form of short extensions u0600

  • Individual bundles of collagen surrounded by lesional cells, so-called *collagen trapping,* especially at the periphery of the lesion u0605

• Lesions restricted to subcutis or deeper structures rare u0610

• Several histological variants have been recognized, including cellular, epithelioid, aneurysmal, atypical (pseudosarcomatoid), lipidized ("ankle type"), clear cell, palisading, deep, signet sing cell, fibrous histiocytoma with osteoclast-like cells, cholesterolotic u0615

• Different variants can coexist within a single lesion u0620

Immunopathology/special stains s0150

• Although factor XIIIa is usually positive, it may just delineate a background population of dermal dendrocytes p0720

• See variants for additional immunohistochemical features u0630

Molecular genetic features s0155

• Gene fusions involving multiple protein kinase C–encoding genes (*PRKCA, PRKCB,* or *PRKCD*) with a variety of other genes have been documented p0735

• The prevalence and distribution of these fusions in the various subtypes of benign fibrous histiocytoma are not known, but they are only present in a subset. u0640

Main differential diagnoses s0160

• Nodular fasciitis p0750

• Dermatofibrosarcoma protuberans u0650

• Scar u0655

• Xanthoma u0660

• Xanthogranuloma u0665

• Melanocytic lesions u0670

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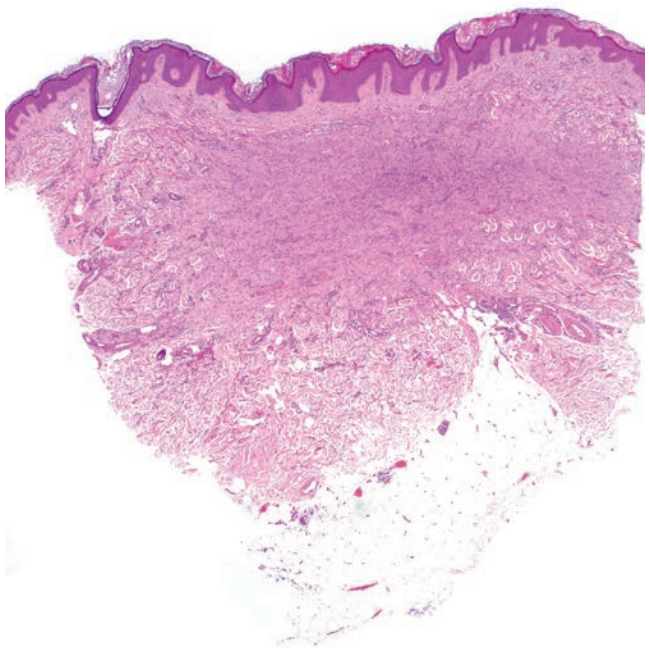

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Fig. 1. Benign fibrous histiocytoma—dermatofibroma. Classic appearance of an ill-defined dermal tumor associated with overlying epidermal hyperplasia.

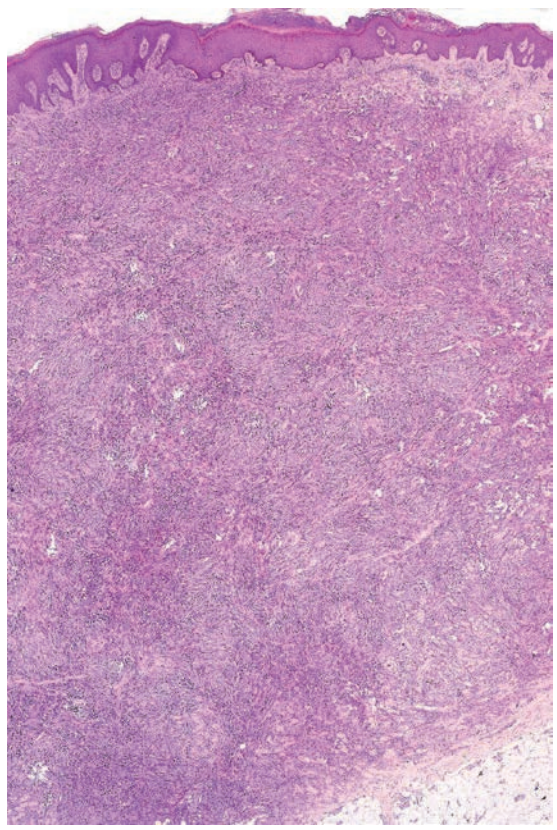

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Fig. 2. Benign fibrous histiocytoma—dermatofibroma. Variably cellular, polymorphic dermal tumor that can involve the full thickness of the dermis.

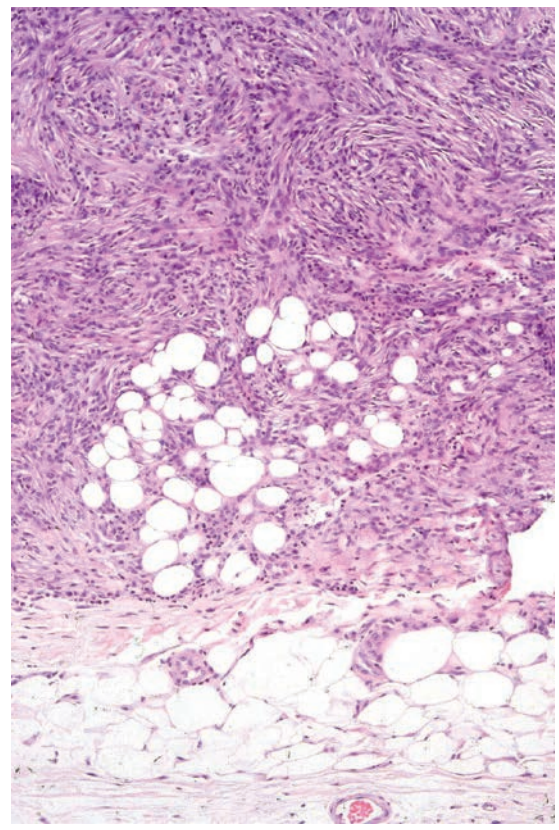

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Fig. 3. Benign fibrous histiocytoma—dermatofibroma. Focal involvement of the subcutis is relatively common.

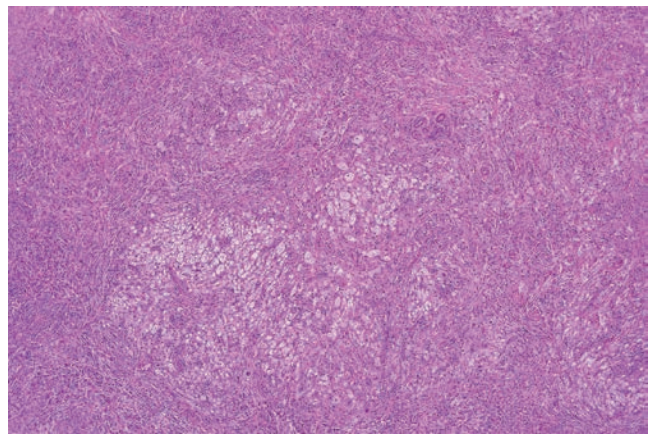

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Fig. 4. Benign fibrous histiocytoma—dermatofibroma. The tumor is generally composed of an admixture of spindle cells and histiocyte-like cells, albeit in variable proportions.

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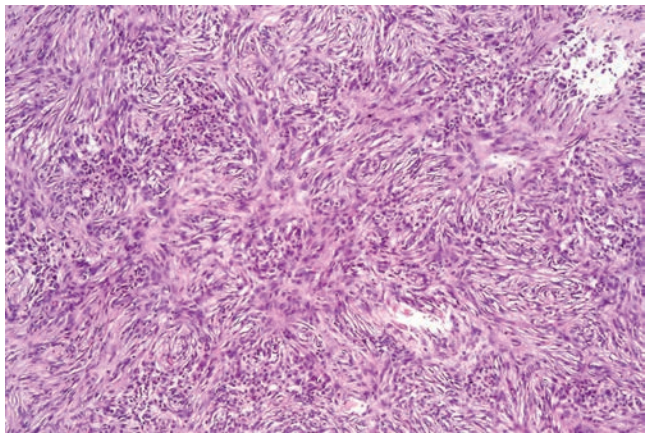

Fig. 5. Benign fibrous histiocytoma—dermatofibroma. High-power view of spindle-shaped tumor cells displaying a storiform growth pattern.

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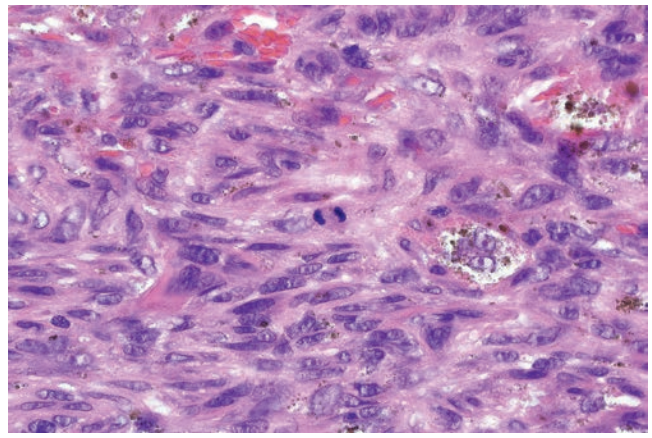

Fig. 8. Benign fibrous histiocytoma—dermatofibroma. Occasional normal mitoses are not uncommon. In addition, note the prominent deposition of hemosiderin in this example.

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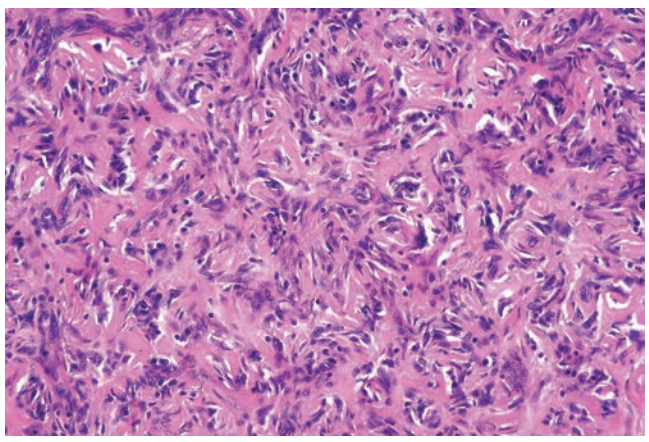

Fig. 6. Benign fibrous histiocytoma—dermatofibroma. In this example, spindle cells in a curlicue and focal storiform growth pattern are embedded in collagenous hyalinized stroma.

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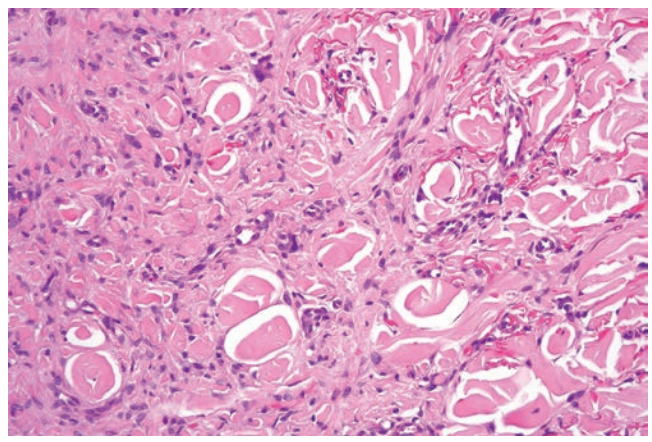

Fig. 9. Benign fibrous histiocytoma—dermatofibroma. Collagen trapping is typically present at the periphery of the tumor. This is an important clue as an aid in recognizing the entity.

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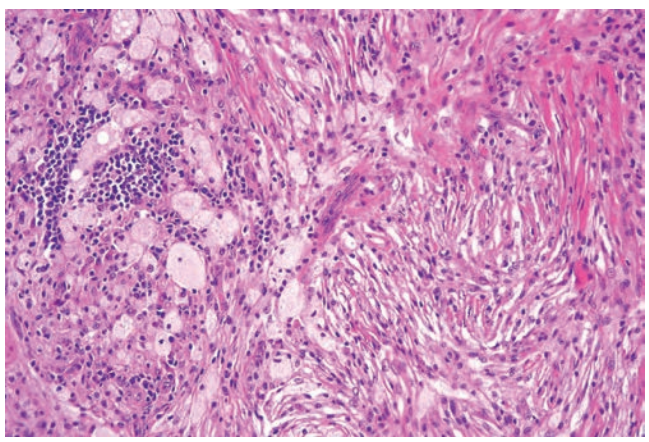

Fig. 7. Benign fibrous histiocytoma—dermatofibroma, higher magnification. An admixture of spindle and histiocyte-like cells is noted. Note also the presence of an inflammatory cell infiltrate composed of lymphocytes.

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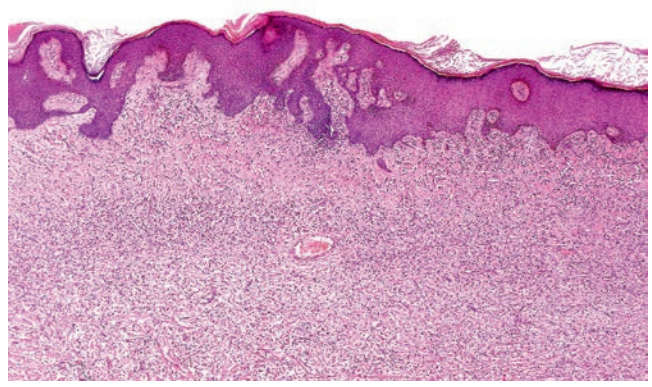

Fig. 10. Benign fibrous histiocytoma—dermatofibroma. The epidermis overlying dermatofibroma is frequently acanthotic. A grenz zone separates the tumor from the epidermis.

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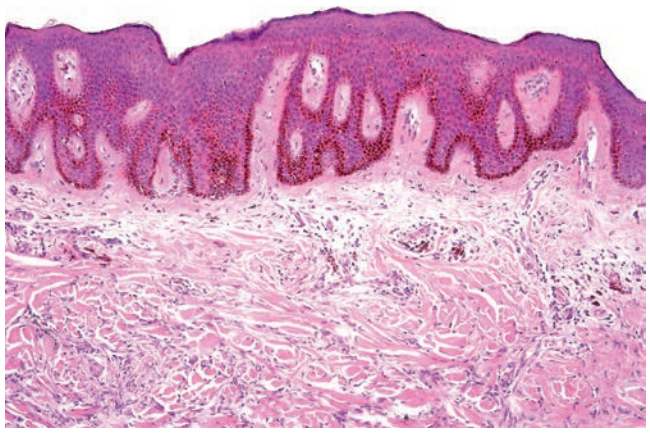

Fig. 11. Benign fibrous histiocytoma—dermatofibroma. Elongation and broadening of the rete ridges associated with hyperpigmentation of basal keratinocytes in the epidermis overlying the tumor.

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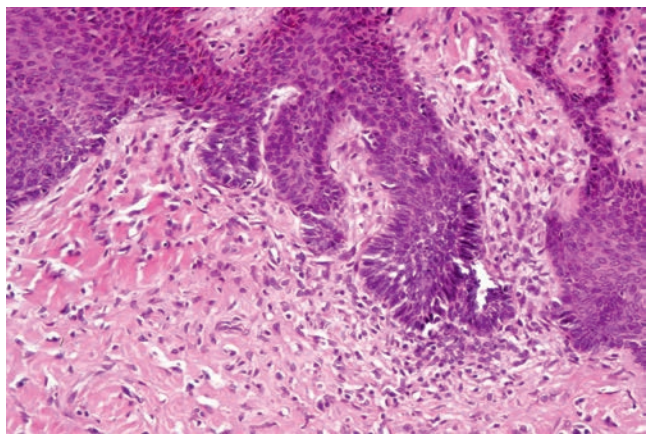

Fig. 13. Benign fibrous histiocytoma—dermatofibroma. Trichoblastoma-like basaloid proliferation, high-power magnification.

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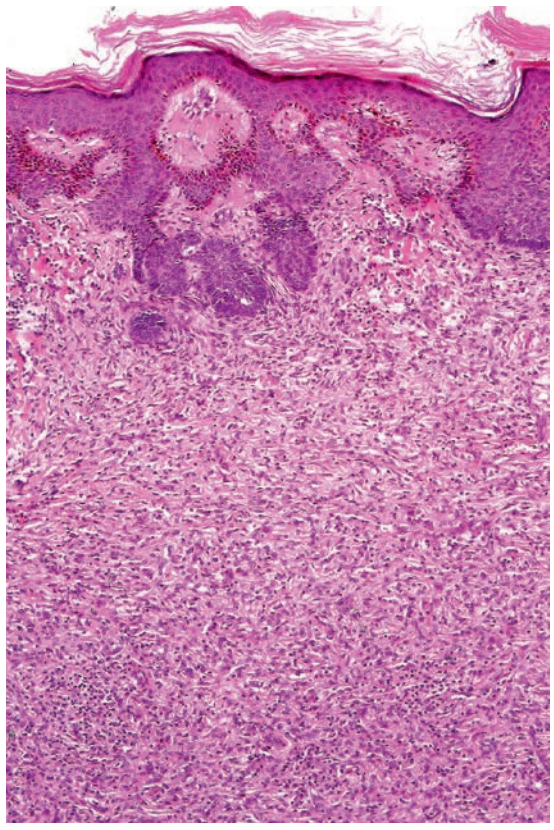

Fig. 12. Benign fibrous histiocytoma—dermatofibroma. Proliferation of immature hair follicle structures reminiscent of trichoblastoma is not uncommonly seen above the dermal proliferation and should not be mistaken for basal cell carcinoma.

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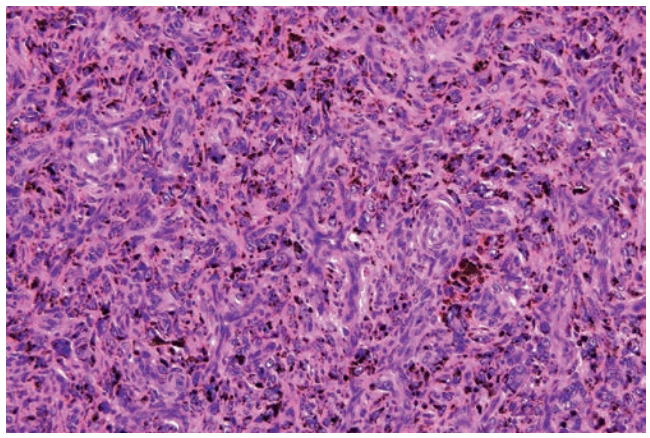

Fig. 14. Benign fibrous histiocytoma—dermatofibroma. Prominent hemosiderin deposition is typical of the hemosiderotic variant. Note the presence of multinucleated giant cells.

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s0165

CELLULAR FIBROUS HISTIOCYTOMA

s0170 **Definition**

p0785 • Distinctive variant of a benign fibrous histiocytoma (dermatofibroma), characterized by highly cellular monomorphic proliferation of spindle cells growing in a more fascicular and focally storiform pattern

s0175 **Clinical features**

s0180 Epidemiology

p0795 • Represents about 5% of benign fibrous histiocytomas

u0685 • Approximately equal gender distribution, although slight male predominance observed in the initial publication

u0690 • Wide age distribution, but most common in young to middle-aged adults (between 33 and 42 years)

s0185 Presentation

p0815 • Solitary asymptomatic nodule

u0700 • Multifocal growth and familial occurrence in a single patient

u0705 • Preoperative duration of the lesion variable (2 weeks–2 years)

u0710 • Upper limb/limb girdle followed by lower limb/limb girdle, head and neck, and trunk

u0715 • Propensity for unusual sites, like face, ears, hands, and feet

s0190 Prognosis and treatment

p0845 • Complete excision usually curative

u0725 • Recurrence rate as high as 26% after incomplete/marginal excision

u0730 • Locoregional (lymph nodes) and systemic metastases (lungs) in exceptional cases; no histological features have been detected to predict metastatic potential

s0195 **Pathology**

s0200 Histology

p0865 • Two growth patterns recognized on low-power examination

u0740 • Nonexophytic and ill defined (more common)

u0745 • Exophytic and circumscribed

u0750 • Defining features include

u0755 • Cellular proliferation of plump spindle cells with tapering nuclei containing small eosinophilic nucleoli and relatively abundant ill-defined, pale eosinophilic cytoplasm

u0760 • Short fascicular growth predominates over storiform growth pattern

u0765 • Foci of more epithelioid cells occasionally present and represent a minor component of the lesion

u0770 • Normal mitoses common (up to 10 mitoses per 10 high-power fields)

u0775 • Abnormal mitoses not present

u0780 • Focal necrosis (in up to 12%), generally not associated with surface ulceration

u0785 • Surface ulceration uncommon

u0790 • Most frequently arise in superficial dermis and subsequently infiltrate the deep dermis, but middermal and deep dermal origin not uncommon

u0795 • Extension into the subcutis present in roughly one-third of the cases

u0800 • Fascicular growth along the septa (perpendicular to the epidermis)

u0805 • Lacelike growth between the fat cells

u0810 • Infiltration beyond subcutis into the underlying skeletal muscle rare, usually in the head and neck area, most likely due to the more superficial localization of skeletal muscles at this particular site

u0815 • Areas of a classical benign fibrous histiocytoma consistently identified at least focally, usually at the periphery of the cellular proliferation

s0205 Immunopathology/special stains

p0955 • Smooth muscle actin (SMA) positivity in over 90%,

u0825 • Cytoplasmic desmin positivity in 32%

u0830 • Consistent with myofibroblastic differentiation

u0835 • Genuine CD34 positivity in 6%

u0840 • Usually seen at the periphery of the lesion or in a patchy pattern

u0845 • Diffuse CD34 staining is an exception

u0850 • Consistently negative for cytokeratins, S100 protein, and EMA

u0855 • Factor XIIIa reveals nonneoplastic cells in the background

s0210 Main differential diagnoses

p1000 • Atypical dermal smooth muscle tumor

u0865 • Dermatofibrosarcoma protuberans

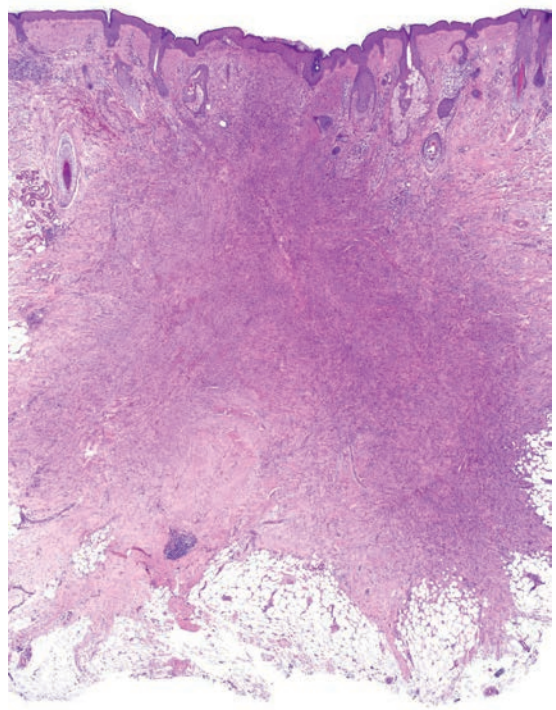

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Fig. 1. Cellular fibrous histiocytoma. Note an ill-defined, highly cellular dermal tumor. Extension into subcutis is present in about one-third of the cases, mainly along the fibrous septa.

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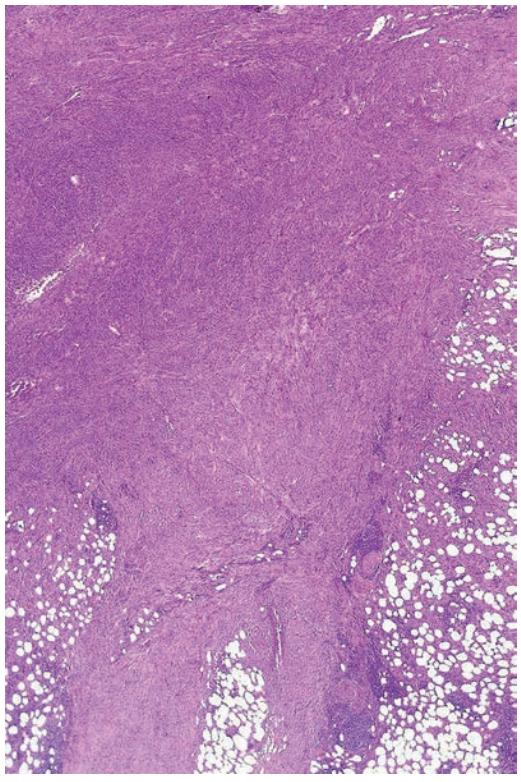

Fig. 2. Cellular fibrous histiocytoma. This example shows extensive infiltration of the subcutis.

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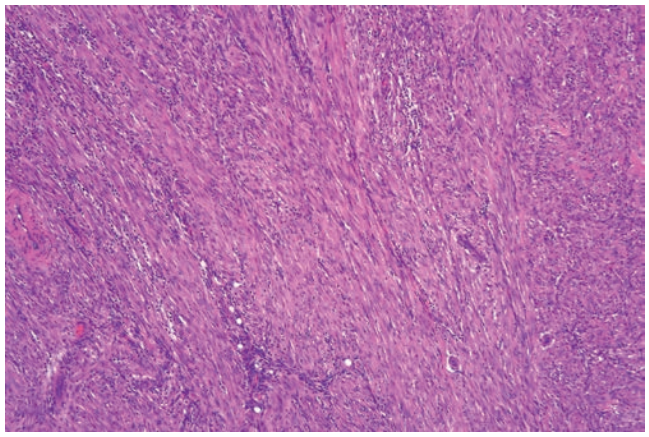

Fig. 3. Cellular fibrous histiocytoma. Highly cellular proliferation of monomorphic fascicles of myofibroblast-like spindle cells associated with lymphocytes in the background.

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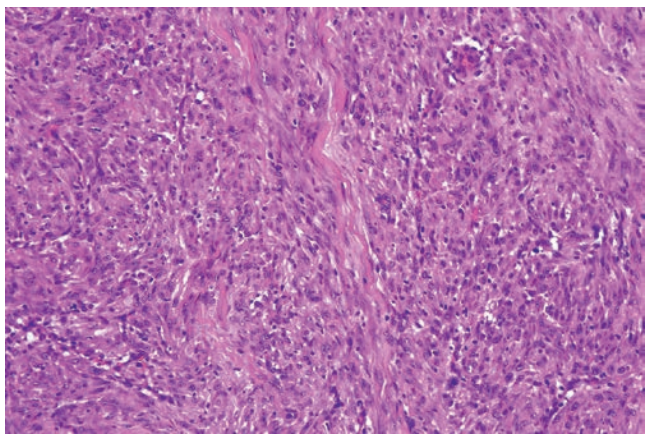

Fig. 4. Cellular fibrous histiocytoma. Note a more polymorphic area containing spindle-shaped cells, histiocyte-like cells, and lymphocytes.

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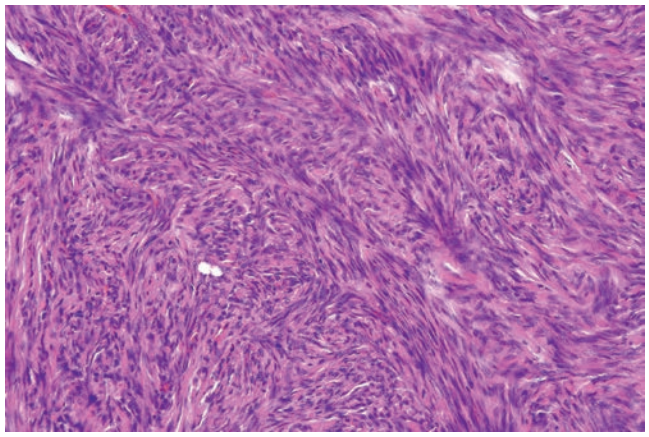

Fig. 5. Cellular fibrous histiocytoma—higher magnification. Bland spindle cells growing in short fascicles. Note focal storiform growth pattern.

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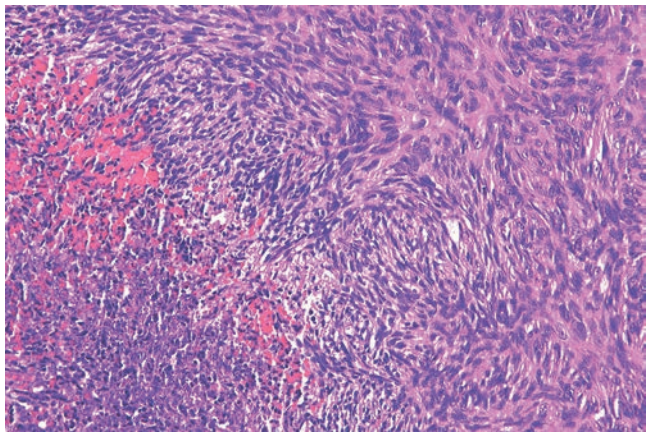

Fig. 6. Cellular fibrous histiocytoma. Areas of necrosis are present in about 10% of the tumors and have no prognostic implication.

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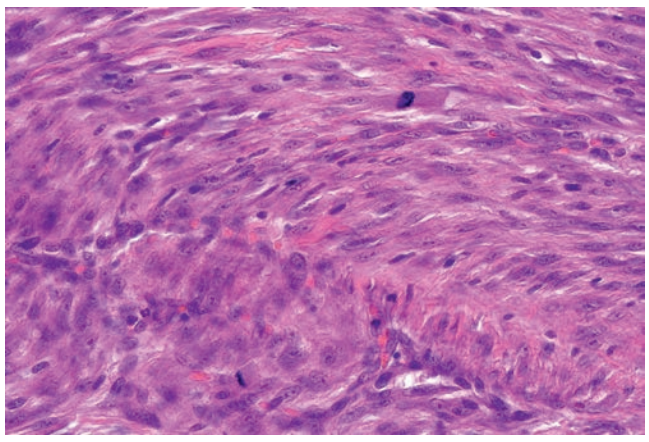

Fig. 7. Cellular fibrous histiocytoma. Mitotic activity can be brisk. Atypical mitoses are generally absent.

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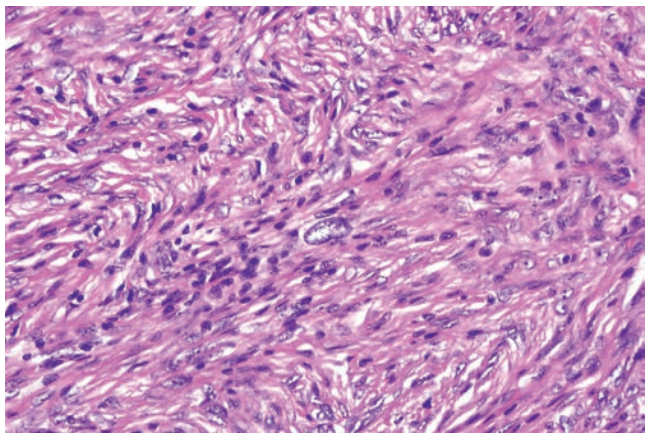

Fig. 8. Cellular fibrous histiocytoma. This example displays scattered large atypical cells indicating a tumor combining features of cellular and atypical fibrous histiocytoma.

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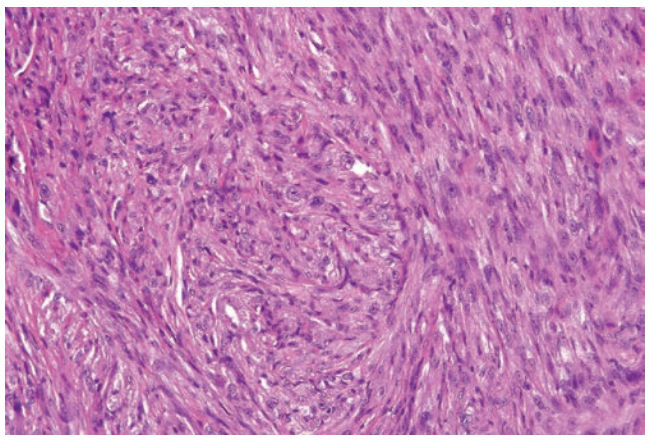

Fig. 9. Cellular fibrous histiocytoma. This example is characterized by granular cell change.

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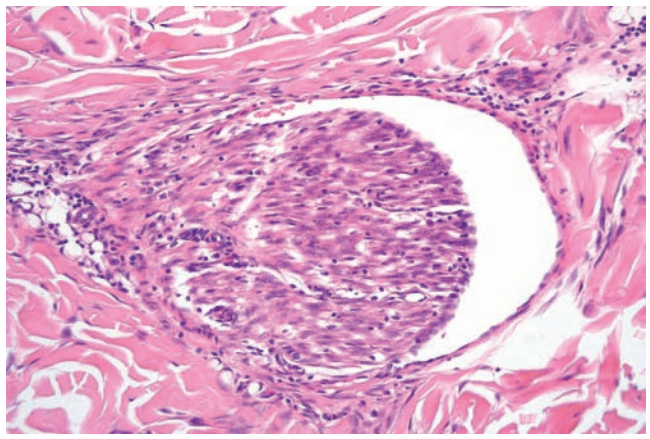

Fig. 10. Cellular fibrous histiocytoma. A rare finding of pseudovascular invasion shows tumor cells protruding into the lumen of a small vein.

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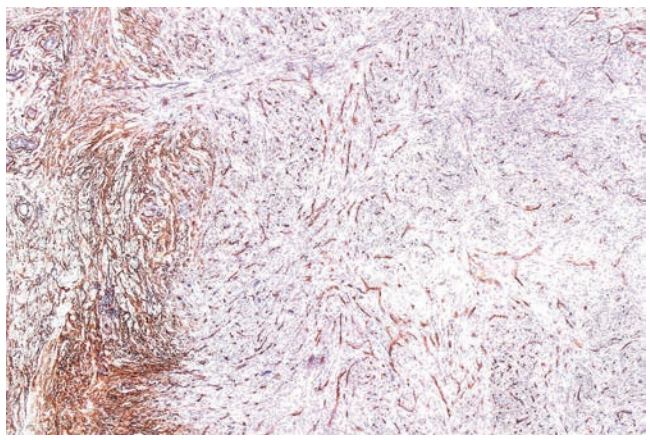

Fig. 11. Cellular fibrous histiocytoma—CD34 immunohistochemistry. Patchy positivity can frequently be observed at the periphery of the tumor. Focal positivity of tumor cells for this marker can be seen in other areas of the tumor, but diffuse positivity as seen in dermatofibrosarcoma protuberans is not usually a feature.

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s0215

ANEURYSMAL FIBROUS HISTIOCYTOMA

s0220 **Definition**

p1015 • Distinctive variant of a benign fibrous histiocytoma (dermatofibroma), characterized by formation of variably sized, blood-filled spaces developing in the background of an ordinary common benign fibrous histiocytoma

s0225 **Clinical features**

s0230 Epidemiology

p1025 • Represents less than 2% of fibrous histiocytomas

u0880 • Develops most frequently in the fourth decade of life (mean age 37 years)

u0885 • Shows female predominance, with male-to-female ratio of 1:1.5

s0235 Presentation

p1045 • Broad anatomical distribution with predilection for the lower limbs/limb girdle (55%), followed by upper limbs/limb girdle (17%), trunk (12%), and head and neck (4%)

u0895 • Solitary papule of variegated color from dark brown to red or blue

u0900 • Diameter of the lesion from 5 to 40 mm

u0905 • Multiple lesions develop exceptionally

u0910 • Rapid growth due to hemorrhage within the preexistent long-standing lesion is a common presenting symptom

s0240 Prognosis and treatment

p1075 • Simple excision is usually curative

u0920 • Recurrences after incomplete/marginal excision are common (up to 20%)

u0925 • Metastatic disease exceptional, no histological features have been detected to predict metastatic potential

s0245 **Pathology**

s0250 Histology

p1095 • Epidermis overlying the lesion demonstrates variable degrees of acanthosis

- Generally located in the dermis, extension into the subcutis not uncommon, but infiltration into the underlying skeletal muscle rare u0935
- The lesion can be ill defined u0940
- Defining features include blood-filled spaces ranging from slitlike to large cavities, similar to cavernous hemangioma u0945
- Blood-filled spaces u0950
  - Lack of endothelial lining u0955
  - Are lined by the lesional cells, including histiocytes, fibroblasts, and giant cells u0960
  - Are most frequently located within the most cellular parts of the lesion, usually central, which are devoid of collagen and elastic fibers u0965
  - Can represent the predominant component of the lesion u0970
- Surrounding stroma contains numerous small capillaries, prominent interstitial haemorrhage, and hemosiderin deposition u0975
- Classical histological features of benign fibrous histiocytoma can usually be recognized at the periphery of the lesion u0980

Immunopathology/special stains/cytogenetics s0255

- Lesional cells can stain focally for smooth muscle actin p1155
- Factor XIIIa– and CD34-positive cells may represent reactive cells within the lesion u0990
- Lesional cells are consistently negative for desmin, CD34, CD31, CD68, and factor XIIIa u0995
- t(12;19)(p12:q13) detected in a single case u1000

Main differential diagnoses s0260

- Angiomatoid fibrous histiocytoma p1180
- Spindle cell hemangioma u1010
- Nodular Kaposi sarcoma u1015
- Angiosarcoma u1020

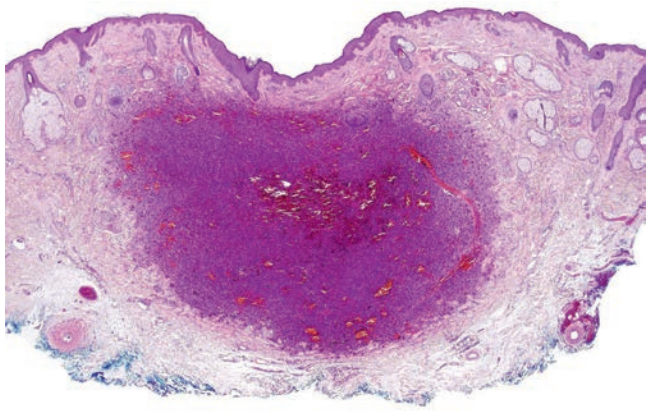

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Fig. 1. Aneurysmal fibrous histiocytoma. Tumor with variably sized, blood-filled spaces mimicking blood vessels in the background of an ordinary fibrous histiocytoma.

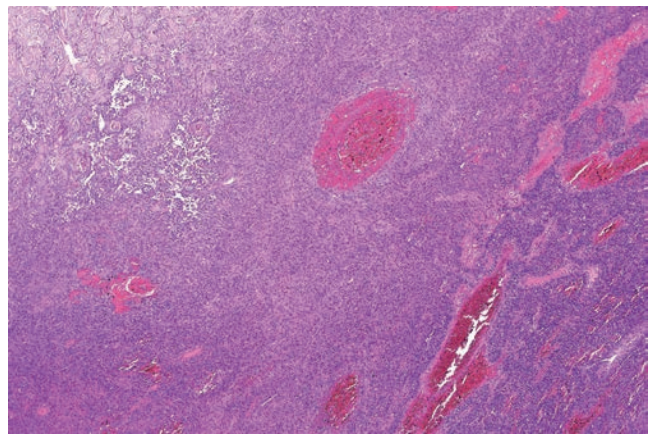

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Fig. 2. Aneurysmal fibrous histiocytoma. Note numerous pseudovascular spaces with prominent hemorrhage and artifactual slitlike spaces.

ISBN: 978-1-4557-2501-4; PII: B978-1-4557-2501-4.00003-5; Author: Calonje & Lazar & Luzar; 00003