

Benign Fibrous Histiocytoma

A Clinico-Pathologic review of 450 Cases

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SUMMARY

Four hundred and fifty cases with benign fibrous histiocytoma diagnosed in a dermatopathology laboratory were reviewed. Clinical information included the age, sex, size and location of the lesions. Seven common histologic patterns were identified including the classic fibrous histiocytoma, hemosiderotic histiocytoma (Sclerosing hemangioma), deep seated fibrosis histiocytoma, atrophic fibrous histiocytoma (Subepidermal nodular fibrosis), xanthomatized fibrous histiocytoma, epithelioid cell fibrous histiocytoma and the sclerotic variety. Other rare variants included palisading fibrous histiocytoma, fibrous

Table 1. Age distribution of the patients.

Age in years	Number of cases	Percentage
11-20	12	3%
21-30	65	14%
31-40	135	30%
41-50	125	28%
51-60	70	16%
61-70	29	6%
71-80	14	3%

Table 2. Sex distribution of the patients and site of the lesions.

Locations	Head & Neck	12 cases	3%
	Trunk	80	18%
	Upper extrem	140	30%
	Lower extrem	218	49%
Sex	Male	143	32%
	Female	307	68%

histiocytoma with giant cells, and with monster cells and the dermatomyofibroma.

Fibrous histiocytomas are skin lesions appearing most commonly in adults as single or multiple firm nodules measuring a few millimeters to as much as 2-3 centimeters in diameter. The most common locations are the extremities but they may also occur elsewhere 1-3. Palms and soles are rarely affected. The individual lesion may be skin colour but often it is hyperpigmented. The lesion may persist indefinitely. However, spontaneous involution may occur.

Fibrous histiocytomas may be not true skin neoplasms, rather representing a reactive cell

proliferation⁴. Some lesions have been noted to occur following insect bites or other minor trauma. We have reviewed a series of 450 cases with fibrous histiocytomas in order to establish the incidence of various histologic forms, and to see whether the histologic variants are associated with differences in the anatomical distribution of the lesions.

Material and Methods

Four hundred and fifty cases with benign fibrous histiocytoma were collected during an eight month period in a dermatopathology laboratory. The histologic sections were stained with hematoxylin-eosin. In one hundred cases additional sections were also prepared by acid-orcein giemsa method for the elastic fibers.

Results

1. Classic fibrous histiocytoma. In this most common histologic form, intradermal nodule is made up of a number of endothelial lined capillary blood vessels surrounded by massive proliferation of histiocytes, elongated

fibroblasts forming intersecting bundles and fine collagenous tissue. There are occasional multinucleated giant cells. Mitotic figures are rare. The periphery of the lesion is ill-defined. At the periphery, there are often small foci of perivascular chronic inflammatory cellular infiltrate (Fig. 1). The majority (404) of the cases examined showed this form of fibrous histiocytoma which included 252 predominantly cellular and 152 mainly collagenous variety. The sections stained by acid-orcein-giemsa technique showed absence of elastic fibers within the histiocytic lesion in 70% of the 100 cases studied. Some elastic fibers were present at the periphery where the lesion faded into the surrounding normal connective tissue. The elastic fibers were present in varying amount within the nodular lesion in 30% of the cases. One case showed a relatively well defined growth consisting of many intersecting bundles of elongated fibroblasts and a well formed network of elastic fibers. This case identified as an example of dermatomyofibroma.

2. Hemosiderotic histiocytoma. It was the second most common histologic variant observed in 19 cases. This lesion is also known as sclerosing hemangioma and aneurysmal (angiomatoid) histiocytoma. The lesion is richly vascular and appear to grow in size following repeated areas of hemorrhages and reactive proliferation of histiocytes, macrophages and multinucleated giant cells containing hemosidrin pigment granules (Fig. 2). The location is most commonly over the extremities.

3. Deep seated fibrous histiocytoma. Observed in 13 cases. The lesions are often densely cellular. Deep location and extension of the densely cellular growth into the subcutaneous fat may histologically resemble a dermatofibrosarcoma.

4. Atrophic fibrous histiocytoma (Subepidermal nodular fibrosis). This series included six cases of this type. Histologically, the dermis is replaced by a narrow band of fibro-histiocytic proliferation, and the

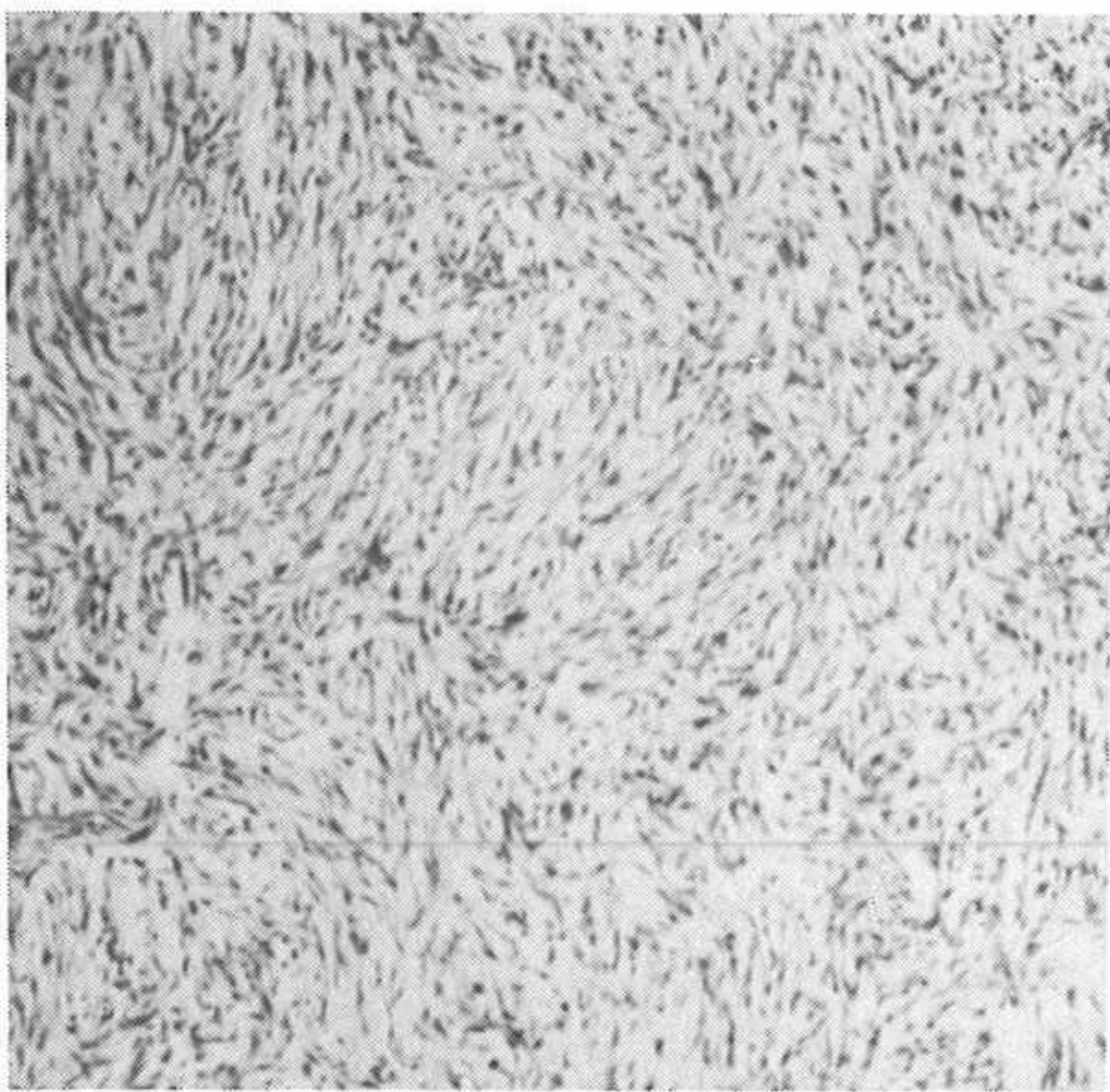


Fig.1 Benign fibrous histiocytoma. a classic lesion showing massive proliferation of histiocytes, bundles of fibroblasts and fine collagenous tissue. H&E X225.

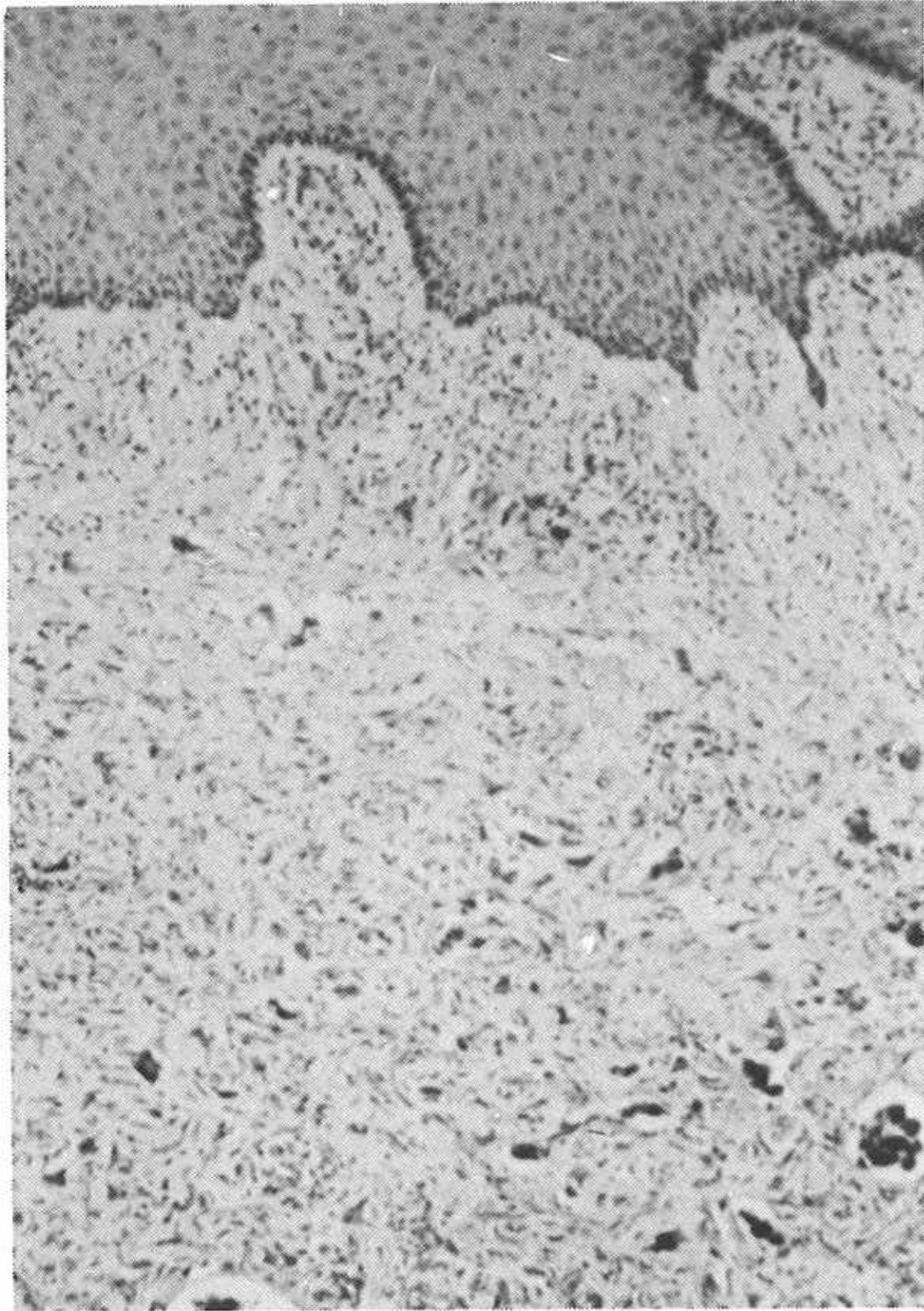


Fig.2 Hemosiderotic histiocytoma. Note macrophages and multinucleated giant cells containing hemosiderin pigment granules. H&E X.225.

subcutaneous fat lobules are high up close to the epidermis (Fig. 3). The elastic fibers are absent.

5. Epithelioid cell fibrous histiocytoma⁵. Four cases of this type were found in this series. This form is characterized by massive proliferation of angulated epithelioid cells with abundant eosinophilic cytoplasm. Scattered mononuclear cells are also present, and collagen bundles are few (Fig. 4).

6. Xanthomatized fibrous histiocytoma. Only two cases of this type were observed in this review. This form is characterized by the presence of many histiocytes having abundant and foamy cytoplasm and a number of foamy multinucleated giant cells. Also, there is a number of endothelial-lined blood vessels,

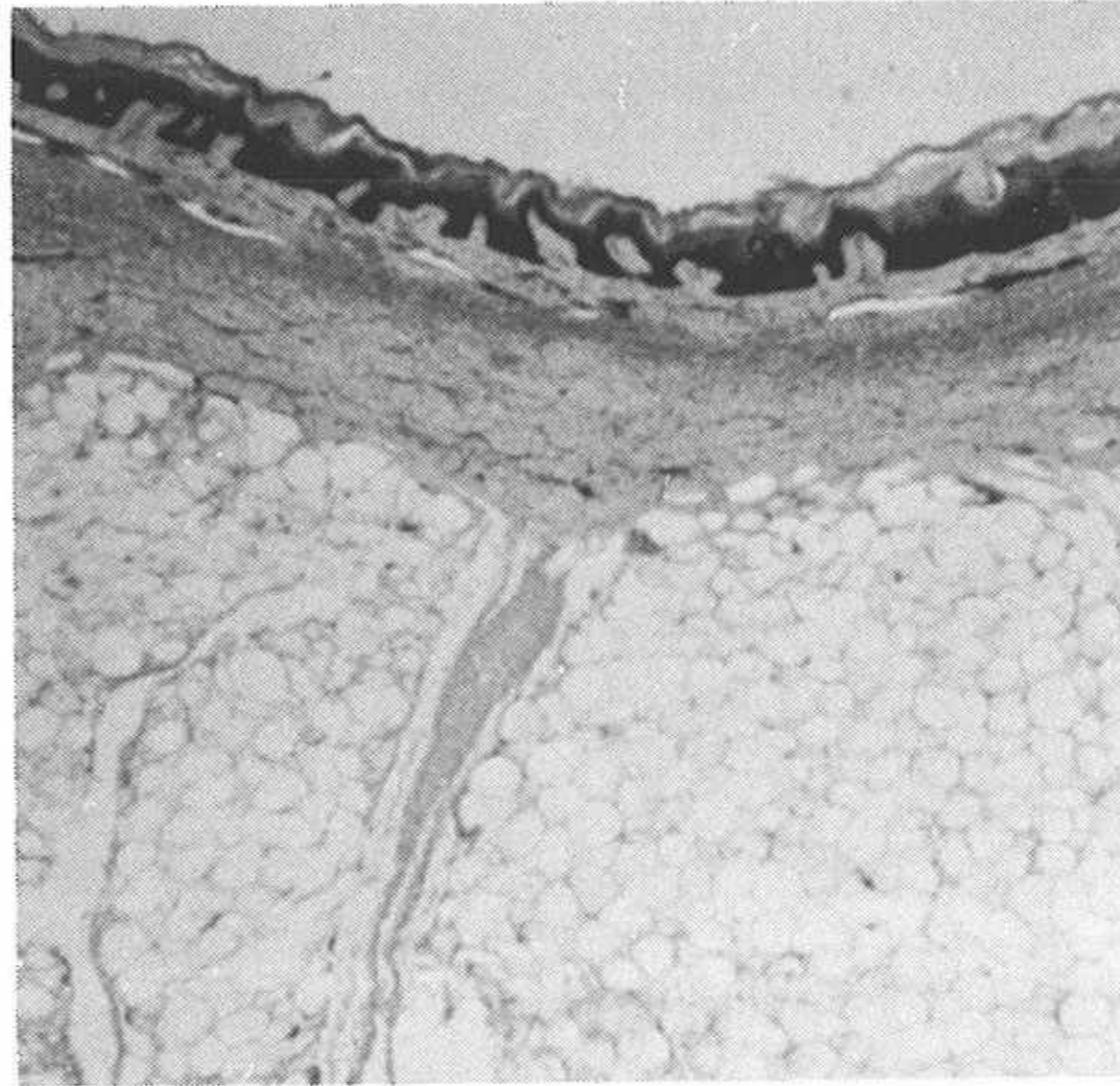


Fig.3 Atrophic histiocytoma (subepidermal nodular fibrosis). Note replacement of dermis by a narrow band of fibrotic tissue. H&E X60.

some elongated fibroblasts and collagenous tissue.

7. Sclerotic fibrous histiocytoma⁶. The two cases of this type showed heavy deposition of eosinophilic collagen bundles with few elongated fibroblasts giving an impression of dermal sclerosis.

Discussion

This study was carried out to see if there are any differences in the clinical presentation or distribution pattern of various histologic forms of benign fibrous histiocytoma which may indicate different pathogenesis.

The classic histopathology characterized by the presence of endothelial lined capillary blood vessels and massive proliferation of histiocytes, elongated fibroblasts and collagen bundles is observed in 90% of cases (Classic fibrous histiocytoma). This histologic form shows a spectrum ranging from a densely cellular growth to a largely collagenous lesion with a relatively few elongated fibroblasts. Occasional, lymphoid follicles may be present⁷.

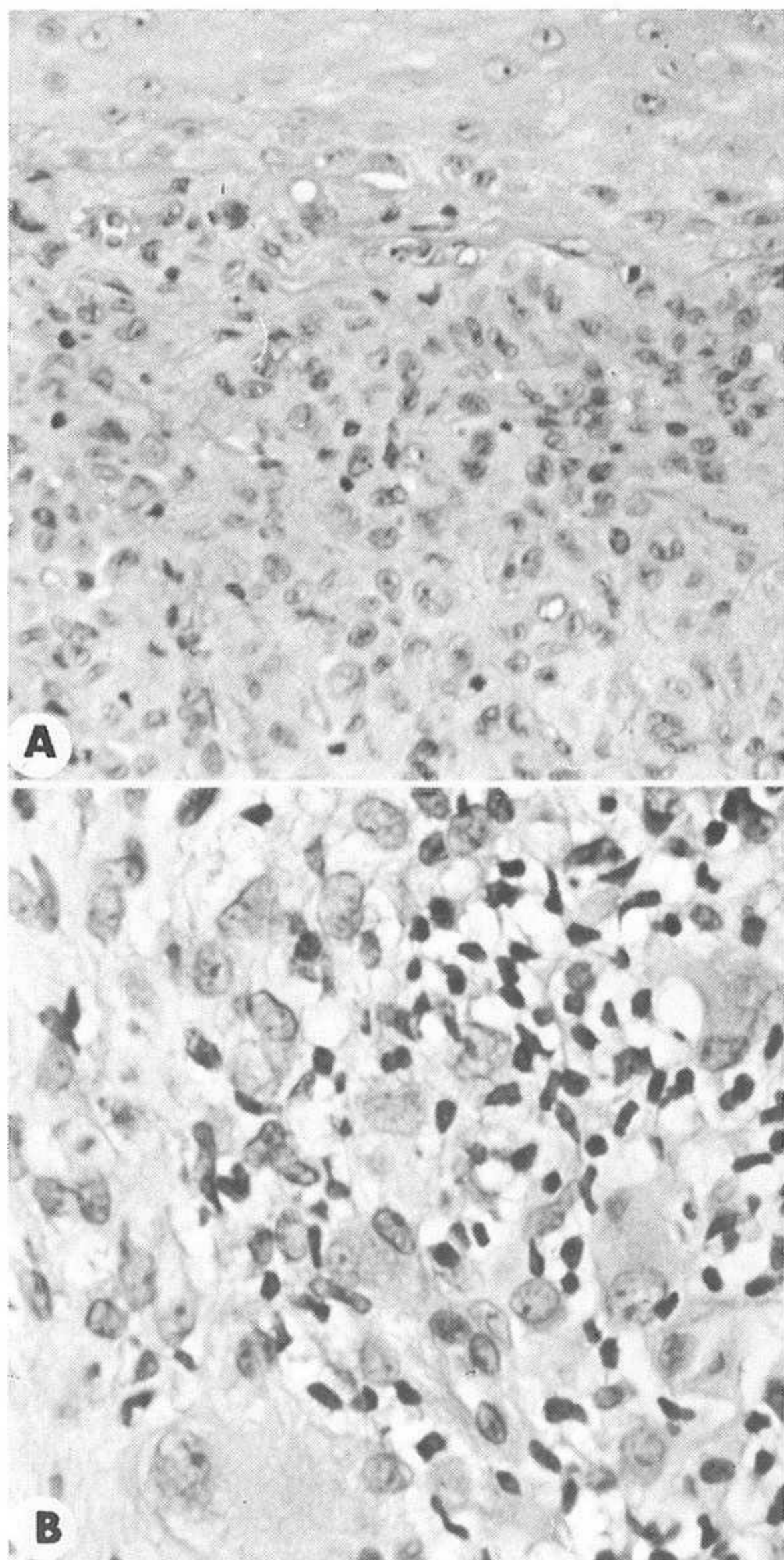


Fig.4 Epithelioid cell histiocytoma. Dermis is replaced by angulated histiocytes having abundant eosinophilic cytoplasm. H&E X225 and X400.

In the hemosiderotic variant, the lesion is deeply pigmented and may be diagnosed as a blue nevus or malignant melanoma. The growth is made up of many endothelial-lined blood vessels surrounded by massive proliferation of histiocytes, macrophages and

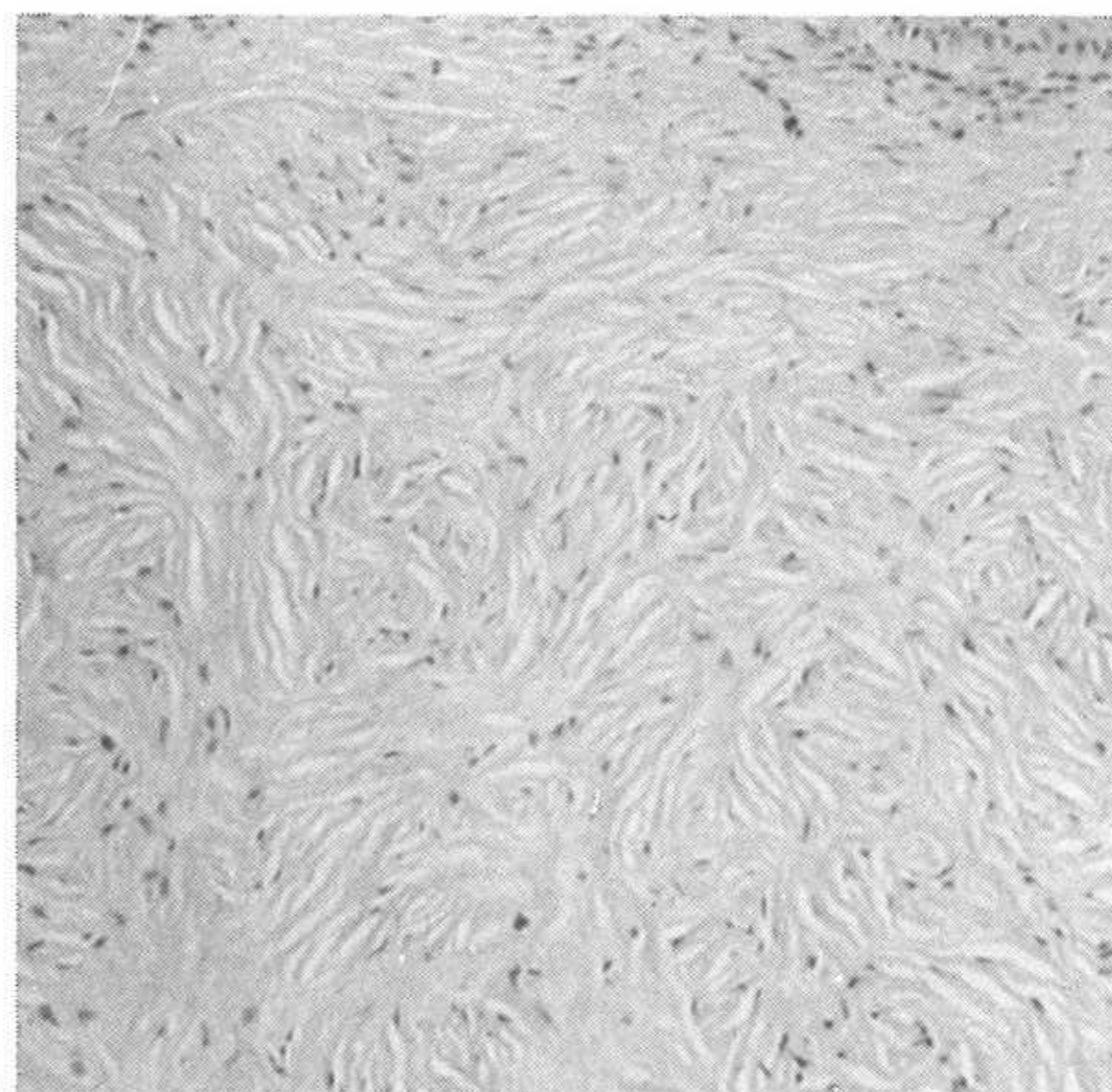


Fig.5 Sclerotic fibrous histiocytoma showing intersection bundles of fine collagenous tissue and elongated fibroblasts. H&E X225.

foreign body type multinucleated giant cells. Some of the latter contain hemosiderin pigment.⁸ Fibroblasts and collagen bundles appear in older lesion. Immunostaining for factor VIII has been reported to be negative ruling out the endothelial origin of this lesion⁹.

Deep seated fibrous histiocytoma is located in deep reticular dermis and in the subcutaneous fat tissue giving the clinical impression of an epithelial cyst, while atrophic fibrous histiocytoma, appears clinically as a well-defined area of skin depression with brown discoloration¹⁰.

Immunohistochemical study of epithelioid cell fibrous histiocytoma give positive reaction to staining for vimentin and alpha-1-antitrypsin and negative staining reaction to S-100 protein or HMB-45¹¹. The lesion of xanthomatized fibrous histiocytoma should be differentiated histologically from a tuberous xanthoma.

Other rare variants include palisading fibrous histiocytoma in which histiocytes and fibroblasts show nuclear palisading forming

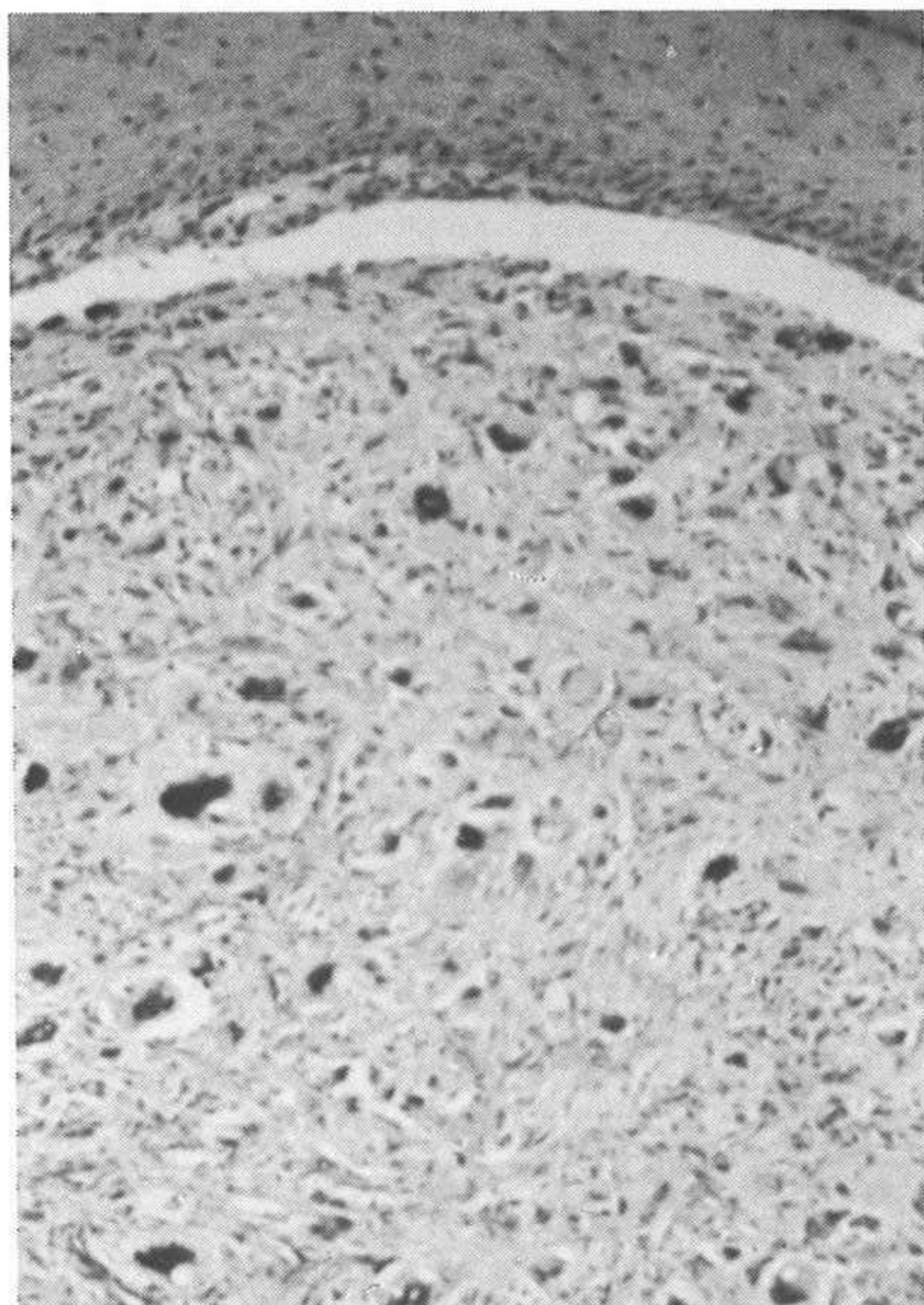


Fig.6 Benign fibrous histiocytoma showing epidermal acanthosis and basal cell epithelioma-like regressive changes of the pilosebaceous structures. H&E X225.

verocag-like bodies.¹²

Fibrous histiocytoma may show many abnormally large multinucleated giant cells (Fig. 7) or large fibroblasts with irregularly shaped and hyperchromatic nuclei (Monster cells) lying in between the collagen bundles (Fig. 8)¹³.

Dermatomyofibroma is a recently identified variant characterized by a relatively well circumscribed, plaque-like proliferation of fibroblasts and myofibroblasts. The lesion is made up of proliferation of very uniform spindle-shaped cells arranged in well defined elongated and intersecting fascicles. The elastic fibers and the cutaneous adnexae are well preserved within the lesion¹⁴. Epidermal

thickening and hyperpigmentation is present in the majority (98%) of the lesions¹⁵. The superficial basal cell epithelioma-like regressive changes of the pilosebaceous structures occur only in 2% of the lesions.^{16, 17} The elastic fibers are absent (Fig.5).

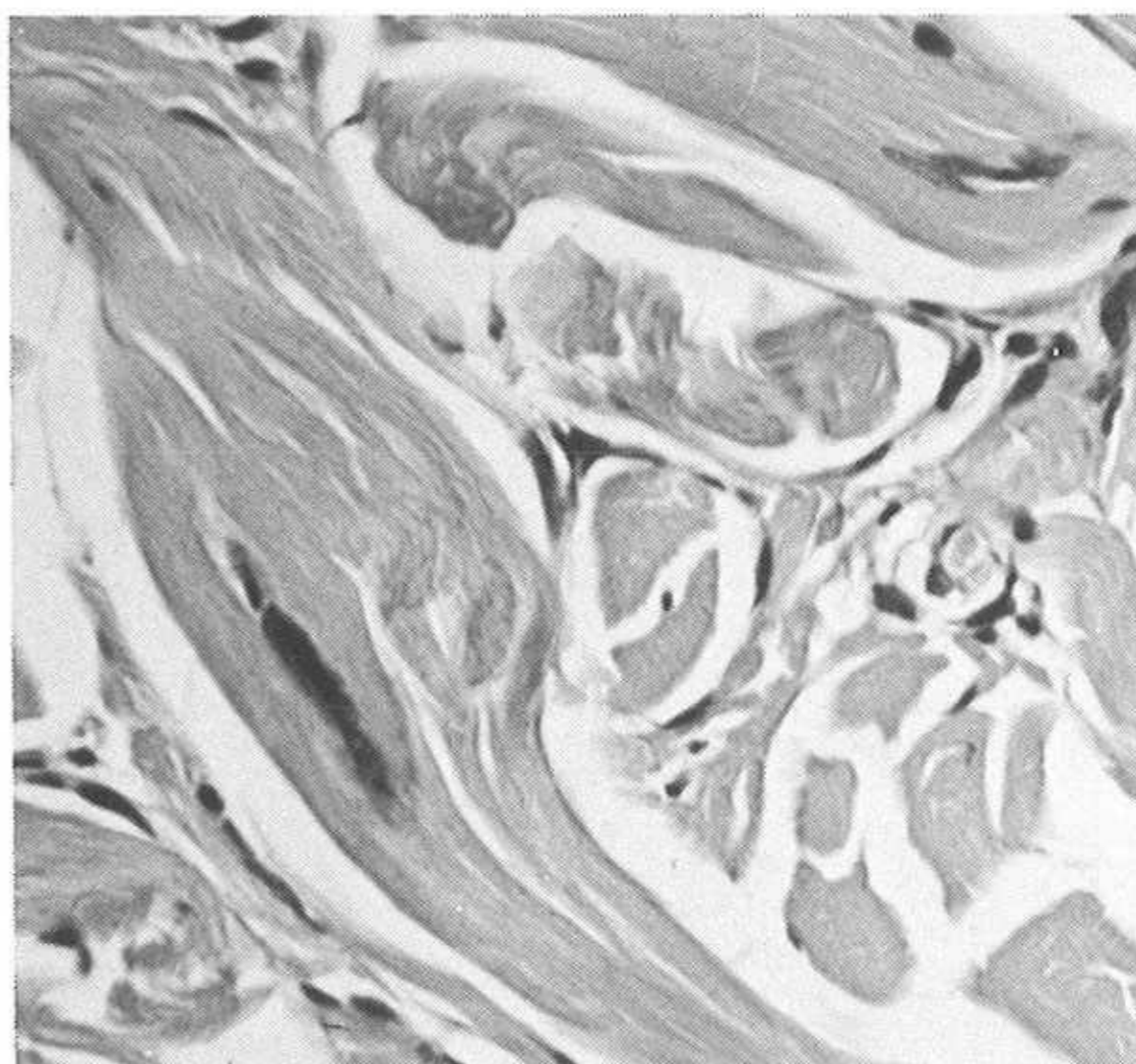


Fig.7 Benign fibrous histiocytoma with many irregularly shaped multinucleated giant cells H&E X225.

Epidermal and adnexal changes in fibrous histiocytoma. The epidermis overlying fibrous histiocytomas was normal in configuration in only ten cases. The majority (440 cases) showed various degrees of epidermal acanthosis and hyperpigmentation. The pilosebaceous structures were present in the vicinity of the lesion in 266 (60%) of the cases.

The basal layer of the epidermis was intact in 440 (98%) of the lesions. Ten lesions showed areas of basaloid cell proliferation in connection with the lower surface of the acanthotic epidermis. Rest of the basaloid cells, present in connection with the epidermis, are often surrounded by fibrous stroma from which they are separated by retraction spaces (Fig. 6). In nine cases, the nests were small and were considered to represent regressing pilosebaceous structures. In one case, there was massive basalioma cells proliferation with

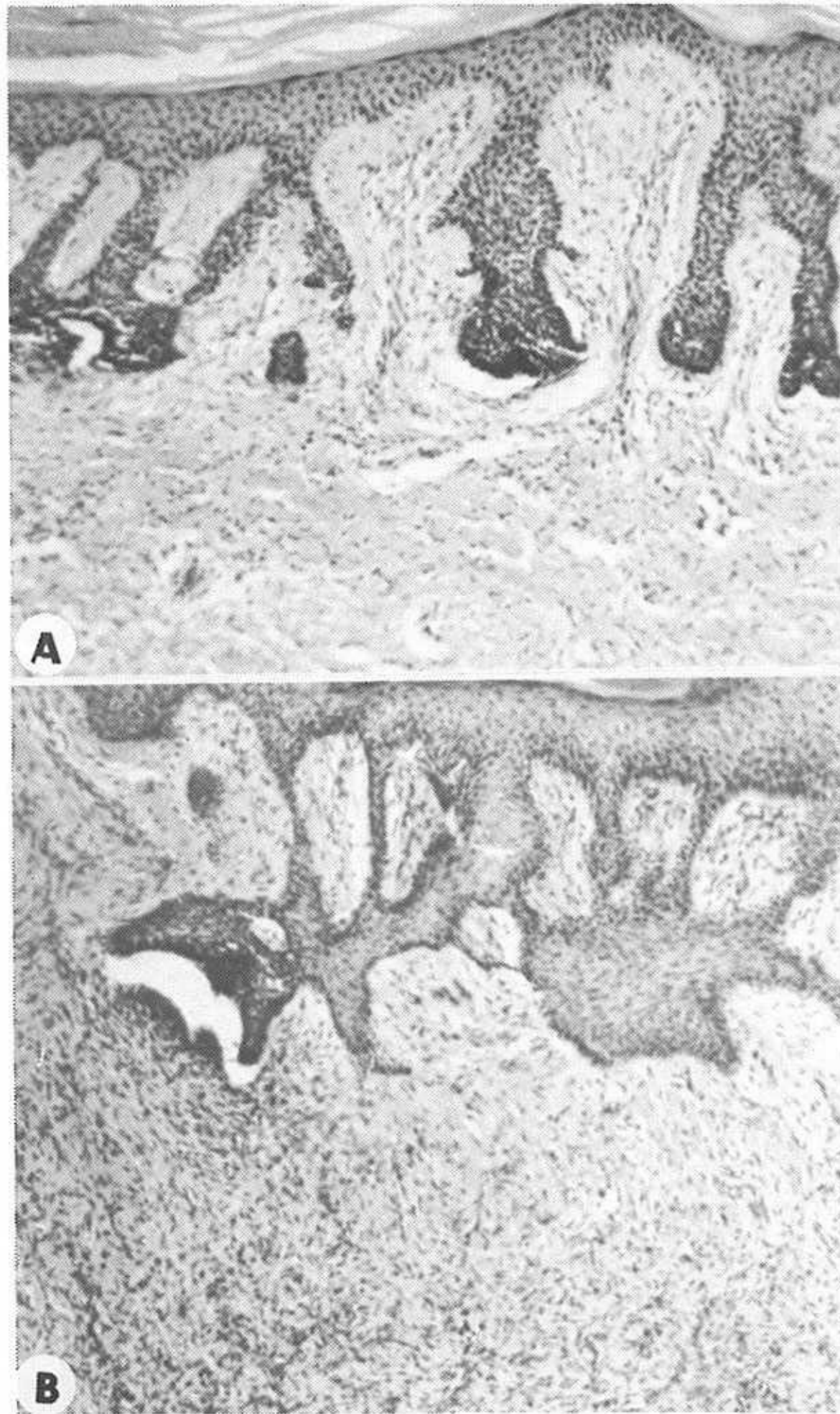


Fig.8 Benign fibrous histiocytoma with large "Monster" cells. H&E X600.

surrounding fibrous stroma suggesting the development of a basal cell epithelioma over the benign fibrous histiocytoma.

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