

Foresee Your Next Patient

Dermatofibroma

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A 35-year-old woman presented with a slow-growing, dark brown lesion on the left knee of 2 to 3 years' duration. The lesion was asymptomatic. There was no history of preceding trauma or insect bite in the area of the lesion. Her past health was unremarkable.

Physical examination revealed a firm, dark brown, dome-shaped nodule on the woman's left knee. Lateral compression of the lesion resulted in dimpling of the skin. There was slight

tenderness on pressure. The rest of the physical examination findings were normal.

Diagnosis. The woman received a clinical diagnosis of dermatofibroma.

Dermatofibroma, also known as benign fibrous histiocytoma, is a common benign dermal lesion composed primarily of fibrohistiocytic cells densely incorporated into a connective tissue matrix with thickened collagen.¹

Epidemiology and etiopathogenesis. Dermatofibroma most frequently affects young adults and, occasionally, children.^{1,2} It is the most common cutaneous neoplasm in adults.² Approximately 20% of dermatofibromas occur in individuals younger than 17 years.³ The female to male ratio is 2:1 to 4:1.^{1,4}

Dermatofibroma is a cutaneous fibrohistiocytic proliferation of unknown etiology. The clonal proliferative growth, the frequency of local recurrences of some variants, and the persistent nature of the growth suggest that the condition is neoplastic in



nature.^{1,4,5} On the other hand, in approximately 20% of cases, the condition occurs as a result of trauma such as that from ear piercing, nipple piercing, vaccination, tattooing, or insect bite.^{6,7} Thus, a reactive process also may be operative; inflammatory cells can be demonstrated in some cases.⁶

Histopathology. Histologically, the lesion is composed of interlacing fascicles of spindle cells set within a loose, collagenous stroma.^{8,9} Within this stroma, a variable admixture of fibroblasts, macrophages, and small capillaries can be found.⁸ An inflammatory, predominately lymphocytic infiltrate can sometimes be observed.⁸ Individual collagen bundles surrounded by a dense collagen matrix (“collagen trapping”) are diagnostic.^{1,8} The overlying epidermis often is hyperplastic and hyperpigmented in the basal cell layer (dirty fingernail sign).^{1,4,6} Many histologic variants have been described, namely fibrocollagenous, cellular, aneurysmal, atypical (with monster cells), subcutaneous, histiocytic, angiomatous, sclerotic, palisading, epithelioid, keloidal, polypoid, lipidized, hemosiderotic, granular cell, atrophic, myxoid, lichenoid, osteoclastic, balloon cell, and signet-ring cell dermatofibromas.^{1,4,10,11}

Clinical manifestations. Typically, a dermatofibroma presents as an asymptomatic, firm, slow-growing, red or reddish brown, dome-shaped nodule. Occasionally, the color can be dark brown or bluish black when hemosiderin is deposited within the tumor, as is illustrated in the present case. The lesion is attached to the skin but not to the underlying structure. Although the lesion can develop anywhere in the body, it most commonly is found on the extremity, particularly the lower limb.^{2,10} The size varies from a few millimeters to 3 cm, with most lesions less than 1 cm in diameter.^{2,10} Giant lesions greater than 3 cm have rarely been described.⁹ In general, dermatofibromas arising in childhood may grow larger and affect unusual locations such as the head and neck.¹² Characteristically, pinching or squeezing of the lesion results in dimpling of the lesion (dimple sign or Fitzpatrick sign).² This can be attributed to tethering of the epidermis to the underlying lesion.³ Occasionally, the lesion may be pruritic or painful.⁴

The lesions are most often solitary, but 2 to 5 lesions are present in approximately 10% of cases.¹⁰ Multiple eruptive dermatofibromas (more than 15 lesions or development of 5 or more lesions within 4 months) have been described in individuals with immunodeficiency, diabetes mellitus, ulcerative colitis, myasthenia gravis, dermatomyositis, systemic lupus erythematosus, and Sjögren syndrome.^{1,13,14}

Diagnosis. The diagnosis is usually clinical, based on physical findings. Dermoscopy shows a peripheral pigment network with a central white area.^{4,15} Excisional biopsy or referral to a dermatologist should be considered if the diagnosis is in doubt.⁴

The differential diagnosis includes melanocytic nevus, common blue nevus, keratoacanthoma, juvenile xanthogranuloma, dermatofibroma protuberans, keloid, leiomyoma, mastocytosis, pilomatricoma, melanoma, neurilemmoma, prurigo nodularis,

pigmented basal cell carcinoma, squamous cell carcinoma, Spitz nevus, and seborrheic keratosis.⁴

Prognosis and management. Rarely, the condition can be complicated by dystrophic calcification.¹⁶ Malignant transformation and metastasis have rarely been described.^{17,18}

Without treatment, the lesion tends to persist. The atypical, cellular, subcutaneous, and aneurysmal variants are notoriously more locally recurrent.^{4,11}

No treatment is necessary apart from reassurance and watchful observation, unless the lesion is symptomatic, when the diagnosis is in doubt, or if there is a cosmetic concern.^{2,9} Surgical excision including the subcutaneous fat is indicated if the tumor is large, is rapidly growing, has a deeper subcutaneous component, or has atypical features such as atrophic, exophytic, or sclerotic features.^{4,11} Surgical excision allows histologic examination of the lesion. Otherwise, therapeutic options include ablative laser surgery, shave excision, intralesional corticosteroid injection, and liquid nitrogen cryotherapy.^{2,4} ■

REFERENCES:

- Cusack CA, Loosemore M. Dermatofibroma (fibrous histiocytoma). Decision Support in Medicine. <http://www.decisionsupportinmedicine.com>. Accessed July 4, 2015.
- Alonso-Castro L, Boixeda P, Segura-Palacios JM, de Daniel-Rodríguez C, Jiménez-Gómez N, Ballester-Martínez A. Dermatofibromas treated with pulsed dye laser: clinical and dermoscopic outcomes. *J Cosmet Laser Ther*. 2012; 14(2):98-101.
- Lang KJ, Lidder S, Hofer M, Graham C, Taylor A. Rapidly evolving giant dermatofibroma. *Case Rep Med*. 2010;2010:620910. doi:10.1155/2010/620910.
- Parish LC, Yazdanian S, Lambert WC, Lambert PC. Dermatofibroma: a curious tumor. *Skinmed*. 2012;10(5):268-270.
- Vanni R, Fletcher CDM, Sciort R, et al. Cytogenetic evidence of clonality in cutaneous benign fibrous histiocytomas: a report of the CHAMP Study Group. *Histopathology*. 2000;37(3):213-217.
- Bittencourt MdJS, Miranda MFRd, Parijós AMd, Mesquita LB, Fonseca Dmd, Jambo DAA. Dermatofibroma in a black tattoo: report of a case. *An Bras Dermatol*. 2013;88(4):614-616.
- Lobato-Berezo A, Churrua-Grijelmo M, Martínez-Pérez M, et al. Dermatofibroma arising within a black tattoo. *Case Rep Dermatol Med*. 2014;2014:745304. doi:10.1155/2014/745304.
- Alves JVP, Matos DM, Barreiros HF, Bártolo EAF. Variants of dermatofibroma—a histopathological study. *An Bras Dermatol*. 2014;89(3):472-477.
- Goldstein BG, Goldstein AO. Overview of benign lesions of the skin. UpToDate. <http://www.uptodate.com/contents/overview-of-benign-lesions-of-the-skin>. Updated November 11, 2015. Accessed May 11, 2016.
- Han TY, Chang HS, Lee JHK, Lee W-M, Son S-J. A clinical and histopathological study of 122 cases of dermatofibroma (benign fibrous histiocytoma). *Ann Dermatol*. 2011;23(2):185-192.
- Kim HJ, Kim I-H. A 3-mm margin completely removes dermatofibromas: a study of 151 cases. *Dermatol Surg*. 2015;41(2):283-296.
- Sampaio FMS, Gualberto GV, Cerqueira FGMD, Cerqueira AMMD, Treu CM, Vargas TJD. Case for diagnosis. *An Bras Dermatol*. 2014;89(3):519-520.
- Ammirati CT, Mann C, Hornstra IK. Multiple eruptive dermatofibromas in three men with HIV infection. *Dermatology*. 1997;195(4):344-348.
- Zaccaria E, Rebora A, Rongioletti F. Multiple eruptive dermatofibromas and immunosuppression: report of two cases and review of the literature. *Int J Dermatol*. 2008;47(7):723-727.
- Zaballos P, Puig S, Llambrich A, Malvehy J. Dermoscopy of dermatofibromas: a prospective morphological study of 412 cases. *Arch Dermatol*. 2008;144(1):75-83.
- Famenini S, Cassarino DS. Dermatofibroma-associated dystrophic calcification. *J Cutan Pathol*. 2014;41(1):68-70.
- Gu M, Sohn K, Kim D, Kim B. Metastasizing dermatofibroma in lung. *Ann Diagn Pathol*. 2007;11(1):64-67.
- Mentzel T, Wiesner T, Cerroni L, et al. Malignant dermatofibroma: clinicopathological, immunohistochemical, and molecular analysis of seven cases. *Mod Pathol*. 2013;26(2):256-267.