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Dermoscopic findings of hemosiderotic dermatofibroma: A comprehensive review

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Abstract
Dermatofibroma (DF) is a very common benign skin tumor composed of fibroblasts, histiocytes, capillaries and collagen with multiple clinical presentations and histological variants [1]. DF usually affects female patients at any age between 10 and 75 years old [2-4]. Most of the time it presents as a single, firm papular lesion with a slightly keratotic surface, sometimes brown pigmented or skin tone, and frequently present in the inferior extremities. Almost 6% of all dermatofibromas are associated with trauma [2, 5].
Diagnosis is clinical and dermatoscopic patterns have been described as diagnostic tools. The most common presentation seen in 30-60% of all DF is a central scar-like patch with a peripheral reticular network [2, 3, 5, 6]. Nevertheless, atypical patterns simulating melanomas, vascular tumors or basal cell carcinomas have been described in another variants of DF such as hemosiderotic dermatofibroma [2, 3].

Keywords: Hemosiderotic, dermatofibroma, multicomponent, pattern

Introduction
Dermatofibroma (DF) is a very common benign skin tumor composed of fibroblasts, histiocytes, capillaries and collagen with multiple clinical presentations and histological variants [1]. DF usually affects female patients at any age between 10 and 75 years old [2-4]. Most of the time it presents as a single, firm papular lesion with a slightly keratotic surface, sometimes brown pigmented or skin tone, and frequently present in the inferior extremities. Almost 6% of all dermatofibromas are associated with trauma [2, 5].
Diagnosis is clinical and dermatoscopic patterns have been described as diagnostic tools. The most common presentation seen in 30-60% of all DF is a central scar-like patch with a peripheral reticular network [2, 3, 5, 6]. Nevertheless, atypical patterns simulating melanomas, vascular tumors or basal cell carcinomas have been described in another variants of DF such as hemosiderotic dermatofibroma [2, 3].

Dermoscopic characteristics
Hemosiderotic DF was first described by Diss in 1938 [7]. It is a rare clinical presentation that represents 2% to 5.7% of the overall DF [6, 8–10]. It is often seen in extremities as a single or multiple, firm, papular tumor with a smooth surface and homogeneously pigmented areas varying from light to dark brown, red-bluish or green-yellowish color. (Figure 1) The dimple sign not always is present as the examiner performs lateral pressure to the lesion [2, 7, 11]. Histologically, the hemosiderotic DF is compose of capillaries, extravasated erythrocytes, hemosiderin deposits inside the histiocytes and accumulation of extracellular hemosiderin [9, 12]. The mechanisms of extravasations is unknown; trauma and a decrease in the quantity of the stroma's reticulin in cellular rich areas are considered trigger factors for micro hemorrhages [1, 7, 10]. Many authors consider the hemosiderotic DF as an early stage in the development of an aneurismatic DF [1, 7, 13]. It has been proposed that the formation of cavities in the aneurismatic DF is due to a constant erythrocyte extravasation, which put pressure inside the stroma creating cavities lacking of endothelial tissue a characteristic of the aneurismatic DF [7, 9, 10]. The diagnosis of this variety is hardly clinical. Because hemosiderotic DF's dermatoscopy has atypical patterns that make them indistinguishable from malignant melanocytic lesions (melanoma as the main differential diagnosis),

literature reports diagnosis of this entity achieved by biopsy [10, 12, 14-18] (Table 1). Cases with dermatoscopic description and histological confirmation were obtained from these studies, eliminating duplicate data in literature [1, 16] (Table 2). Eleven cases were obtained, of whom 6 were female and 5 males with an age range between 12-85 years; the most frequent localization were lower extremities (36.3%), next to trunk and upper extremities (27.2% both), and only 1 case affecting the head. Morphologically, most of them were presented as papular neoformations with different diameter sizes ranging from 3mm up to 1cm, violet bluish pigmentation and variable development, the shortest development time was 11 months and the longest one 5 years. Only 3 cases presented the dimple sign and in 4 cases progressive lesion growth was observed.

The most common dermatoscopic characteristics were violet red homogenous areas, white linear structures and delicate peripheral pigment network. Colors within the lesions were histologically related to erythrocyte extravasation as well as intra and extracellular hemosiderotic deposits; other pigments reported: blue-gray, blue-yellow and yellowish green, the later probably due to the degraded hemoglobin to biliverdin and hemosiderin by the histiocytes [16]. Although the white linear structures predominated in the center of the tumor, they were also observed, in less number, at the periphery. Very few DF presented vascular structures, the ones who did had dot vessels and comma like vessels; other findings were white superficial scale [6].

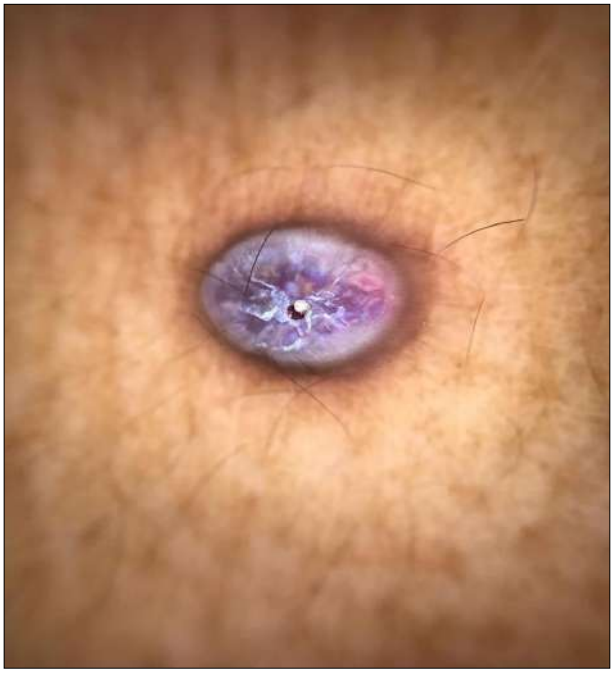

Fig 1: Papular tumor with a smooth surface and homogeneously pigmented areas varying from light to dark brown, and red-bluish color

Table 1: Studies reporting HDF

Author	Publication year	Country	Number of HDF reported	Clinical diagnosis	Dermoscopy description	Histologic confirmation
Saga [11]	1981	Japan	1	NS	No	Yes
Requena *et al.* [7]	1990	Spain	1	Circumscribed angiokeratoma	No	Yes
Blum *et al.* [14]	2004	Germany	1	Melanoma	Yes	Yes
Zaballos *et al.* [1]	2006	Spain	4	NS	Yes	Yes
Cardoso *et al.* [15]	2007	Portugal	1	Melanoma	Yes	Yes
Kilinc *et al.* [8]	2007	Turkey	3	NS	Yes*	Yes
Scalvenzi *et al.* [19]	2007	Italy	1	NS	Yes	Yes
Alves *et al.* [9]	2014	Portugal	11	NS	No	Yes
Roldán-Marin *et al.* [16]	2014	Spain	2	Melanoma	Yes	Yes
Laureano *et al.* [12]	2015	Portugal	1	Melanoma	Yes	Yes
Kelati *et al.* [6]	2017	Morocco	4	NS	Yes*	Yes
Villareal *et al.* [10]	2017	Brazil	1	Melanoma	Yes	Yes
Acar *et al.* [17]	2018	Turkey	1	Melanoma	Yes	Yes
Genc *et al.* [20]	2020	Turkey	1	NS	Yes*	Yes
Lagziel *et al.* [18]	2020	USA	1	Melanoma	No	Yes

*No information of each lesion. NS: Not specified

Table 2: Dermoscopy findings of each HDF reported

Case	Age (years)	Sex	Topography	Morphology	Evolution	Previous trauma	Symptoms	Dermoscopy	Ref
1	27	M	Right shoulder	Exophytic tumor, 9 mm, rough surface	4-5 years	NS	NS	Asymmetric blue-grayish areas, white strikes, pigment network	[14]

2	74	F	Left arm	Round, smooth, firm, blue nodule, 6 mm, dimple sign present	2 years	No	Asymptomatic	Blue-yellowish pattern with central scale, surrounded by yellowish homogeneous area	[1]
3	28	F	Back	Round, smooth, firm, bluish papule, 3 mm, dimple sign present	2 years	No	Pain	Blue-violaceous homogenous, white central line, delicate light-brown pigment network and few dotted vessels at periphery	[1]
4	25	M	Left tigh	Round, smooth, firm, red-violaceous papule, 9 mm, firm, violet red, dimple sign present	2 years	No	Asymptomatic	Blue-violaceous homogeneous area, central white linear structures, delicate pigment network at periphery, isolated comma and dotted vessels in the upper and lower parts	[1]
5	59	M	Right temple	Round, firm, reddish papule, 5 mm	1 year	No	Asymptomatic	Red-bluish homogeneous area with white linear structures	[1]
6	50	F	Left leg	Firm, central hyperpigmented, erythematous-violaceous nodular lesion, 9 mm, dimple sign present	3 years	No	Asymptomatic	Central brown-gray pigmentation with delicate blue-whitish veil, few black dots and dark-brown irregular streaks in the upper side, semicircular scar-like area in the right side, fine and regular pigmented network at periphery	[15]
7	38	M	Abdomen	Blue-violaceous nodular lesion, 1 cm	7 years	No	Asymptomatic	Red homogeneous area, delicate peripheral pigment network, blue-whitish veil with white strikes and superficial scale.	[19]
8	43	F	Right forearm	Erythematous-violaceous nodular lesion	15 years (recurrent)	Yes	NS	Central homogenous erythematous area with central whitish strikes, homogenous green area at periphery	[16]
9	85	F	Right leg	Black macule, 8 mm, irregular borders	3 years	No	Asymptomatic	Central red-bluish homogeneous area, chrysalis, irregular dark brown blotches, atypical peripheral brown pigment network	[12]
10	36	F	Right breast	Blue-gray hard plaque with hypochromic halo	11 months	NS	Asymptomatic	Blue-gray homogenous area	[10]
11	12	M	Right knee	Dark brown nodule, 1 x 1 cm, with 2 small nodular lesions at periphery	1 year	NS	Asymptomatic	Focal blue-red area on a white structureless background and pink-red area at periphery surrounded by brown pigment	[17]

M: male, F: female, NS: Not specified

Conclusion

Even though this characteristics can be useful for the diagnosis of hemosiderotic DF, a global multicomponent pattern is the overall view; a pigment network distinguishes a melanocytic lesion but can too be seen in this entity; whitish regression structures and atypical vascular components like dotted and comma-like vessels make us think of multiple differential diagnosis before the certain diagnosis solely by dermatoscopy. Ferrari *et al*. associated the dermatofibroma atypical pattern with the melanoma-like DF and hemosiderotic DF [3]. Consequently, in cases in which there's no accuracy to rule out the presence of a melanocytic lesion, the performance of a biopsy to confirm the diagnosis is recommended.

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