CASE REPORT

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Correlations between clinics, dermoscopy and histopathology in a female with two dermatofibromas – a case report

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Abstract

Dermatofibromas are benign fibrohistiocytic tumors that involve the dermis. They have often a polymorphous clinical aspect, being frequently confused with other lesions varying from vascular tumors to melanoma. An important tool in diagnosis is represented by dermoscopy, which facilitates the recognition of dermatofibromas' characteristic structures such as central white patch and peripheral pigment network. Although dermatofibromas are often solitary lesions, we report the case of a woman who presented two fibrohistiocytary masses, involving the calf and the thigh, the last one with an atypical aspect leading to the confusion with a malignant tumor. Furthermore, the lesions were different at both dermoscopic and histopathological examinations, needing a second histopathological opinion. The aim of our study is to emphasize the role of histopathology, which represents the diagnostic golden standard in suspicious cases and the possible connections between dermatoscopy and histology. Sometimes, even histopathology may be very difficult, needing repeated sections and even special stains.

Keywords: dermatofibroma, dermoscopy, fibrous malignant histiocytoma, white central area, peripheral pigment network.

Introduction

Dermatofibromas (DF) are lesions frequently encountered in the dermatological practice. They represent fibrohistiocytic masses with an unknown etiology. Although they are associated with traumatic insult to the skin, the exact cause of DF is still unknown. Whether DF is a true neoplasm or a reactive process induced by mechanical stimuli remains unclear [1]. They present as firm, hyperchromatic and asymptomatic proliferations measuring less than 1 cm. Frequent solitary, they are more often found in young women and in the lower limbs. The particularity of our case is represented by the presence of two lesions, with different locations, in the calf respectively in the thigh.

Their color varies from red, dark brown to pink in case of fair complexion patients [2]. An important clinical sign of these tumors is represented by the appearance of a hollow or a dimple, which is visible when the mass is compressed [3]. However, the presence of the dimple sign does not always assure the lesion is dermatofibroma [4]. Another diagnostic tag is the fact that this fibrous tumor is considered one of the most common painful skin tumors [5]. The occurrence on the shoulder has a high incidence of sebaceous induction with seborrheic keratosis-like epidermal hyperplasia, and a fibrocollagenous or sclerotic pattern [6]. There are also reported in the literature cases of multiple clustered dermatofibroma (MCDF) [7]. The differential diagnosis encompasses a large variety of disorders; atypical fibroxanthoma, atypical mole, basal cell carcinoma, blue nevi, cutaneous manifestations of HIV (human immunodeficiency virus), cutaneous T-cell lymphoma, cylindroma, dermatofibrosarcoma protuberans, epithelioid sarcoma, keloid and hypertrophic scar, keratoacanthoma, leiomyoma, malignant melanoma, metastatic carcinoma of the skin, neurilemmoma, nevi, melanocytic spiradenoma, squamous cell carcinoma, etc. An intermediate step in diagnosis is represented by dermoscopy, which is a non-invasive *in vivo* imagistic technique. Dermatoscopy may be useful in supporting the clinical impression and it increases the clinical diagnosis accuracy in the detection of the malignant skin lesions [8, 9]. Dermoscopy identifies the high-risk malignant lesions (melanoma or basal carcinoma) and allows their differentiation from a large scale of lesions, varying from the very similar benign tumors to malignancies. The first lesion of our patient had a classical dermatoscopic aspect but the second showed a Kaposi-like appearance. The final step is represented by the histopathological report, which in the case of dermatofibromas reveals an overlying epidermis that is usually acanthotic and may show basal hyperpigmentation. The tumor is centered in the mid dermis, presents no capsule and blends peripherally with the surrounding tissue. Spindle cell proliferation forms

whorling fascicles with characteristic excessive collagen deposition [1]. The histopatology of the lesions in our case was also different, classical in the case of the first dermatofibroma and noncapsulated fascicles in a storiform pattern including siderophages in the second case.

Case presentation

We present the case of a 30-year-old woman that asked for a dermatological consult in order to remove two clinical distinct lesions – one in the calf and the other in the thigh. One mass was asymptomatic and the other presented a discrete sensitivity to light touch. The tumors appeared distinctively and successively four years ago. The first lesion had a relatively typical aspect of dermatofibroma. The second mass presented clinically as a 9 mm inflammatory tumor suggesting an inflammed vascular or melanocytic mass. The patient denied trauma, possible injections or insect bites (Figures 1 and 2).

The dermoscopy revealed central white patch, central scales, atypical pigment network in the north-west quadrant and polymorphous atypical vessels (linear irregular vessels, dotted vessels) and a pinky-milk zone in the same area. It was recommended surgical biopsy followed by histopathology. The excision and skin suture were sufficient. This was in consonance with the majority of the cases presented in the literature, confirming that it is the only needed treatment, provided that the resection margins are free of tumor. We remarked a slower healing, possible due to lesion location on an area known to have a problematic healing. The excision did not suppose defect covering by any grafts or flaps; direct suture was possible due to tumor small sizes (Figures 3 and 4).

The histopathological (HP) report emphasized that the typical mass was dermatofibroma while the atypical lesion was qualified both clinically and dermoscopically as a Kaposi-like vascular lesion. The histopathological examination revealed in the case of the first lesion the presence of a vascular proliferation located in the profound dermis. The spindle-like cells neighbored vascular slots. The tumor was not capsulated and was relatively well delimited by collagen tissue (Figures 5 and 6).

In the second lesion, we encountered numerous fibroblasts and vascular slots in a rich collagen stroma, located in the superficial and deep dermis – suggesting Kaposi-like lesions. For diagnostic reasons, we considered a second opinion. The second HP exam revealed in the case of the first lesion a dermal tumor proliferation with spindle cells in a storiform pattern – a dermatofibroma aspect. In the case of the second lesion, we identified in the dermis non-capsulated fascicles composed of spindle cells, disposed in a storiform pattern, that delimited in certain places pseudovascular spaces that contained siderophages (highlighted by Pearls stain) – benign fibrous hemosiderotic histiocytoma, which represented a dermatofibroma variant (Figures 7 and 8).

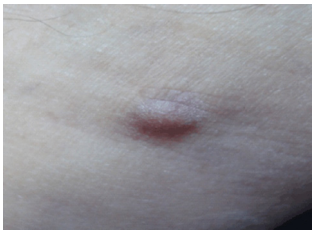

Figure 1 – ***Clinical image of the first dermatofibroma.***

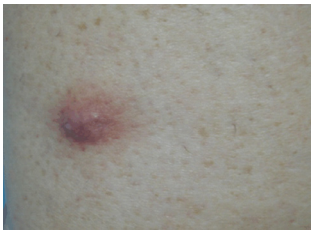

Figure 2 – ***Clinical image of the second dermatofibroma.***

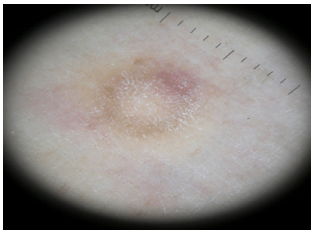

Figure 3 – ***Dermoscopy showed classical signs in the case of the first dermatofibroma – central white patch and peripheral pigment network.***

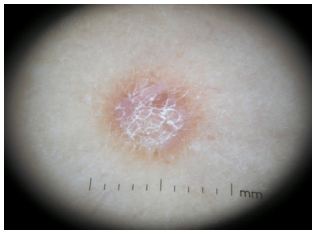

Figure 4 – ***Dermatoscopy of the second dermatofibroma showed numerous fibroblasts and vascular slots in a rich collagen stroma, located in the superficial and deep dermis – suggesting Kaposi-like lesions.***

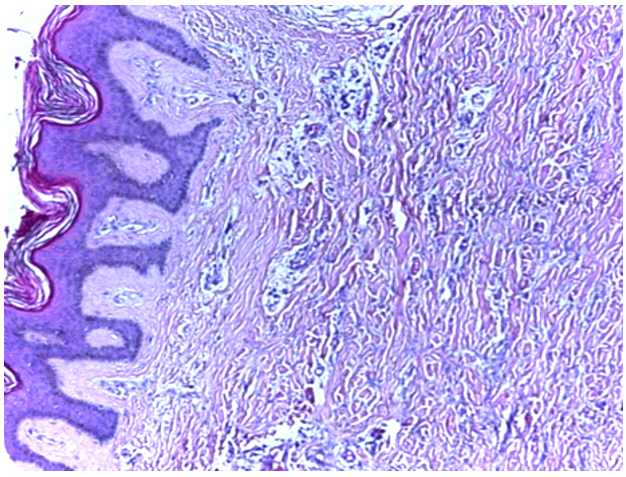

Figure 5 – ***The histology of the first dermatofibroma showed dermal tumor proliferation with spindle cells in a storiform pattern: dermatofibroma aspect. Hematoxylin–Eosin staining, ×60.***

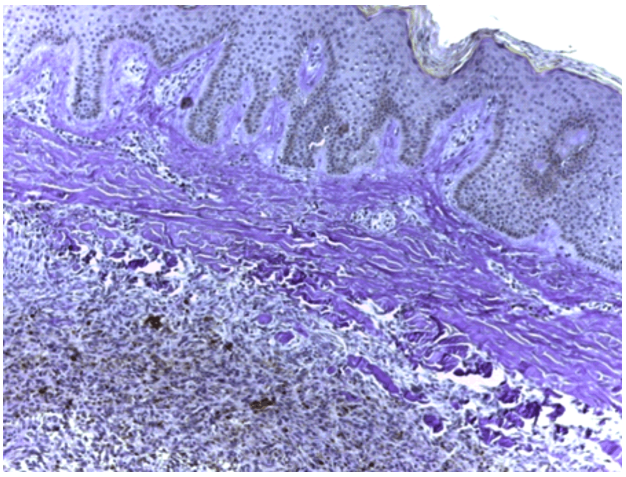

Figure 6 – ***The histology of the first dermatofibroma showed hyperkeratosis and acanthosis. Van Gieson staining, ×100.***

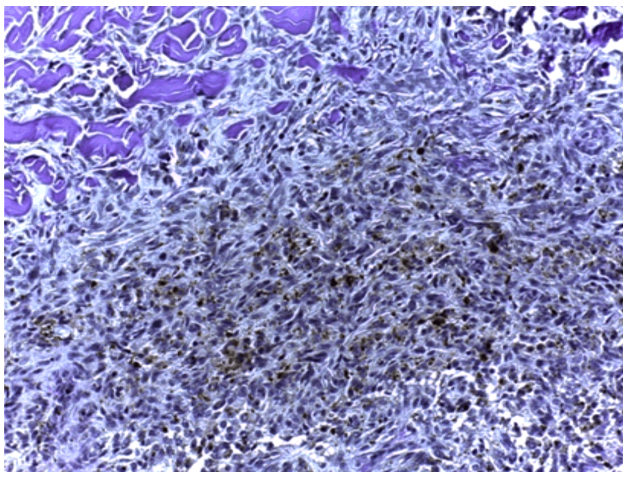

Figure 7 – ***Histopathological aspect of the second dermatofibroma dermis showed noncapsulated fascicles composed of spindle cells, disposed in a storiform pattern, that delimited in certain places pseudovascular spaces that contained siderophages. Van Gieson staining, ×200.***

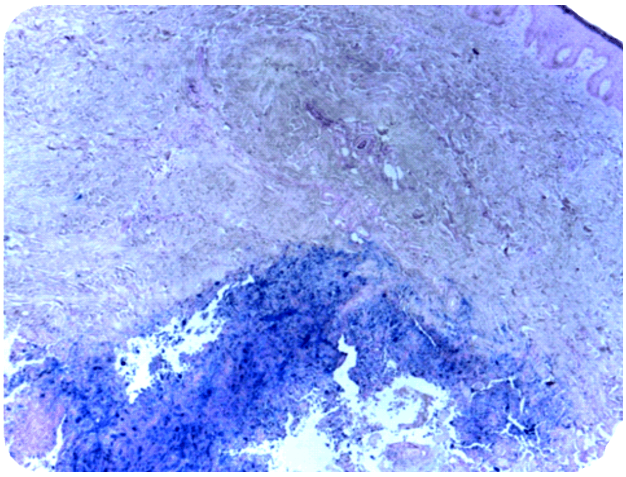

Figure 8 – ***Histopathology of the second dermatofibroma: highlighting of the siderophages by Pearls staining (×60).***

We compared the results of both investigations, dermatoscopic and histopathological, to see their possible connections (Table 1).

Table 1 – ***Correlations between dermatoscopic and histopathological examinations***

No.	Dermoscopy	Histopathology
1.	Central scales	Hyperorthokeratosis and acanthosis
2.	Polymorphous atypical vessels, linear irregular vessels, dotted vessels	Pseudovascular spaces that contain siderophages (Pearls stain)
3.	Pinky-milk areas	Little lymphocytic infiltrates and rare red blood cells

It is the first observation from the literature regarding these possible connections but needs to be confirmed by further serial studies.

Discussion

Dermatofibromas, one of the most common skin tumors, present often as small lesions, raised or flat in young or middle age persons. Women are prevalent. The tumors are centered on the dermis, rarely invading the subcutaneous plane [10]. Although generally solitary, in 10% of the patients appear 2–5 lesions [11]. Located frequently in trunk or limbs, they are often small sized (less than 1 cm), allowing their easy removal without complicated closure procedures. In our case, the patient presented two clinical different lesions, which is a rare situation. One of our patient's dermatofibroma presented typical features such as pinky-milk areas and peripheral pigment network at dermoscopy [12], while the atypical lesion was qualified both clinically and dermoscopically as a Kaposi-like vascular lesion. In atypical cases, dermoscopy can increase the diagnostic accuracy, being the step between clinics and HP exam [13].

After the excision, as one lesion had the classical aspect of dermatofibroma and the second appeared as a vascular tumor associated with inflammatory signs, we needed a second opinion. We must emphasize that complete excision, including the subcutaneous fat, is the ideal procedure especially if there is any diagnostic uncertainty, as it was in our specific case or when one of the aggressive subtypes is suspected. An inverted pyramidal biopsy technique may allow for an aesthetically pleasing result, while still providing adequate tissue for histological findings [14]. Superficially, shaving the lesion or cryosurgery can be attempted for cosmesis or to decrease the symptoms; however, recurrences are more likely. Prasad reported the removal of dermatofibromas by an innovative technique – targeted cryotherapy using disposable biopsy punches [15].

Carbon dioxide laser treatment of multiple facial dermatofibroma has also been reported [16]. More recently, pulsed-dye laser has been used with success [17]. Due to the clinical confusing aspects, we treated the lesions classically, by excision in the subcutaneous plane.

Generally, the tumors that appear simultaneously in the same patient tend to have similar histological aspects [18]. In our case, the patient presented two clinical different lesions, which is a rare situation. One lesion had the classical aspect of dermatofibroma but the second appeared as a vascular tumor associated with inflammatory signs imposing the need of a second opinion. The histopathological aspects were also different, needing a second confirming histological examination. The second HP exam revealed, in the case of the first lesion, a dermal tumor proliferation with spindle cells in a storiform pattern – a dermatofibroma aspect. In the case of the second lesion, we identified in the dermis noncapsulated fascicles composed of spindle cells, disposed in a storiform pattern, that delimited in certain places pseudovascular spaces that contained siderophages (highlighted by Pearls stain) – benign fibrous hemosiderotic histiocytoma, which represented a dermatofibroma variant.

Conclusions

The article emphasizes the importance of a good dermatoscopy and a good highlighting of the correlations between the dermatoscopy and histopathology, especially in the atypical cases. In clinical atypical cases and rare subtypes, when a dermatofibroma can simulate atypical nevi, melanomas or other tumors, dermoscopy is imposed,

increasing diagnosis accuracy and allowing the exclusion of malignant tumors. The presented case was also interesting due to the presence of two distinct forms of dermatofibroma. Usually, the pathological forms that appear in the same patient are similar. One mass was a typical dermatofibroma while the other had a hemosiderotic aspect, which is a more rare morphopathological entity, highlighted by Pearls stain, otherwise leading to confusions with vascular tumors or malignancies.

Conflict of interests

The authors declare that they have no conflict of interests.

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