



A Rare Case of Transient Friction Melanosis of the Finger: A Case Report

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Friction melanosis (FM) is an acquired pigmented disease that is caused by recurrent mechanical stress. There is no previous report explaining the presence of tiny brown-colored particles confined to the corneal layer. We describe a case of a rare form of FM of the finger that showed a relatively transient clinical course. A 17-year-old Korean female presented with a 5-month history of an asymptomatic localized hyperpigmented patch on the tip of the right index finger. The dermoscopic examination revealed homogenous globular pattern, which favored pigmentation over hemorrhage. Histopathologically, hyperkeratosis and acanthosis with lymphohistiocytic infiltration of the superficial dermis were noted on hematoxylin and eosin staining; however, there was neither a definite increase in melanophages in the upper dermis nor melanocytic proliferation in the basal layer. Per high-power field, multiple brown-colored tiny particles were scattered in the corneal layer. The particles were not dyed by Fontana-Masson stain, iron stain, and S-100. We questioned the patient about the presence of irritation and found that she had bought new shoes at the time of the onset. She was habituated to placing her fingers in her shoes while wearing them because they were slightly tight. The lesion disappeared spontaneously a week after the cause of friction was eliminated. Altogether, we encountered a rare form of FM that occurred in a rare location with a transient clinical course. Further cases on pigmentation restricted to finger tips might reveal the origin of the particles.

Keywords: Friction, Hyperpigmentation, Melanosis, Pigmentation

INTRODUCTION

Friction melanosis (FM) is an acquired pigmented disease that is caused by recurrent mechanical stress¹. Lesions are often asymptomatic but may be itchy at times. Usage of scrub pad during the shower is known to be a major risk factor. Hence, FM seems to be more common in Asian countries, including Iraq, Jordan, Japan, and India. The most common sites of lesion are the clavicle, shin, and upper portion of the back². Here, we report a case of transient FM that affected the finger.

CASE REPORT

A 17-year-old Korean female with no specific previous medical history presented with a 5-month history of an asymptomatic

localized hyperpigmented patch on the tip of the right index finger (Fig. 1A). She denied any history of trauma, irritation, or unusual contact to chemicals. We performed dermoscopic examination and skin biopsy. The dermoscopic finding favored pigmentation over hemorrhage (Fig. 1B). Hyperkeratosis and acanthosis with lymphohistiocytic infiltration of the superficial dermis were noted on hematoxylin and eosin (H&E) stain; however, there was neither a definite increase in melanophages in the upper dermis nor melanocytic proliferation in the basal layer (Fig. 2A). Per high-power field, multiple brown-colored tiny particles were scattered in the corneal layer (Fig. 2B, C). Fontana-Masson stain and S-100 were performed subsequently, and we found no remarkable increase in the number of melanocytes or deposition of melanophages in the epidermis and dermis. However, the brown-colored particles confined to the



corneal layer were still found in the Fontana-Masson as in the H&E stain (Fig. 2D). Additionally, no remarkable finding was noted in specimens using the iron stain.

We hypothesized that mechanical irritation preceded the pigmentation, considering the presence of inflammatory cell infiltration and acanthotic epidermis. Therefore, we questioned the patient about the presence of irritation and found that she had bought new shoes at the time of the onset. She was habituated to placing her fingers in her shoes while wearing them

because they were slightly tight (Fig. 3). The lesion disappeared spontaneously a week after the cause of friction was eliminated. We received the patient's consent form about publishing all photographic materials.

DISCUSSION

FM is characterized by localized pigmentation at the site exposed to recurrent mechanical stress. In the literature, many

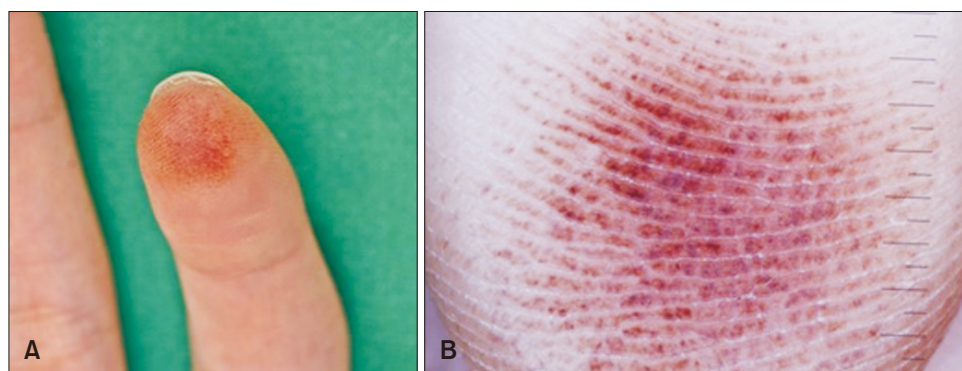


Fig. 1. (A) Asymptomatic localized hyperpigmented patch on the tip of the right index finger. (B) Homogeneous globular pattern noted on dermoscopy.

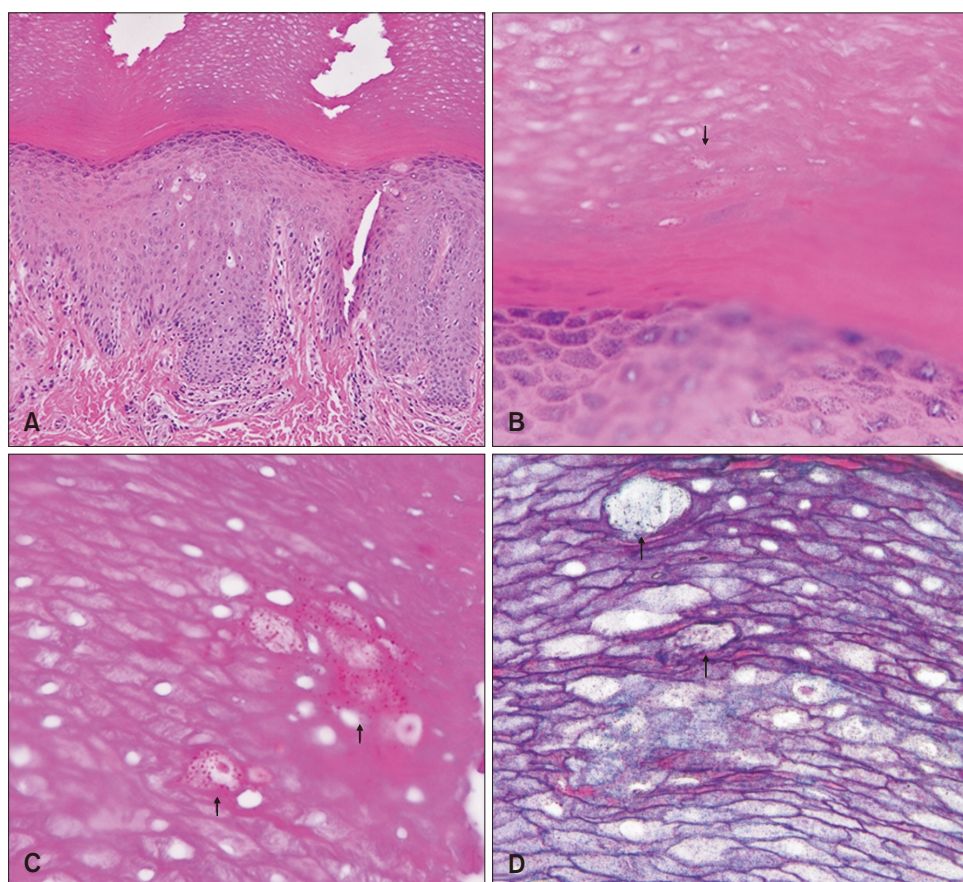


Fig. 2. (A) Hyperkeratosis, acanthosis, and mild perivascular lymphohistiocytic infiltration seen (H&E, $\times 100$). (B) Tiny brown-pigmented particles present at lower level of corneal layer (H&E, $\times 400$). (C) At mid-level of corneal layer (H&E, $\times 400$). (D) The brown-colored particles confined to the corneal layer were still found in the Fontana-Masson stain ($\times 400$). Tiny brown-pigmented particles were marked in the arrows.



Fig. 3. The patient had a habit of using her index finger while wearing a shoe.

different terms have been used to describe FM, including friction amyloidosis, macular amyloidosis, and towel melanosis. Ghodsi et al.³ used the term 'diffuse pigmentation of back and arms' as an entity different from macular amyloidosis because only 20% of the 45 cases had a pathologic finding of amyloid deposition. The remaining 80% of cases had non-specific findings, including melanin deposition in the upper dermis, mild papillary edema, and occasionally periarterial infiltration by lymphocytes and histiocytes. Most cases showed diffuse pigmentation on the back and arm in this study. Sharquie and Al-Dorky² revealed that the most frequent site of FM in Jordan were clavicles (71.8%), shins (36.6%), and upper back (32.4%). Hayakawa et al.⁴ reported a review of previous reports of FM and found that shoulder, back, and nape of the neck were common regions of pigmentation. Both reports suggested that the pigmentation was associated with washing agents, such as nylon towel and "lifa."

Our case showed unique features compared to those in the previous reports. Clinically, FM seems to be a relatively chronic disorder that is difficult to treat. Various treatment modalities have been used including Q-switched lasers, dermabrasion, and cryosurgery. Further, a recent report suggested that chemical peeling could be helpful⁵. In contrast, immediate recovery was observed after the irritant had been removed in this case. Further, the region of pigmentation was a finger in our case. The lesion was associated with frequent friction while wearing a shoe, rather than usage of washing agents. It is implied that

the site and aggravating factors might vary in different ethnic groups or countries. Hence, it would be important to know the patients' habits and lifestyle for the accurate diagnosis of FM. The histopathologic examination showed no sign of dermal melanosis or increased basal pigmentation. There was no definite deposit of amyloid in the papillary dermis. In our knowledge, the pigmentation in FM patients is the result of dermal melanosis, and there is no previous report explaining the presence of tiny brown-colored particles confined to the corneal layer as in this case^{2,4,6}. We suggest that the pathologic finding of FM might be variable. In most cases, a sign of dermal melanosis could be found, but might not be the diagnostic feature. We believe that the tiny particles might cause pigmentation and be associated with the melanocyte-keratinocyte interaction. Moreover, this case may be the first report concerning friction epidermal melanosis, a unique entity from friction dermal melanosis. The fact that the particles were only limited to the corneal layer might explain why the lesion was transient. Although we could not find the exact identity of the particles, this case suggested that transient forms of FM might exist, and an unknown mechanism of skin pigmentation could be demonstrated in the future.

Clinically, subcorneal hematoma should be important differential diagnosis, which occurs at palms and sole after intense physical activity or trauma. Dermoscopic findings in subcorneal hematoma could share some features of melanocytic lesion. According to one study, homogenous pattern, parallel-ridge pattern and globular pattern are frequently observed in cases of subcorneal hematoma, which are also common findings in melanocytic lesion⁷. However, globular pattern is usually seen at peripheral area of the lesion as satellite form. In the dermoscopy of this case, homogenous globules are seen throughout the whole lesion. Therefore, we regard it as melanocytic lesion rather than hemorrhage.

In summary, we encountered a case of a rare form of FM that occurred in a rare location with a transient clinical course. Further case studies on pigmentation restricted to finger tips might reveal the origin of the particles.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

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