

Parallel-ridge pattern on dermatoscopy: observation in a case of purpura traumatica pedis

Luca Feci¹, Michele Fimiani¹, Pietro Rubegni¹

¹ Dermatology Section, Department of Clinical Medicine and Immunological Sciences, Siena University, Italy

Key words: purpura traumatica pedis, dermatoscopy, parallel-ridge pattern, acral melanoma

Citation: Feci L, Fimiani M, Rubegni P. Parallel-ridge pattern on dermatoscopy: observation in a case of purpura traumatica pedis. *Dermatol Pract Concept* 2015;5(4):7. doi: 10.5826/dpc.0504a07

Received: January 15, 2015; **Accepted:** June 30, 2015; **Published:** October 31, 2015

Copyright: ©2015 Feci et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Funding: None.

Competing interests: The authors have no conflicts of interest to disclose.

All authors have contributed significantly to this publication.

Corresponding author: Luca Feci, MD, Dermatology Section, Department of Clinical Medicine and Immunology, Siena University, Viale Bracci 1, 53100 Siena, Italy. Tel. 0577 585482. Email: lucafec84@gmail.com

ABSTRACT Dermatologists are often referred urgent cases of acral hematoma by general practitioners and sports medicine specialists for the purpose of excluding warts, nevi or melanoma. Acral hematoma is often a cause of anxiety to patients and their families. Here, we report a case of purpura traumatica pedis, referred to us as suspected plantar melanoma because of the finding of parallel-ridge pattern on dermatoscopic examination. To avoid unnecessary and costly procedures, doctors should inquire about any episode of physical exertion before the onset of purpura, recording the lesion's anatomic site (e.g., unilateral vs. bilateral involvement) and clinical features.

Case report

A 50-year-old male was urgently referred to our unit by his family doctor, who sought a specialist's opinion about an asymptomatic pigmented lesion on the second toe of the right foot (Figure 1a); the general practitioner wished to exclude the possibility of plantar melanoma. The patient was unable to reliably establish when the lesion appeared. Examination showed pigmentation involving almost the entire nail and extending into the surrounding skin. Dermatoscopy revealed uniform brownish-black pigmentation of the nail bed, involving the eponychium, lunula (suggestive of Hutchinson sign) and lateral nail folds. In the hyponychium, pigmentation was mostly distributed on the ridges, forming a parallel-ridge pattern (Figure 1b). These dermatoscopic features raised the dif-

ferential diagnosis of acral lentiginous melanoma. However, examination of the left foot showed less evident but clinically and dermatoscopically similar findings on the second, third and fourth toes (Figure 1c). Detailed medical history revealed that the patient had run two marathons in recent months. We therefore performed partial scraping of the lesion on the right foot, which confirmed the clinically suspected diagnosis of purpura traumatica pedis.

Discussion

Marathon runners experience a range of dermatological conditions and tissue-related injuries caused by mechanical trauma, infectious pathogens, inflammatory processes and environmental factors [1]. Sports medicine specialists, family



Figure 1. (a) Asymptomatic pigmented lesion on second toe of right foot; (b) Dermatoscopy revealed uniform brownish-black pigmentation of the nail bed; in the hyponychium, pigmentation was distributed prevalently on the ridges (parallel-ridge pattern); (c) Bilateral lesions having similar clinical and dermatoscopic appearance. [Copyright: ©2015 Feci et al.]

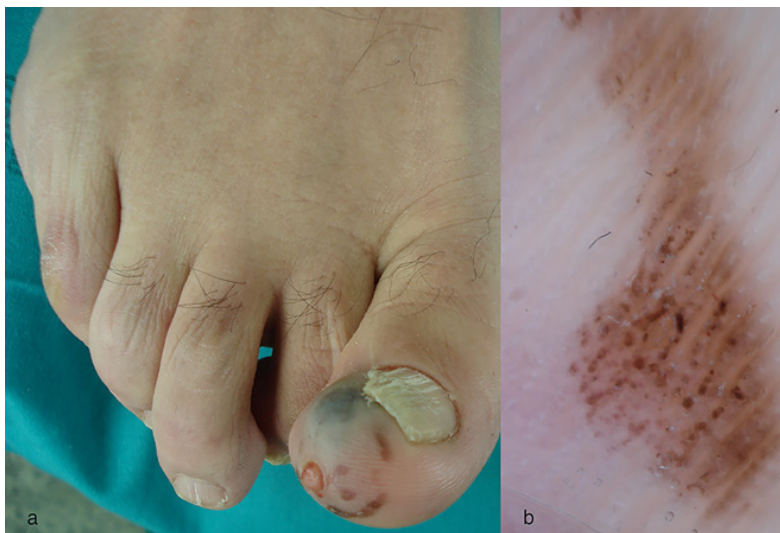


Figure 2. (a) Acral lentiginous melanoma of the right toe. The square indicates the area from which the dermatoscopic image was obtained; (b) Parallel-ridge pattern on dermatoscopy. [Copyright: ©2015 Feci et al.]

physicians, dermatologists and coaches should be familiar with these skin conditions to ensure timely and accurate diagnosis and correct management of affected athletes [2].

Mechanical dermatoses, such as post-traumatic punctate skin hemorrhage, friction bullae, callosities and onycho-cryptosis, are the most frequent skin disorders in runners. These injuries

result from friction, shear forces, chronic pressure and collisions with surfaces that occur when athletes endure repetitive jump landings, accelerated starts and stops and other maneuvers during rigorous training and competition. Among these conditions, “purpura traumatica pedis” (black heel), frequently observed in young athletes, may be difficult to differentiate from acral lentiginous melanoma (Table 1). This explains the anxiety with which these patients and their equally worried accompanying parents seek medical advice.

Diagnosis of traumatic purpura is often easy if sports come up during the medical history intake. In other cases, dermatoscopy may prove useful (Table 1). Indeed, dermatoscopic evidence of subcorneal hemorrhage in the form of reddish globules makes diagnosis easy in the case of recent lesions [3-5]. However, in some cases of older lesions, dermatoscopy does not enable acral melanoma to be distinguished from frictional purpura (Figure 2), as both may show a parallel-ridge pattern [6,7]. In these patients, the bilateral distribution of acral lesions, as was seen in our case, indicates the correct diagnosis.

In conclusion, to avoid unnecessary and costly procedures, doctors should inquire about any physical exertion by the patient before onset of the black macules on the feet, and should record the anatomic site of the lesions, as well as clinical and dermatoscopic features. If purpura traumatica pedis is suspected, partial scraping of the lesion may be a simple and minimally invasive way of confirming the diagnosis.

References

1. Adams BB. Dermatologic disorders of the athlete. *Sports Med.* 2002;32:309-21.
2. De Luca JF, Adams BB, Yosipovitch G. Skin manifestations of athletes competing in the Summer Olympics: what a sports medicine physician should know. *Sports Med.* 2012;42:399-413.
3. Zalaudek I, Argenziano G, Soyer HP, Saurat JH, Braun RP. Dermoscopy of subcorneal hematoma. *Dermatol. Surg.* 2004;30:1229-32.

TABLE 1. Acral hemorrhage versus acral melanoma: clinical and dermoscopic clues

	Acral hemorrhage	Acral melanoma
Clinical clue		
<i>Clinical aspect</i>	Well-demarcated, roundish or irregularly shaped, sometimes linear or punctuated macules, with colors varying from blue-black to reddish-brown	Early acral melanoma appear as a spreading pigmented patch with varying degrees of pigment intensity. As the lesion evolves, it may appear as a large, black, mounded, ulcerated, and bleeding lesion
<i>Distribution</i>	Multiple toes	Single toe
<i>Duration of lesion</i>	Transient	Persistent
<i>Anamnesis</i>	History of physical trauma, sport activity, and/or treatment with anticoagulant medications	Patient usually denied physical trauma, sport activity, and/or treatment with anticoagulant medications
Dermoscopic clues		
<i>Red-black to grayish color with a homogeneous pattern of pigmentation and red-black globules especially seen as satellites at the periphery of the lesion.</i>	Present	Usually absent
<i>Parallel-ridge pattern</i>	Present in about 40% of cases (“pebbles on the ridges”)	Present (The pigmentation following the ridges, with hypopigmentation of the furrows, is the only clue of early acral melanoma)
<i>Irregular diffuse pigmentation with variable shades, irregular dots and globules</i>	Absent	Present in more locally advanced acral melanoma, along with brownish or black parallel ridge pattern
<i>Blue-white veil and ulceration</i>	Absent	Present in far-advanced acral melanoma, along with dark parallel ridge pattern
<i>Parallel-furrow and fibrillar patterns</i>	Mostly absent (only 1 case reported in literature)	Rarely present

- Saida T, Koga H, Uhara H. Key points in dermoscopic differentiation between early acral melanoma and acral nevus. *J Dermatol.* 2011;38:25-34.
- Rubegni P, Burrioni M, Andreassi A, Fimiani M. The role of dermoscopy and digital dermoscopy analysis in the diagnosis of pigmented skin lesions. *Arch Dermatol.* 2005;141:1444-6.
- Fracaroli TS, Lavorato FG, Maceira JP, Barcaui C. Parallel ridge pattern on dermoscopy: observation in non-melanoma cases. *An Bras Dermatol.* 2013;88:646-8.
- Bernabeu-Wittel J, Domínguez-Cruz J, Zulueta T, Quintana J, Conejo-Mir J. Hemorrhagic parallel-ridge pattern on dermoscopy in “Playstation fingertip”. *J Am Acad Dermatol.* 2011;65:238-9.