

# Comparison of dermatoscopic images of acral lentiginous melanoma and acral melanocytic nevus occurring on body weight-bearing areas

Soko Watanabe<sup>1</sup>, Mizuki Sawada<sup>1</sup>, Sumiko Ishizaki<sup>1</sup>, Ken Kobayashi<sup>2</sup>, Masaru Tanaka<sup>1</sup>

<sup>1</sup> Department of Dermatology, Tokyo Woman's Medical University Medical Center East, Tokyo, Japan

<sup>2</sup> Kobayashi Dermatology Clinic, Tokyo, Japan

**Keywords:** acral lentiginous melanoma, acral melanocytic nevus, negative fibrillar pattern, dermatoscopy

**Citation:** Watanabe S, Sawada M, Ishizaki S, Kobayashi K, Tanaka M. Comparison of Dermatoscopic images of acral lentiginous melanoma and acral melanocytic nevus occurring on body weight-bearing areas. *Dermatol Pract Concept*. 2014;4(4):8. <http://dx.doi.org/10.5826/dpc.0404a08>

**Received:** April 21, 2014; **Accepted:** June 15, 2014; **Published:** October 31, 2014

**Copyright:** ©2014 Watanabe 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 declare no conflict of interest.

**Contribution:** All authors have contributed significantly to this publication.

**Corresponding Author:** Soko Watanabe, MD, Department of Dermatology, Tokyo Women's Medical University Medical Center East, 2-1-10 Nishi-Ogu, Arakawa-ku, Tokyo 116-8567, Japan. Tel: +81 3 3810 1111; Fax: +81 3 3894 1441. E-mail: [soko1031@yahoo.co.jp](mailto:soko1031@yahoo.co.jp)

**ABSTRACT** **Background:** Because body weight-bearing produces a shift in the horny layer, acral melanocytic nevus on the body weight-bearing area of the sole showed a regular fibrillar pattern (FP) due to slanting of the melanin columns in the horny layer. On the other hand, acral lentiginous melanoma (ALM) on the body weight-bearing area of the sole tended to show irregular fibrillar pattern showing rather structureless pigmentation instead of a parallel ridge pattern, which is due to the shift of the horny layer.

**Objective:** To elucidate the subtle difference between the regular FP of nevus and irregular FP in ALM.

**Methods:** In this study, the dermatoscopic features of five cases of ALM and five cases of acral melanocytic nevus on the weight-bearing area of the sole were compared.

**Results:** All the cases with nevi showed regular FP showing regular distribution of fibrils, whereas all the melanomas showed irregular distribution of fibrils and colors. Fibrils in nevi tended to be clear at the furrows and dim at the ridges. White fibrils corresponding to the eccrine ducts in the horny layer were more often present on the ridges in ALM, which showed negative FP.

**Conclusion:** Differentiating between the regular and irregular FP, including negative FP, might be helpful for the discrimination of melanoma from nevus.

## Introduction

The soles of the feet are the sites of predilection for acral lentiginous melanoma (ALM) in the colored races [1]. Approximately 7% of the Japanese population has acral melanocytic

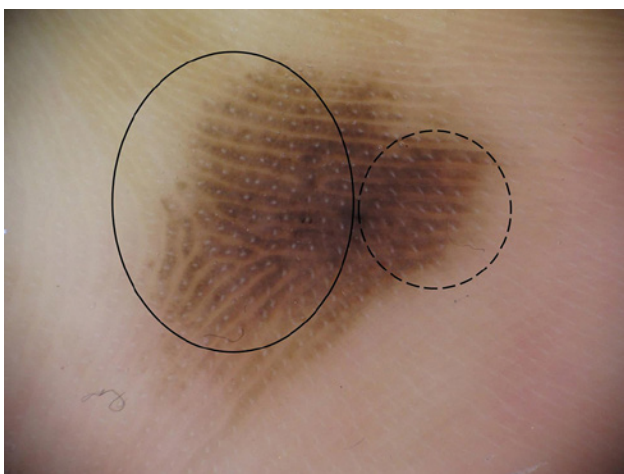
nevus [1]. ALM often shows a parallel ridge pattern (PRP), with a specificity of 99% and a sensitivity of 86% [1,4]. In contrast, the acral melanocytic nevus shows a parallel furrow pattern (PFP, 54%), lattice-like pattern (21%), or fibrillar pattern (FP, 15%) [5,6].

The bearing of body weight produces a shift in the horny layer; therefore, acral melanocytic nevus in the weight-bearing area of the sole often shows a regular fibrillar pattern (FP) due to slanting of the melanin columns in the horny layer. The fibrils tend to be clear at the furrows and dim at the ridges. The length of the fibrils is dependent on the thickness of the horny layer or the extent of weight-bearing. Their thickness likely depends on the amount of melanin present.

However, on the weight-bearing area of the feet, ALM often shows structureless pigmentation instead of PRP and 10% of acral melanocytic nevi show an atypical pattern [5,7]. ALM sometimes shows whitish fibrils corresponding to eccrine ducts in the horny layer of the ridge of the structureless pigmentation, which we term “negative FP” (Figure 1). Negative FP is composed of whitish fibrils, corresponding to the elongated eccrine ducts, and the diffuse pigmentation as a background. This is often observed in ALM on the weight-bearing area, although it is seldom found in acral nevus in the same area. The reason for negative FP is probably due to the much darker background in ALM than that in nevus.

## Materials and methods

Five cases of ALM (age: 39-68, median 67; 2 males and 3 females; histopathology: 4 cases were in situ, 1 case was invasive with tumor thickness of 1.6 mm) and five cases of acral melanocytic nevi (age: 7-38, median 16; 2 males and 3 females; 4 cases showed typical regular fibrillar pattern on dermatoscopy and histopathology of 1 as junctional nevus) with FP, on the body weight-bearing area of the sole, were used to compare the frequency of dermatoscopic features, including FP, negative FP, distribution of colors and fibrils, and whether the fibrils terminated at the furrows.



**Figure 1.** Dermatoscopy of acral lentiginous melanoma located ALM on the left sole near the fifth toe. The non-loaded area showed the typical parallel ridge pattern and regular white dots corresponding to the eccrine pores on the center of the ridges. The loaded area showed a more homogeneous brown pigmentation and a short negative fibrillar pattern was observed. (Copyright: ©2014 Watanabe et al.)

**TABLE 1.** Comparison of dermatoscopic features between acral lentiginous melanoma and acral nevus occurring on the body weight-bearing area of the sole

Cases	ALM (5)	Acral nevus (5)
Fibrillar pattern	5	5
Regular distribution of colors	0	4
Regular distribution of fibrils	0	5
Fibrils terminating at the furrows	1	5
Negative fibrillar pattern	5	1

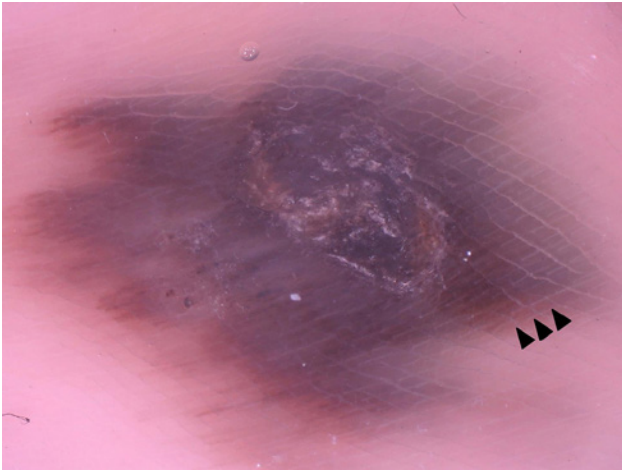
ALM, acral lentiginous melanoma

## Results

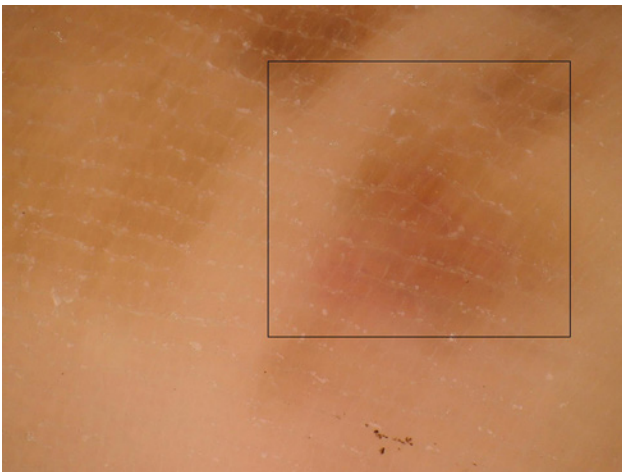
The results are summarized in Table 1. The four cases of acral melanocytic nevus showed regular distribution of colors with an exception of the case 3 nevi, which showed negative FP and was confirmed histopathologically as a nevus. All the ALM cases showed irregular distribution of colors. All the nevus showed regular distribution of fibrils, whereas all the ALM cases showed irregular distribution. All the fibrils terminated at the furrows in all cases of acral nevus. One ALM case showed termination of the fibrils at the furrows only partially. Most of ALM cases showed dark and diffuse background and therefore white lines, which correspond to eccrine openings, were well observed. Only in case 3 did the nevus show dark and diffuse background and white lines, namely negative FP. The other four cases of nevus did not show white lines. In these four nevi, there were hypopigmented spaces between the fibrils. The white lines corresponding to eccrine ducts were distinguishable from the hypopigmented spaces between the fibrils.

## Discussion

FP is regarded as a benign pattern [8]. However, ALM on the body weight-loading area of the sole also shows fibrillar area at least partly and often shows irregular FP. We have recently noted the difference between the FP in nevi and irregular FP in ALM, namely that the background is much darker and more diffuse in irregular FP in ALM than in regular FP in nevi and eccrine openings are more distinct in ALM (Figure 1). We defined the “negative FP” as white lines corresponding to



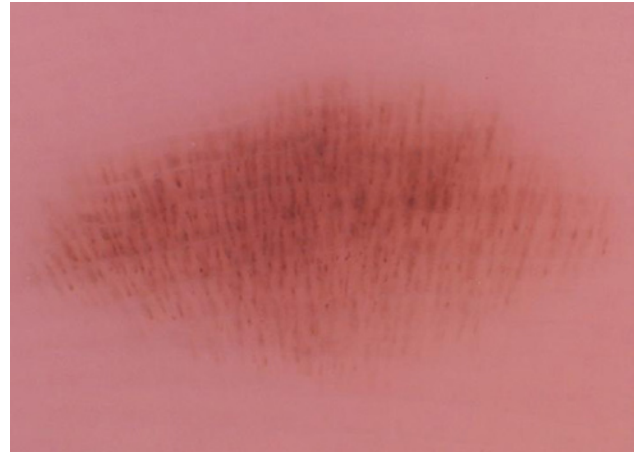
**Figure 2.** Dermatoscopy of acral lentiginous melanoma on the loaded area, case 1. On the gray-blue to dark brown structureless background, a negative fibrillar pattern was conspicuous at the 12 to 6 o'clock position (black arrowhead). (Copyright: ©2014 Watanabe et al.)



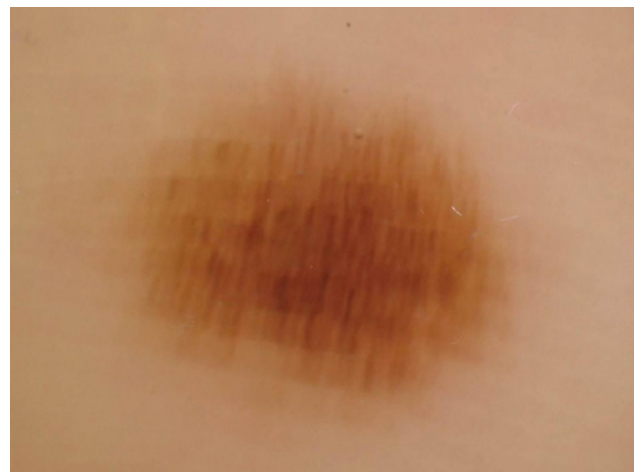
**Figure 3.** Dermatoscopy of acral lentiginous melanoma ALM on the loaded area, case 2. A negative fibrillar pattern was observed on the light brown background. (Copyright: ©2014 Watanabe et al.)

eccrine intraepidermal ducts on the dark background, which is observed in nevi or more often in ALM on the body weight-loading area of the sole.

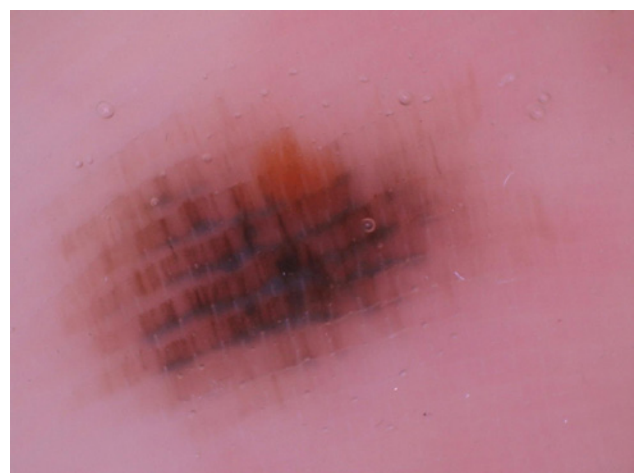
Negative FP was more commonly observed in ALM (Figures 2 and 3), however, only one case of acral melanocytic nevus showed these findings. Negative FP could be observed when the background was dark. ALM often shows PRP, which is characterized by rather diffuse pigmentation divided by whitish lines at the furrows. When body weight-bearing produces a shift in the horny layer, the pigmentation of the PRP might become more diffuse, thus darkening the background. The eccrine ducts are usually whitish and therefore not conspicuous on a lighter background, but when the background became dark, the eccrine duct could be seen more clearly as whitish fibrils, thus indicating a negative FP. Acral melanocytic nevus also shows hypopigmented spaces between the fibrils, simulating negative FP, however, these



**Figure 4.** Dermatoscopy of acral melanocytic nevus on the loaded area, case 1. The double dotted line variant seemed to change into the short fibrillar pattern due to the body weight loading. The distribution of the dark brown fibrils was sparse and regular. There was no negative fibrillar pattern, FP but there were hypopigmented spaces between the fibrils. (Copyright: ©2014 Watanabe et al.)



**Figure 5.** Dermatoscopy of acral melanocytic nevus on the loaded area, case 2. Each fibril was densely arranged and the hypopigmented spaces between fibrils simulated negative fibrillar pattern. However, they terminated randomly and were light brown in color. (Copyright: ©2014 Watanabe et al.)



**Figure 6.** Dermatoscopy of acral melanocytic nevus on the loaded area, case 3. This exceptional case of acral melanocytic nevus showed a negative fibrillar pattern, but the fibrils were regular and terminated at the furrows. (Copyright: ©2014 Watanabe et al.)

hypopigmented spaces were not as thin and white as the eccrine ducts. Furthermore, these hypopigmented spaces did not terminate at the center of the ridges and were distributed more irregularly (Figures 4 and 5). Acral melanocytic nevus also showed negative FP, when it produced more melanin than usual and demonstrated long and dense fibrils (Figure 6).

The distribution of the FP is also important for the differentiation of ALM from acral nevus. ALM has the tendency to show an irregular overall distribution of colors and thickness of each fibril. In contrast, acral melanocytic nevus shows a regular distribution of fibrils that terminate at the furrows.

Irregular PRP is an important finding indicative of ALM, but when this feature is unclear owing to the body weight-bearing and structureless pigmentation, a finding of negative FP or irregular fibril distribution might be helpful for the diagnosis of ALM.

*This study was presented at the 77th Annual Meeting of the Tokyo Division of the Japanese Dermatological Association.*

## References

1. Saida T, Koga H, Yamazaki Y, Tanaka M. Acral Melanoma. In: Soyer HP et al, ed. *Color Atlas of Melanocytic Lesions of the Skin*. New York: Springer, 2007:196-203.
2. Bellows CF, Belafsky P, Forgang IS, Beech DJ. Melanoma in African-Americans: trends in biological behavior and clinical characteristics over two decades. *J Surg Oncol*. 2001;78:10-16.
3. Ishihara K, Saida T, Yamamoto A. Updated statistical data for malignant melanoma in Japan. *Int J Clin Oncol*. 2001;6:109-16.
4. Saida T, Miyazaki A, Oguchi S, et al. Significance of dermoscopic patterns in detecting malignant melanoma on acral volar skin: results of a multicenter study in Japan. *Arch Dermatol*. 2004;140:1233-8.
5. Saida T, Oguchi S, Ishihara Y. In vivo observation of magnified features of pigmented lesions on volar skin using video macrocope. Usefulness of epiluminescence techniques in clinical diagnosis. *Arch Dermatol*. 1995;131:298-304.
6. Oguchi S, Saida T, Koganehira Y, et al. Characteristic epiluminescent microscopic features of early malignant melanoma on glabrous skin. A videomicroscopic analysis. *Arch Dermatol*. 1998;134:563-568.
7. Tanaka M, Kimoto M, Saida T. Acral Nevus. In: Soyer HP et al, ed. *Color Atlas of Melanocytic Lesions of the Skin*. New York: Springer, 2007:66-74.
8. Braun RP, Thomas L, Dusza SW, et al. Dermoscopy of acral melanoma: a multicenter study on behalf of the international dermoscopy society. *Dermatology*. 2013;227:373-80.