

Case Letter

Fungal Melanonychia Caused by *Trichophyton rubrum* and the Value of Dermoscopy

To the Editor:

Longitudinal melanonychia encompasses a broad spectrum of diseases and often is a complex diagnostic problem. Differential diagnoses include ethnic-type nail pigmentation, which is more frequently seen in darker-skinned individuals; drug-induced pigmentation; subungual hemorrhage; fungal or bacterial infection; nevus; and melanoma.^{1,2} Fungal melanonychia is an uncommon presentation of onychomycosis. Dermoscopy can assist in the evaluation of nail pigmentation caused by fungi to avoid unnecessary nail biopsies.

A 39-year-old man visited the dermatology clinic with a concern for melanoma because of blackish pigmentation of the toenails of 1 month's duration. He denied history of trauma and was not taking any medications. On physical examination the second and third toenails revealed a 2-mm longitudinal band of black pigment on the lateral side; the fifth toenail showed diffuse black pigment (Figure 1A). The nail plates were thickened. Dermoscopy revealed prominent subungual hyperkeratosis, a homogeneous brown-black band with wide yellow streaks that were wider in the distal ends, and some focal reddish hue. No visible melanin inclusions were observed (Figure 2). These findings were suggestive of fungal infection. Cultures from the diseased nail grew a fungus identified as *Trichophyton rubrum*. The patient was treated with itraconazole 200 mg daily for 3 months. Clinical cure with disappearance of pigment was obtained at 5-month follow-up (Figure 1B).

Our patient illustrates the value of dermoscopy in evaluating melanonychia. The pigmentation of adult-onset melanonychia involving multiple fingers can be divided into nonmelanocytic or melanocytic origin. Causes of the former include subungual hemato-



Figure 1. Blackish discoloration of the right second, third, and fifth toenails (A). Resolution of pigmentation and subungual hyperkeratosis was achieved at 5-month follow-up after treatment (B).

matoma, fungal or bacterial infection, and exogenous pigmentation. The nonmelanocytic pigment often is homogeneously distributed without melanin inclusions under the dermoscope.²

On the contrary, melanin inclusions can be detected as fine granules in pigmentation of melanocytic origin, either from focal melanocytic activation or melanocyte proliferation. Causes of focal melanocytic activation include ethnic-type nail hyperpigmentation; inflammatory nail diseases; or drug-, radiation-, and friction-induced hyperpigmentation. The characteristic dermoscopic features are thin longitudinal gray lines with regular thickness and spacing in a grayish background.¹⁻³

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The authors report no conflict of interest.

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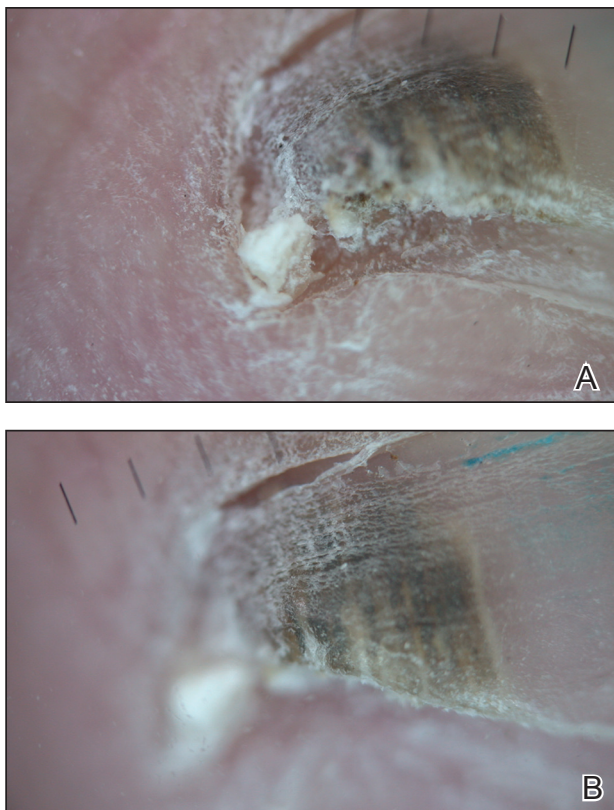


Figure 2. Top view (A) and front view (B) of a homogeneous brown-black band with subungual hyperkeratosis and wide intervening yellow streaks. Each ruler mark denotes 1 mm.

Melanocyte proliferation can result in a nevus or melanoma of the nail apparatus. Both share dermoscopic features of brown-black longitudinal lines in a brown background. However, the longitudinal lines in melanoma are irregular in coloration, spacing, thickness, and parallelism, in contrast with the regular pattern of a nevus.¹⁻⁴ Although patients often are concerned about melanoma, involvement of multiple fingers at the same time is less likely.

In our patient, the homogeneous deep brown color without melanin inclusions favored a nonmelanocytic origin. The distally wider pigmentation suggested fungal infection because most ungual infections extend from the distal to the proximal part of the nail.^{5,6} The focal reddish hue may be related with traumatic hemorrhage from subungual hyperkeratosis.

Cases of fungal melanonychia are being reported at an increasing rate. Some fungal strains are capable of synthesizing melanin, which is associated with

virulence and acts as a fungal armor against toxic insults.⁵ In *T rubrum*, the melanoid variant, the diffusible black pigment infiltrates the nail plate and attributes to the black nail clinically.⁴ The most frequently isolated fungi in fungal melanonychia are *T rubrum* and *Scytalidium dimidiatum*⁶; however, *Candida* species,^{7,8} dematiaceous fungus,⁹ and other dermatophytes such as *Trichophyton soudanense*¹⁰ have been reported to be the cause.⁵

Our patient presented with fungal melanonychia due to *T rubrum* with dermoscopic features. The prominent subungual hyperkeratosis, distally wider homogeneous brown-black pigmented band, and wide yellow streaks with focal reddish hue all suggested fungal melanonychia. The diagnosis was further confirmed by a good response to antifungal agents.

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