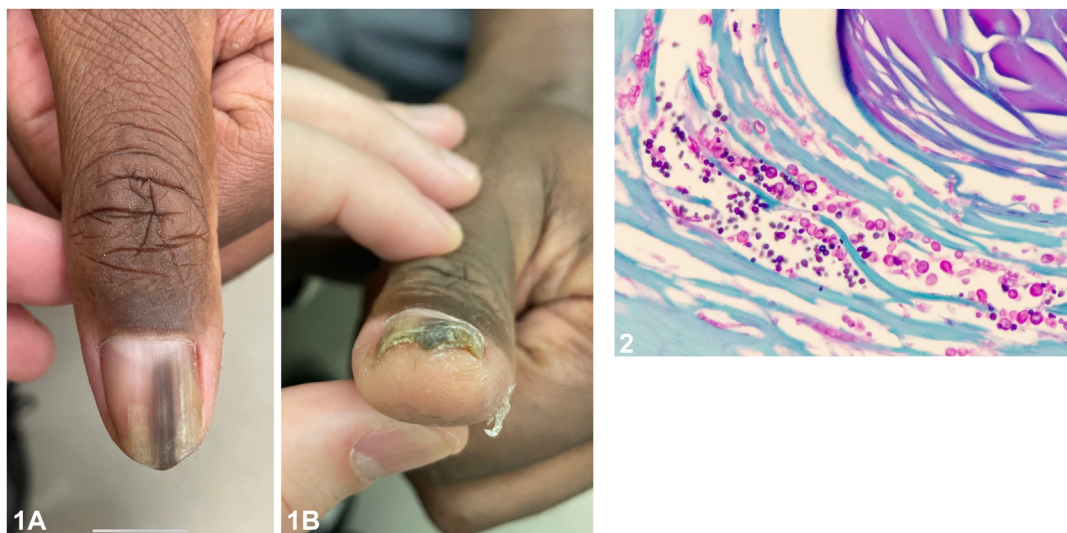


Melanonychia and subungual papule in a middle-aged man



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CASE REPORT

A 59-year-old man with no personal or family history of skin cancer presented with a growing lesion on his left thumbnail for the past year. The area was painful and gradually became larger and darker, causing elevation of the nail plate. On examination, there was a 4 mm dark brown longitudinal band with subungual papule and distal onycholysis (Fig 1, A and B). Nail clipping was submitted to histopathology (Fig 2).

Question 1: What is the most likely diagnosis?

- A. Dermatophytoma
- B. Pigmented onychomatricoma
- C. Pigmented onychopapilloma
- D. Subungual melanoma
- E. Subungual verruca

Answers:

A. Dermatophytoma — Correct. Dermatophytoma are densely packed fungal masses in the subungual space in patients with distal onychomycosis. Dermatophytoma commonly present as opaque yellow, orange, or white patches or streaks in the nail plate. Histopathology of the nail clipping showed confluent growth of fungal organisms, and culture

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was identified as *Candida parapsilosis* (Fig 2). This is a rare, but established, cause of black or brown pigmentation of the nail or longitudinal melanonychia.¹ The patient had substantial clinical improvement with fluconazole 200 mg once weekly after 4 weeks of use.

B. Onychomatricoma — Incorrect. Onychomatricoma is a benign proliferation of fibroepithelial cells originating from the nail matrix. It is rare and usually presents as a thickened nail plate with honeycomb-like appearance of the distal nail plate. It is diagnosed via histologic examination of a nail clipping and will show filiform epithelial projections lined with matrix epithelium.²

C. Onychopapilloma — Incorrect. Onychopapilloma is a tumor of the nail bed or distal nail matrix that often presents as longitudinal red, white, or brown streaks in the nail and subungual hyperkeratosis. Although it may present similarly, the histopathology shows papillomatosis or acanthosis of the nail bed epithelium.²

D. Subungual melanoma — Incorrect. Subungual melanoma presents as a longitudinal brown or black band originating from the nail matrix. It can also present as a mass below the nail plate or ulceration of the nail. The image (Fig 1, A) shows that the pigmented band does not extend to the proximal nail fold. Hutchinson's nail sign is an extension of the pigmentation to the nail folds and is a strong predictor of melanoma.²

E. Subungual verruca — Incorrect. Subungual verruca is a rare cause of melanonychia and is more likely to cause onycholysis and splinter hemorrhage.

Question 2: Which of the following is the best next step?

- A. Complete nail avulsion
- B. Longitudinal nail matrix excision
- C. Oral itraconazole and topical urea
- D. Topical ketoconazole cream
- E. Topical urea

Answers:

A. Complete nail avulsion — Incorrect. There is no data on the efficacy of nail removal alone without combination oral or topical antifungal therapy.³

B. Longitudinal matrix excision — Incorrect. This technique is used to evaluate the longitudinal bands

with an excisional technique that allows full evaluation for histology.² A biopsy was not performed on the nail matrix because the nail clipping revealed fungal organisms consistent with dermatophytoma.

C. Oral itraconazole and topical urea — Correct. There are limited case reports of *Candida parapsilosis*-induced melanonychia in the literature. Most have been successfully treated by oral antifungals such as itraconazole and voriconazole.⁴ Additionally, the presence of a dermatophytoma increases the likelihood of treatment failure with antifungal monotherapy. The addition of avulsion or chemical debridement to antifungals is recommended.³

D. Topical ketoconazole — Incorrect. Ketoconazole is not likely to penetrate the dermatophytoma. Three topical antifungals have been shown to be efficacious for dermatophytoma, including tavaborole, efinaconazole, and luliconazole.³

E. Topical urea — Incorrect. Although it is possible to chemically debride the entire nail using topical urea under occlusion, it is not the first-line treatment for dermatophytoma.³

Question 3: Which organism is the most common cause of dermatophytoma?

- A. *Alternaria alternata*
- B. *Aspergillus niger*
- C. *Candida albicans*
- D. *Trichophyton rubrum*
- E. *Trichophyton tonsurans*

Answers:

Alternaria alternata — Incorrect. It is the most frequently isolated *Alternaria* species in ungual phaeohyphomycosis but not a common cause of dermatophytoma. It is a black mold that causes diffuse brown nail pigmentation.⁵

Aspergillus niger — Incorrect. It is a known cause of fungal melanonychia but not the most common cause of dermatophytoma. It is another black mold that causes diffuse brown nail pigmentation.⁵

Candida albicans — Incorrect. It is a common cause of fingernail onychomycosis but not commonly associated with dermatophytoma. *Candida albicans* produces nail pigmentation by activating host melanocytes in the nail fold. For this reason, candidal melanonychia is more common in darker phototypes.⁵

Trichophyton rubrum — Correct. This is the most common causative organism in dermatophytoma cases. It is a very common cause of onychomycosis, but only certain strains cause diffusible black pigment.⁵

Trichophyton tonsurans — Incorrect. It is not a common cause of onychomycosis, dermatophytoma, or fungal melanonychia.

Conflict of interest

Dr Andrea Murina is a speaker for Abbvie, Amgen, Bristol-Meyers-Squibb, and Janssen. She is on the Editorial Board of the *Journal of the American Academy of Dermatology Case Reports*. She has served as a consultant for Bristol-Meyers-Squibb, Janssen, Novartis, Ortho-Dermatologics, and UCB.

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