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An amelanotic nail bed melanoma presenting as persistent onychodystrophy

Lisa Ishii[1] BS, Nicholas A Richmond[2] MD, Stephanie J Carstens[2] MD, Vladimir Vincek[2] MD PhD

Affiliations: [1]Medical College of Georgia at Augusta University, Augusta, Georgia, USA, [2]University of Florida Department of Dermatology, Gainesville, Florida, USA

Corresponding Author: Lisa Ishii, BS, 4037 NW 86th Terrace, 4th floor Gainesville, FL 32606, Tel: 404-693-0652, Email: lishii@augusta.edu

Abstract

Nail apparatus melanomas are rare and may present with a wide variety of clinical presentations. In particular, the amelanotic subtype can pose a diagnostic challenge, often leading to a poor prognosis related to a delayed diagnosis. We report a 69-year-old man with an unusual subungual amelanotic melanoma presenting as a persistent single nail dystrophy that was repeatedly treated as onychomycosis. Owing to the delayed diagnosis of the melanoma and to minimize recurrence risk, the patient underwent a partial amputation of his left thumb.

Keywords: amelanotic melanoma, nail apparatus melanoma, onychomycosis, subungual melanoma

Introduction

Nail apparatus melanomas pose a diagnostic challenge for dermatologists. Symptoms and features can be nonspecific, often resembling other nail diseases. The prognosis is often poor, in large part related to the late stage at diagnosis [7]. We report a patient with subungual amelanotic melanoma presenting with single nail dystrophy over several years. Although amelanotic subungual melanomas represent only a small fraction of all malignant melanomas [3], we urge dermatologists to be aware of the wide range of clinical presentations of this disease and to have a low threshold for early biopsy.

Case Synopsis

A 69-year-old Caucasian man presented to our dermatology clinic with a painful, dystrophic, left thumbnail of five years' duration that occurred after trauma to the affected digit. Previous treatments for suspected onychomycosis by an outside dermatologist and other specialties included topical and oral antifungals as well as nail avulsion without improvement. Examination at the time of referral to the dermatology clinic revealed a thick, yellowed nail plate with longitudinal ridging and a small lateral spicule with absence of the plate over the ulnar nail bed (**Figure 1**). There was no pigmentation of the proximal nail fold. Nail plate culture grew *Candida parapsilosis* and the patient was treated with pulsed itraconazole for two months without improvement. At the follow-up visit, the nail was avulsed and proximal nail fold reflected and biopsied without

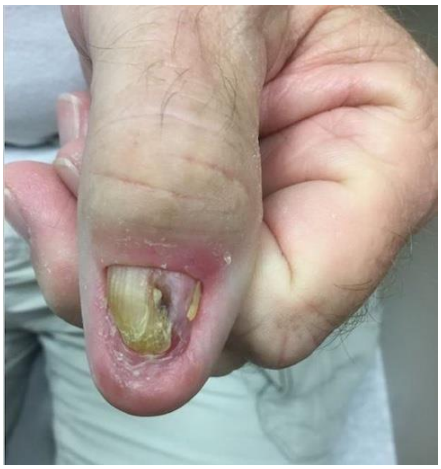

Figure 1. *Initial patient presentation showed a hyperkeratotic, yellow nail plate with longitudinal ridging on the left thumb.*

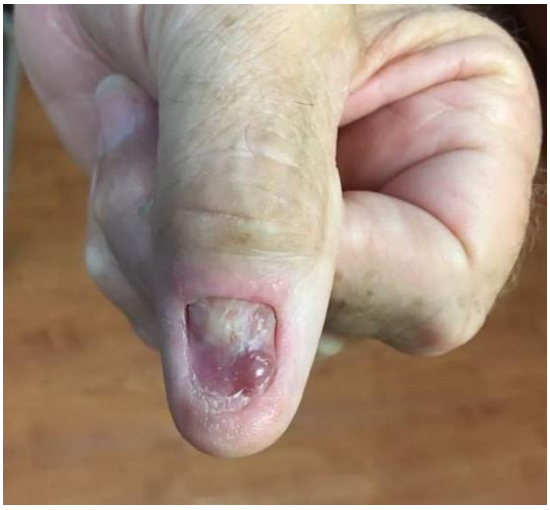

Figure 2. *A 5mm soft, violaceous papule in the distal-ulnar nail bed, as seen at follow-up visit two months after initial presentation.*

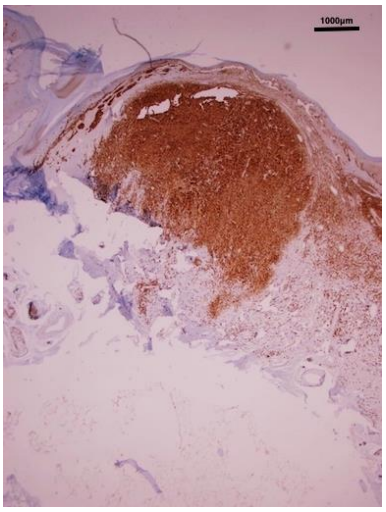

Figure 4. *Post-amputation immunohistochemistry with S100-positive cell aggregates (20×).*

concerning findings of the nail bed or matrix. Dermatophytes were appreciated on PAS stain of the nail plate and fluconazole was initiated. Two months later, the patient presented with a 5mm, soft, violaceous papule in the distal-ulnar nail bed (**Figure 2**). Biopsy revealed amelanotic acral melanoma and the patient ultimately underwent a partial amputation of the left first digit at the interphalangeal joint. Histology confirmed the diagnosis, revealing Stage IIb, T3bNxM0 amelanotic acral melanoma with a 4mm Breslow depth, mitotic count of 4/mm2, and no lymphovascular or perineural invasion (**Figure 3**A, 3B). Immunohistochemistry was S100/calcium-binding protein (**Figure 4**) and Melan A positive. Post-operative PET-CT did not show evidence of metabolically active neoplasm or metastatic disease.

Case Discussion

Melanoma of the nail apparatus is rare, accounting for 1-3% of melanomas in Caucasian populations [10]. Although findings such as Hutchinson sign or melanonychia can be helpful, often clinical presentations can be less specific and lead to delayed diagnosis and poorer prognosis [7]. Subungual amelanotic melanomas represent an even greater diagnostic challenge. Patients typically undergo multiple failed pharmacological or surgical treatments before correct diagnosis is reached [5]. This is especially troubling given amelanotic melanomas represent 20-33% of nail apparatus melanomas [10].

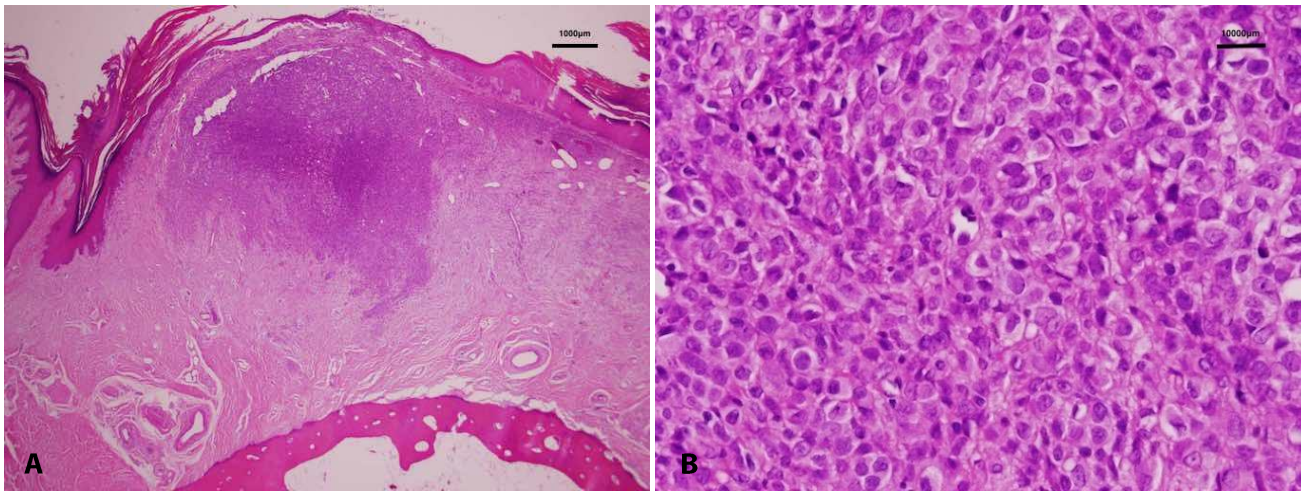

Figure 3. ***A)*** *H&E staining of amputated first digit (20×);* ***B)*** *H&E staining of amputated first digit (400×).*

Our case demonstrates both the diagnostic difficulty of subungual amelanotic melanomas and the consequences of delayed diagnosis. This case is unique in that despite careful inspection of the nail over many years, classic signs of melanoma were absent and initial examination of the nail bed and matrix after nail avulsion failed to reveal a suspicious lesion. The patient's course was additionally complicated by a positive nail culture for *C. parapsilosis*, an emerging cause of onychomycosis caused by *Candida* species [2], and the presence of dermatophyte growth on the nail plate. The nail dystrophy was likely related to the melanoma, making it susceptible to secondary fungal infection. This case supports that persistent single nail dystrophy or single nail onychomycosis that fails to improve may warrant additional investigation of underlying causes of nail dystrophy, as they may be the presenting features of amelanotic melanoma of the involved nail apparatus.

Subungual melanoma often has a poor prognosis owing to late detection of disease. Especially in cases with Breslow depth of 2.01-4mm, 1-3 cm margins for excision is recommended to minimize recurrence risk [4]. Unfortunately, amputation is often the most reasonable option to accommodate these recommendations [7]. Studies have observed that there is no significant difference in survival and recurrence rates when amputation is performed through the interphalangeal joint when compared to more proximal amputations [8, 4, 6]. In order to maximize tissue sparring and minimize recurrence, our patient underwent an amputation through the interphalangeal joint.

Conclusion

Amelanotic subungual melanomas are a diagnostic challenge for even seasoned dermatologists. These melanomas can mimic multiple diseases of the nail. Misdiagnosis on initial presentation can lead to delayed biopsies, and patients can be incorrectly treated for years before the correct diagnosis is reached. Dermatologists should be urged to approach any prolonged history of single nail dystrophy with caution, in order to maximize early digit-sparing treatment options for these patients.

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