Case Report
Amelanotic Melanoma Treated as Fungal Infection for Years

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1. Introduction
Melanoma can occur on any skin or mucosal surface. Despite melanoma accounting for only 4% of all skin cancers, it is responsible for approximately half of skin cancer-related deaths [1, 2]. Amelanotic melanoma occurs in up to 1–8% of all melanomas; however, the actual percentage might be lower as many hypopigmented melanomas are characterized as amelanotic [3]. These lesions are difficult to diagnose due to their ability to masquerade as other hypopigmented lesions [4]. Herein, we describe an amelanotic melanoma that was treated as tinea corporis, nummular dermatitis, and actinic keratosis for 5 years before biopsy established the diagnosis and led to appropriate treatment.

2. Case Report
A 69-year-old woman presented with an asymptomatic growth on her left arm that had consistently enlarged over the previous five years. Examination revealed a 5 cm ovoid pink-white, minimally scaly, thin plaque with intact sensation and without pain or itch (Figure 1(a), a¹). This growth had been diagnosed clinically as tinea corporis and nummular dermatitis but did not respond to topical antifungals or steroids, respectively. The lesion had also been treated as an actinic keratosis with cryotherapy with subsequent growth. The patient denied a history of similar rashes and was growing increasingly frustrated with the lack of treatment response.

A shave biopsy was performed with additional clinical differential diagnoses, including lichen sclerosis and Bowen’s disease. Pathology was consistent with a diagnosis of melanoma in situ, lentigo maligna-type (Figures 1(b) and 1(c)). The excision of the clinical residual was significant for invasive lentigo maligna melanoma, Breslow depth 0.3 mm (Figures 1(d) and 1(e)). Per our institutional protocol [5], she was treated with off-label imiquimod prior to Mohs surgery, three times weekly for 4 months, without perceivable improvement, though given the lack of pigmentation in this neoplasm, it was noted that response was challenging to assess. She subsequently underwent slow Mohs micrographic surgery with immunologic staining for Melan-A and Sox10, without residual melanoma being identified [5–8]. The defect was repaired linearly and healed well.
3. Discussion

Amelanotic melanoma arises from malignant melanocytes that do not produce mature melanin granules, with variable presentations, including amelanotic papules and nodules, desmoplastic plaques, subungual neoplasia with nail plate deformity, or secondary amelanotic growths that have metastasized from a primary pigmented melanoma [9]. The

Figure 1: (a) A 5 cm ovoid, pink-white, minimally scaly, thin plaque on the arm of a 69-year-old female, Fitzpatrick skin type II. (a') Postbiopsy. (b) H&E and (c) Melan-A immunohistochemistry revealing melanoma in situ, lentigo maligna type, on shave biopsy. (d) H&E and (e) Melan-A immunohistochemistry revealing invasive lentigo maligna melanoma, Breslow depth 0.3 mm. All microscopy is performed at 100x total magnification.
risk of developing a melanoma is modifiable, with the risk of melanoma doubling after 5 sunburns and halved with regular sunscreen use [10]. The ABCDE criteria recommended for patient evaluation of melanocytic neoplasia are not designed to help patients evaluate at-risk hypopigmented lesions [10]. However, as with other skin cancers, dermatoscopy and biopsy are indicated for all suspicious hypopigmented lesions, especially if the lesion is refractory to other treatments [3]. Most patients with lentigo maligna-type melanoma have localized disease at presentation, but once this type of melanoma reaches lymph node or distant metastasis, outcomes are similar to those of other melanoma subtypes, hence the need to diagnose accurately and treat in a timely manner [11,12]. The increased time to diagnosis and definitive surgical treatment resulting from initial misdiagnosis and treatments for infectious and inflammatory etiologies in this case may have resulted in dermal invasion and increased risk for recurrence and metastasis [13,14].

The key clinical features of this case presentation were the asymptomatic, slow-growing nature of this neoplasm and the failure to respond to multiple different treatment modalities for nonneoplastic etiologies. Amelanotic melanoma can be diagnostically challenging. Therefore, our aim with this case report is to bring increased awareness to clinicians of the need to biopsy a "rash" that does not present with classic symptoms (i.e., itch) or respond to standard topical treatments.

**Conflicts of Interest**

The authors declare that they have no conflicts of interest.

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**References**

[1] C. Karimkhani, A. Green, T. Nijsten et al., “The global burden of melanoma: results from the Global Burden of Disease Study 2015,” *British Journal of Dermatology*, vol. 177, no. 1, pp. 134–140, 2017.

[2] Gbd 2015 Mortality and Causes of Death Collaborators, “Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980–2015: a systematic analysis for the Global Burden of Disease Study 2015,” *Lancet*, vol. 388, no. 10053, pp. 1459–1544, 2016.

[3] M. A. Pizzichetta, R. Talamini, I. Stanganelli et al., “Amelanotic/hypomelanotic melanoma: clinical and dermoscopic features,” *British Journal of Dermatology*, vol. 150, no. 6, pp. 1117–1124, 2004.

[4] S. Kumar, V. Geethamani, M. Rehan, and A. Shetty, “Amelanotic melanoma masquerading as a superficial small round cell tumor: a diagnostic challenge,” *Indian Journal of Dermatology*, vol. 59, no. 6, p. 631, 2014.

[5] J. M. Donigan, M. A. Hyde, D. E. Goldgar, M. L. Hadley, M. Bowling, and G. M. Bowen, “Rate of recurrence of lentigo maligna treated with off-label neoadjuvant topical imiquimod, 5%, cream prior to conservatively staged excision,” *JAMA Dermatol*, vol. 154, no. 8, pp. 885–889, 2018.

[6] S. M. Sicos, B. C. Neill, E. W. Seger, T. A. Hooton, and T. L. H. Hocker, “The current state of Mohs surgery for the treatment of melanoma: a nationwide cross-sectional survey of Mohs surgeons,” *Dermatologic Surgery*, vol. 46, no. 10, pp. 1267–1271, 2020.

[7] M. A. Hyde, M. L. Hadley, P. Tristani-Firouzi, D. Goldgar, and G. M. Bowen, “A randomized trial of the off-label use of imiquimod, 5%, cream with vs without tazarotene, 0.1%, gel for the treatment of lentigo maligna, followed by conservative staged excisions,” *Archives of Dermatology*, vol. 148, no. 5, pp. 592–596, 2012.

[8] B. P. Sampson and G. M. Bowen, “Strategies for reducing final surgical defect sizes in the treatment of lentigo maligna,” *Dermatologic Surgery*, vol. 41, no. 4, pp. 537–545, 2020.

[9] S. E. Koch and J. R. Lange, “Amelanotic melanoma: the great masquerader,” *Journal of the American Academy of Dermatology*, vol. 42, no. 5, pp. 731–734, 2000.

[10] American Cancer Society, “Melanoma Skin Cancer Statistics for 2016,” 2016, https://www.cancer.org/cancer/melanoma-skin-cancer.html.

[11] Y. Fujisawa, S. Yoshikawa, A. Minagawa et al., “Clinical and histopathological characteristics and survival analysis of 4594 Japanese patients with melanoma,” *Cancer Medicine*, vol. 8, no. 5, pp. 2146–2156, 2019.

[12] L. M. Cohen, “Lentigo maligna and lentigo maligna melanoma,” *Journal of the American Academy of Dermatology*, vol. 33, no. 6, pp. 923–936, 1995.

[13] S. M. Swetter, H. Tsao, C. K. Bichakjian et al., “Guidelines of care for the management of primary cutaneous melanoma,” *Journal of the American Academy of Dermatology*, vol. 80, no. 1, pp. 208–250, 2019.

[14] Z. H. Hopkins, R. P. Carlisle, Z. E. Frost, J. A. Curtis, L. K. Ferris, and A. M. Secrest, “Risk factors and predictors of survival among patients with amelanotic melanoma compared to melanotic melanoma in the national cancer database,” *J Clin Aesthet Dermatol*, vol. 14, no. 12, pp. 36–43, 2021.