Pyogenic Granuloma-like Amelanotic Melanoma of the Fingernail

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Abstract

Amelanotic melanoma is an atypical melanoma that presents without pigmentation and can thus be misdiagnosed as benign neoplasm. Ungual trauma can induce amelanotic melanoma of the fingernail as well as pyogenic granuloma (PG). We present the case of a patient in his 60s with a PG-like lesion on his third nail plate that was preceded by ungual trauma one year ago. A shave biopsy revealed an ulcerated nodule composed of epitheloid cells with melanocytic atypia, extending 1.7 mm. Features were consistent with melanoma, confirmed with SOX10, S100, MART-1, and HMB45 immunostaining. This case demonstrates the integral role of histopathology and immunostaining in differentiating a benign PG from amelanotic melanoma, and thereby, preventing metastasis. We present this case to improve clinicians' ability to recognize atypical melanomas and to emphasize the importance of biopsy in such cases to ensure timely treatment and patient outcomes.

Keywords: *Pyoderma gangrenosum, melanoma, skin cancer, amelanocytic melanoma, dermatopathology, medical dermatology.*

INTRODUCTION

Melanoma is a malignant neoplasm of melanocytes and has the highest mortality rate of all skin cancers [1]. Amelanotic melanoma, which presents without pigmentation, is an atypical presentation of melanoma that can often be misdiagnosed as a benign neoplasm. Termed "the great masquerader" by Koch and Lange, amelanotic melanoma can disguise as a variety of conditions that often leads to delayed diagnosis and an increased risk of metastasis and mortality [2]. Ungual and subungual trauma can induce amelanotic melanoma of the fingernail as well as pyogenic granuloma [3]. Pyogenic granuloma (PG), also known as lobular capillary hemangioma, is a benign vascular tumor composed of capillary proliferations, venules, and fibromyxoid stroma [4]. Therefore, it is important to elucidate the variations in the clinical presentation of amelanotic melanoma and pyogenic granuloma as well as the next steps if suspicion for malignancy persists. We present the case of a 69-year-old patient who presented with a PG-like lesion on his third nail plate that was preceded by ungual trauma one year ago.

CASE REPORT

A nonsmoker male patient in his 60s presented to our clinic with a chief complaint of a nonhealing, tender fingernail lesion that persisted for the last year with occasional bleeding. The patient had injured his finger by closing a door on it one year ago. Upon physical examination, a 9mm verrucous, friable, cherry red nodule was noted on the left third-digit nail plate and involved the nail bed (**Fig. 1**). His family history was negative for skin cancer and melanoma. A diagnosis of PG was considered; however, given the patient's age, the duration of the lesion, as well as the size, a shave biopsy was performed to rule out potential malignancy. Histopathology found an ulcerated nodule composed of epitheloid cells with focally marked melanocytic atypia extending 1.7 mm. Features were consistent with melanoma, confirmed with SOX10 (**Fig. 2A**), S100 (**Fig. 2B**), MART-1, and HMB45 immunostaining. The pathological stage was at least pT2b. Treatment options were discussed with the patient and the patient pursued excision and further management of diagnosis with oncology. Given the subungual nature of the tumor, he underwent amputation of the distal end of the third digit of the left hand. There were 35 mitoses per high power

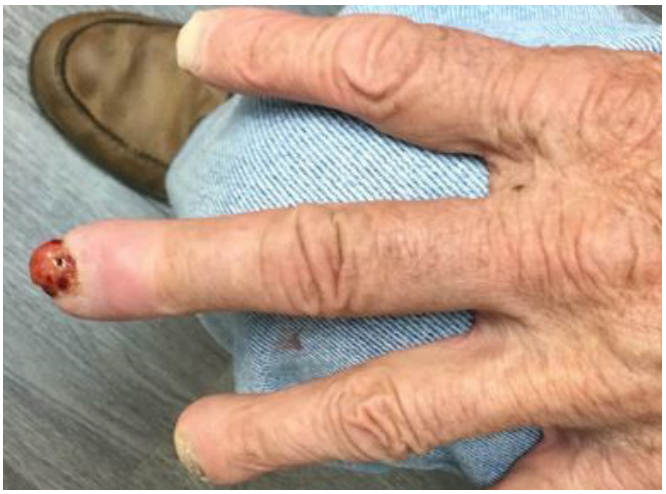

Fig. (1): Clinical presentation of Amelanotic Melanoma. 9mm friable, cherry red nodule on the third digit nail plate of the left hand.

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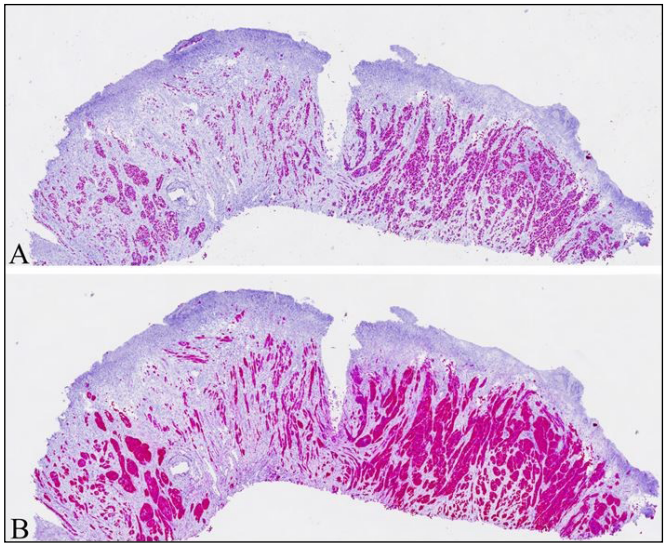

Fig. (2): (A) Photomicrograph showing tumor cells reactivity for SOX10 (immunohistochemistry, SOX10-200x), **(B)** Photomicrograph showing tumor cells reactivity for S100 (immunohistochemistry, S100-200x).

field. Lymphovascular invasion was negative. PET scan was negative for any evidence of distant metastatic spread. The patient began a yearlong course of adjuvant pembrolizumab therapy.

DISCUSSION

Although melanoma is the least common skin cancer, it is the most fatal, with an estimated 11% mortality rate [5]. Amelanotic melanoma accounts for 2 to 8% of melanomas and can mimic common benign lesions [5]. In a 2018 retrospective chart review of 2038 patients diagnosed with melanoma, 10 had a pyogenic granuloma-like amelanotic melanoma, appearing as a lobulated, red, exophytic nodule with occasional bleeding [5]. This atypical presentation of melanoma led to a later diagnosis and more advanced tumor stage than pigmented melanomas [5, 6]. Thereby, amelanotic melanoma poses an increased risk of metastasis and thus increased patient mortality [7].

Richert *et al.* note that when PG is solitary and involves the nail bed, a histologic examination should be performed to rule out malignant melanoma [3]. In our case, the patient has a lesion that has been present for a longer duration (one year) and therefore, was not very similar to the acute disease course of PG. In addition, Moshe *et al.* recommend that if the tumor is large (>8mm), amelanotic melanoma should be suspected. Treatment of PG most often consists of simple excision. In this patient's case, simple excision would be insufficient in removing melanocytic atypia and evaluating for distant metastasis. Moshe *et al.* note in their chart review that 20% of patients with PG-like amelanotic melanoma had distant metastases, 50% had a regional disease, and 30% had localized disease. Moshe *et al.* also noted that their values differed from prior literature on amelanotic melanomas, which presented with a 10% rate of distant metastasis at diagnosis, a 24.6% rate of regional disease, and a 65.4% rate of localized disease. Corresponding values for malignant melanoma were 2.9% distant metastases, 10.4% regional disease, and 86.7% localized disease [5]. Therefore, clinicians need to be aware of amelanotic melanoma as a differential in the setting of a clinically benign, PG-like lesion that presents with an atypical history (duration/size/location of lesion, age of patient). This case represents an important scenario in which clinical presentation would favor a benign diagnosis of PG, instead of a diagnosis of amelanotic melanoma, which carries the risk of distant metastasis and increased probability of future malignancies. We present this case to contribute to the literature that aims to improve clinicians' ability to recognize atypical presentations of melanoma to ensure timely treatment and improved patient outcomes.

CONCLUSION

Amelanotic melanoma can frequently mimic benign conditions and therefore it is often diagnosed at an advanced stage as it lacks typical melanoma features. Therefore doctors should be cognizant of ruling out amelanotic melanoma in suspicious lesions. Biopsy should be performed on lesions that appear clinically equivocal. When available, contemporary optical imaging devices like reflectance confocal microscopy or optical coherence tomography may be used to provide real-time in vivo evaluation.

CONSENT FOR PUBLICATION

The patient gave consent for the publication of medical information and clinical images.

CONFLICT OF INTEREST

I certify that there are no financial or personal relationships between myself and others that could bias the work set out in the manuscript.

ACKNOWLEDGEMENTS

Patients gave consent for their photographs and medical information to be published in print and online with the understanding that this information may be publicly available.

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