ORIGINAL ARTICLE

Nail apparatus melanoma: A comparative, clinicoprognostic study of the initial clinical and morphological characteristics of 49 patients

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Background: Although nail apparatus melanoma has been widely evaluated, only limited data are available concerning its clinical features, which depend on its initial clinical morphology, broadly defined as a melanonychia or nonmelanonychia lesion.

Objective: We sought to determine heterogeneity on the basis of the initial clinical morphology of nail apparatus melanoma.

Methods: We searched the Asan Medical Center database for cases of nail apparatus melanoma that were confirmed by skin biopsy specimen. Patients were classified with either nail apparatus melanoma that began as melanonychia (group A) or nail apparatus melanoma that began as nonmelanonychia lesions (group B).

Results: We identified 49 patients with nail apparatus melanoma. Of these, 29 and 20 patients were included in groups A or B, respectively. The prediagnosis duration was significantly longer in group A. At the time of diagnosis, advanced stage and deeper Breslow thickness were noted in group B. The median overall survival period of the whole cohort was 93.0 months, and the 5-year overall survival was 67%. Patients in group A demonstrated better survival outcomes.

Limitations: This study is a retrospective, single-center design.

Conclusion: Nail apparatus melanoma demonstrates different clinical features and survival outcomes depending on whether the lesion begins as melanonychia or nonmelanonychia. (J Am Acad Dermatol http://dx.doi.org/10.1016/j.jaad.2015.04.044.)

Key words: melanonychia; nail apparatus melanoma; survival outcomes.

Acral melanoma accounts for 1% to 7% of all cases of cutaneous melanomas.[1-6] However, about 50% of all cutaneous melanomas in an Asian cohort and 60% to 70% in a black population presented with acral melanoma.[7-9] The nail apparatus is a site of predilection, including the subungual and periungual areas, and accounts for 20% to 30% of all acral melanomas and 10% to 20% of all cutaneous melanomas in Asian patients.[10-13] Acral melanoma demonstrates a worse prognosis than other melanomas, and its clinicopathologic characteristics include a high ulcerative rate and deep Breslow thickness.[14-17]

Nail apparatus melanoma begins as a longitudinal melanonychia in 38% to 76% of cases and may be accompanied by nail dystrophy, periungual pigmentation, and nail plate ulceration.[9,10,18,19] A nail apparatus melanoma, which starts as a longitudinal melanonychia, arises from the nail matrix and spreads to other nail units that then develop a periungual pigmentation, a nail bed mass, and nail plate dystrophy.[18,20] However, little is known about

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the clinical heterogeneity and progression patterns of nail apparatus melanoma.

Although acral melanoma has been widely evaluated, there are limited data available that describe the clinical features and survival of nail apparatus melanoma according to its clinical spectrum. To date, the clinical and survival differences according to the involved anatomic sites have not been evaluated. Here, nail apparatus melanoma was classified according to the initial clinical presentation, and the clinical characteristics and survival outcomes were analyzed and compared between subgroups.

CAPSULE SUMMARY

- Nail apparatus melanoma begins as longitudinal melanonychia in 38% to 76% of cases.
- Nail apparatus melanoma has different clinicopathologic features, such as disease stage and Breslow thickness, both of which depend on the initial clinical morphology.
- Patients with a nail apparatus melanoma that began as a melanonychia lesion have better survival outcomes than patients with a nail apparatus melanoma that began as a nonmelanonychia lesion.

METHODS

We searched Asan Medical Center's database for cases of nail apparatus melanoma that were confirmed using skin biopsy specimen between January 1998 and June 2013. The present study (2014-0825) was approved by the Institutional Review Board of Asan Medical Center. We defined nail apparatus melanoma as a melanoma that arose from the nail apparatus (nail bed, nail matrix, and periungual tissue) and presented with melanonychia, nail plate dystrophy, or a nail bed mass. Patients were divided into subgroups according to whether or not they presented with melanonychia when the patient first noticed the lesion. Group A was defined as nail apparatus melanoma that initially presented with melanonychia. Group A melanoma could progress to other nail parts, such as the nail plate, nail bed, and periungual tissue, resulting in nail plate dystrophy, a nail bed mass, or a periungual pigmentation after initial melanonychia. Group B was defined as a nail apparatus melanoma that initially presented with a periungual pigmentation, a nail bed mass, or nail plate dystrophy, but without initial melanonychia. Initial nonmelanonychia lesions could be followed by melanonychia lesions during the disease course of patients in group B. Patients with a melanoma that started as a periungual pigmentation (without melanonychia) and progressed to the nail apparatus (nail matrix, bed, or plate) with ensuing nail pigmentation, nail bed mass, or nail plate dystrophy were included in group B. However, 5 patients with a melanoma that began as a periungual pigmentation without progression to the nail apparatus were excluded, because a melanoma localized in the periungual area would be another acral lentiginous melanoma and not a nail apparatus melanoma. We excluded patients whose initial lesions could not be confirmed as melanonychia or not.

Variables of interest

Disease stage was determined according to the classifications of the American Joint Committee on Cancer (AJCC).[21] Biopsy slides were reviewed, and the following data were analyzed: histopathologic subtype, Breslow thickness, ulceration, mitotic rate (number of mitoses identified on consecutive high-power fields), and vertical growth phase.

Survival was calculated from either the date of the initial diagnosis or the date the skin lesion was first noticed by the patient. Overall survival (OS) was calculated from the date of the initial diagnosis by the physician to the date of death from any cause or the date of the last follow-up examination. Progression-free survival was calculated from the date of the initial diagnosis to the first day of disease progression, recurrence, or last follow-up examination. The value of "survival from the onset of the skin lesion" was defined as the period from the date the lesion was first noticed by the patient to the date of death or the date of the last follow-up examination.

Statistical analysis

Survival analyses were performed using the Kaplan-Meier method, and significance was tested using the log rank test. The prognostic factors at the time of diagnosis that were independently associated with OS were identified using multivariate analysis and Cox proportional hazards regression modeling. All analyses were performed using software (SPSS, Version 18.0, IBM Corp, Armonk, NY). In this study, P less than .05 was considered statistically significant.

RESULTS

Our retrospective review of the Asan Medical Center database identified 171 patients with acral melanoma who were treated between January 1996 and June 2013, of which 49 patients were given the diagnosis of nail apparatus melanoma. Of these 49 patients, 29 patients were given the diagnosis of melanoma that initially presented as melanonychia (group A) (Fig 1, *A*) and 20 patients were given the diagnosis of nail apparatus melanoma that initially