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Dermoscopy of Acral Melanoma: A Multicenter Study on Behalf of the International Dermoscopy Society

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Key Words
Acral melanoma · Dermoscopy · Caucasian population

Abstract
Background: Most studies on dermoscopy of acral lesions were conducted in Asian populations. In this study, we analyzed these features in a predominantly Caucasian population. ***Objective:*** Estimate the prevalence of dermoscopic features in acral lesions, and assess their level of agreement between observers. ***Methods:*** In this retrospective multicenter study, 167 acral lesions (66 melanomas) were evaluated for 13 dermoscopic patterns by 26 physicians, via a secured Internet platform. ***Results:*** Parallel furrow pattern, bizarre pattern, and diffuse pigmentation with variable shades of brown had the highest prevalence. The agreement for lesion patterns between physicians was variable. Agreement was dependent on the level of diagnostic difficulty. ***Conclusion:*** Le-

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sions with a diameter >1 cm were more likely to be melanoma. We found as well that a benign pattern can be seen in parts of melanomas. For this reason one should evaluate an acral lesion for the presence of malignant patterns first.

Objectives

The objectives of this work were to estimate the prevalence of dermoscopic features in acral lesions and to assess the level of agreement between observers for these features.

Materials and Methods

Most of the publications pertaining to the dermoscopic features of acral melanoma and nevi are derived from research conducted in Asian patient populations [1–7]. This may be primarily due to the fact that acral melanoma is the most frequent melanoma subtype encountered in people of Asian descent [8]. The aim of the present study is to analyze the dermoscopic features of acral melanoma and acral nevi in a Caucasian population. Our second aim was to assess the interobserver agreement of these criteria.

Image Collection

We asked the members of the International Dermoscopy Society (http://www.dermoscopy-ids.org/) to submit clinical and dermoscopic images of histopathologically confirmed cases of acral melanoma. Patients at each participating institution gave their written or oral consent at the time the images were acquired that these could be utilized for research purposes in the future.

For a melanoma to be included in the study, the dermoscopic image/s had to be sharply in focus and the diagnosis had to be confirmed histopathologically. After the initial acral melanoma case collection phase, dermoscopy images of all melanomas were independently reviewed by 2 physicians with experience in dermoscopy (R.P.B., O.G.). A case was included in the image set if both physicians independently agreed on the diagnosis of melanoma based on the dermoscopic image. If there was discordance between the dermoscopic and histopathological diagnosis, the participating institution/physician was requested to submit the original histopathological slide/s of the corresponding case. These histopathology slides were then independently reviewed by a panel of 3 experienced dermatopathologists, and the lesion was only included in the study if at least 2 of the pathologists diagnosed the lesion as a melanoma.

We also asked the participants to submit clinical and dermoscopy images of cases of benign acral nevi. Clinically atypical-appearing acral nevi that were subjected to biopsy were included into this study only if accompanied by the histopathology report confirming the diagnosis. In order to avoid a selection bias favoring clinically difficult to diagnose nevi, we collected clinically typical-appearing acral nevi even if they were not biopsied. The justification for this is based on the fact that for dermoscopists, the standard of care for diagnosing typical, benign acral nevi is clinical and dermoscopic examination. All benign lesions were randomly chosen and independently reviewed by 2 experienced dermoscopists (R.P.B. and O.G.) and only included into the study if both agreed independently on the diagnosis. By the end of the data collection, we realized that all benign lesions had histopathology available and so included only benign lesions with histopathological examination. Similar to the protocol used with melanomas, if there was discordance between the 2 evaluations or between dermoscopy diagnosis and histopathological diagnosis, the participants were asked for the original histopathological slide and the same panel of dermatopathologists reviewed the cases. The case was only included if the pathologists confirmed the diagnosis of a benign acral nevus.

A lesion which would not fit the field of view would be considered to be larger than 10 mm of diameter; the ones that would fit the field of view would be considered to be smaller than 10 mm.

For a lesion, which did not fit the field of view, more than 1 image was available so it would be possible to evaluate the entire lesion.

After the images had been collected into an image set, 2 experienced dermoscopists (R.P.B. and O.G.) performed a final review (benign and malignant) and evaluated each lesion for the level of diagnostic difficulty as: 'easy', 'intermediate' and 'difficult' to diagnose.

Internet Portal

To enable multiple dermoscopists to view and assess these lesions, we developed an Internet platform which allowed secured access to the images as well as data collection. The system required a personalized login (user name and password), which was unique for every participant. No patient data was available, and none of the patients were identifiable.

Dermoscopy Criteria

We performed a literature search on dermoscopy of acral nevi and acral melanoma in April 2003 and included all dermoscopy criteria that were published to date in medical textbooks or journals [1, 9, 10]. We identified a total of 13 previously described criteria, which we used for this study. A detailed list of the criteria can be found in table 1. Although some of these criteria were well established, others were not well known or had been mentioned only once in an isolated publication. This being said, our concern was that some participants might not be familiar with the terminology of the 13 criteria used. For this reason, we prepared an online tutorial defining all criteria and showing examples of each criterion. This tutorial was available to the participant at any time during the evaluating phase of the study. Needless to say that none of the cases used in the tutorial were included in the study lesion data set.

Evaluation Phase

After the personal login, the participants had to evaluate every case in the following sequence.

First, they were asked to answer the following questions based on the *clinical picture:* (1) Is the lesion benign, suspect or malignant? (2) What is your diagnosis? (3) What is your suggested management (do nothing, follow up, surgical removal)?

Next, participants were presented with the *dermoscopy image* and were asked to answer the same 3 questions. In addition they had to evaluate the dermoscopy images for the presence of the 13 dermoscopy patterns listed in table 1. Once the participants had answered all questions, they were instructed to 'submit' the case to the study coordinator. All participants' answers were recorded in