ABSTRACT BOOK

ABSTRACTS

24TH WORLD CONGRESS
OF DERMATOLOGY
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DERMOSCOPY AND SKIN IMAGING

AUTOMATIC EXTRACTION OF DERMATOLOGICAL PARAMETERS FOR DIAGNOSIS OF MELANOCYTIC AND NON-MELANOCYTIC LESIONS USING A PORTABLE DERMOSCOPE AND AN INEXPENSIVE SMARTPHONE MICROSCOPE: PRELIMINARY RESULTS

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Introduction: The technological development in smartphones has led to an increase of their use in medical applications, especially in dermatology. The Nurugo Derma (NurugoTM) is a small, inexpensive microscope that attaches to any smartphone and allows the acquisition of digital images that can be analyzed, orienting towards an initial diagnosis.

Objective: Demonstrate how dermatological parameters can be automatically extracted from images acquired with a small inexpensive commercial microscope for smartphones and compare the results with dermoscopic images.

Materials and Methods: Twenty-nine images of cutaneous lesions were acquired both with a portable dermoscope and the Nurugo Derma. Twenty-six images were used to assess the ability of an automatic algorithm to determine the presence (n=18) or absence (n=8) of a reticular pattern; the remaining 3 were used to determine the presence of dermoscopic parameters of vascular lesions. An expert dermatologist observed all images and provided the ground truth evaluation.

Results: The automatic algorithm correctly determined the presence/absence of a reticular pattern in all but two cases (accuracy=92%) when considering the dermoscopic images, and in all but four cases (accuracy=76%) considering the Nurugo images. Interestingly, in three of the four Nurugo error cases, the algorithm predicted the presence of a reticular pattern which was visually observed in the dermoscopic image, but not in the Nurugo image. Considering the vascular lesions, a perfect correspondence was found with the

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dermoscopic and Nurugo images.

Conclusions: It is possible to automatically extract dermatological parameters from images acquired with the Nurugo Derma, and future studies with the amplification of the database will allow a tuning of the developed method to provide higher accuracy results for the diagnosis of melanocytic and non-melanocytic lesions. This method, which is inexpensive, easily accessible and usable, could be used by general practitioners and help them to address dermatologists only doubtful or urgent cases.

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