ABSTRACT BOOK

ABSTRACTS

24TH WORLD CONGRESS
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A new ERA for global Dermatology
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MELANOMA AND MELANOCYTIC NAEVI

NON-INVASIVE HYPERSPECTRAL IMAGING IN DIAGNOSTICS OF MALIGNANT MELANOMA

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Introduction: Malignant melanoma, the deadliest form of skin cancer, poses a clinical diagnostic problem with relatively high number of benign lesions needed to excise for one melanoma found. In recent years, non-invasive diagnostic methods have emerged. Hyperspectral imaging is a novel technology, which combines digital imaging, spectroscopy and use of artificial intelligence.

Objective: This study assessed the accuracy of a hyperspectral imaging system (HIS) combined with a novel three dimensional (3D) deep learning method compared to dermatoscopy aided clinical diagnosis in detection of malignant melanoma (MM).

Materials and Methods: Patients were recruited at two dermatology clinics in Finland for their atypical pigmented lesions suspected as MM, MIS or DN. Lesions were evaluated with dermatoscopy and imaged with HIS prior to excision for histopathological evaluation. The hyperspectral image stacks were analysed using a novel three dimensional convolutional neural network method (3D CNN) giving automated diagnoses, and a maplike images of the lesions.

Results: We included 61 lesions in 43 patients. Histopathologically verified diagnoses were the following: MM 15/61 (25%), MIS 7/61 (11%), DN 25/61 (41%), BN 14/61 (23%). The sensitivity and specificity of clinical dermatosvopy-aided MM diagnosis were 80% and 91%, respectively with positive predictive value (PPV) of 75%. HIS achieved sensitivity of 100% and specificity of 70% followed by PPV of 41% for MM diagnosis.

Conclusions: HIS is feasible for non-invasive MM diagnostics and interestingly gives higher sensitivity compared to clinical evaluation. However, sensitivity and PPV MM diagnosis

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were somewhat lower compared to the trained dermatologists. The novel method still needs further validation with larger data amounts.

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