

Medical > In Vivo > Melanoma & Pigmented Lesion Research

239 | Detection of Intraepidermal Malignant Melanoma In Vivo by Confocal Scanning Laser Microscopy

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ABSTRACT

The early detection of malignant melanoma remains challenging for physicians. New techniques are being explored in order to improve diagnostic accuracy. Confocal scanning laser microscopy (CSLM) represents one such novel imaging modality. It allows in vivo microscopic analysis of skin lesions at a level of resolution approaching histological detail. Therefore, interpretation of optical sections represents in principle a histopathological analysis. Pigmented lesions are particularly amenable to examination by CSLM, since melanin pigment provides endogenous contrast, facilitating the recognition of melanocytes and their distribution within the epidermis. As a first step to explore the use of CSLM in the detection of melanoma, we sought to determine whether images obtained by CSLM are suitable for analysis by established histopathological criteria for the diagnosis of melanoma. We examined five pigmented lesions clinically suspicious for melanoma from five individual patients. Following imaging by CSLM, the clinical lesions were excised for examination by conventional histology. The melanocytes in the confocal images were recognized within the epidermis by their bright cytoplasmic signal intensity. They were round to oval in shape and frequently showed dendritic processes of various lengths. Confocal images of melanoma showed an increased number of intraepidermal melanocytes in solitary units at all layers of the epidermis, including the upper spinous and granular cell layers. Our results demonstrate that intraepidermal melanoma can be recognized by CSLM through analysis of the intraepidermal growth patterns of melanocytes using the same criteria as established for conventional histology. Thus, the application of CSLM represents a new tool for non-invasive screening of intraepidermal pigmented lesions in vivo and offers the opportunity to bring histopathological analysis to the bedside.