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Reflectance confocal microscopy--state-of-art and research overview.

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ABSTRACT

Reflectance confocal microscopy (RCM) enables in vivo imaging of human skin at a quasi histologic resolution. The black-and-white RCM images show horizontal sections of the skin, at a maximum depth of 350 microm. To date, the RCM features of a significant number of skin conditions have been described. The main focus of the research community investigating RCM, however, lies on describing and diagnosing melanocytic skin lesions. Taking into account all RCM studies dealing with diagnostic accuracy in melanocytic skin lesions, sensitivity and specificity of approximately 90% and 86% could be found. Improvement of diagnostic accuracy, improved assessment of dermoscopic-histologic correlation, in vivo biopsy site selection, surgical margin assessment, and response control of conservative therapies in skin diseases are some of the major advantages of this novel imaging method. Additionally, RCM holds inherent potential for teledermatologic application and automated image analyzing. This article describes morphologic features of diverse skin lesions and features of "normal skin," summarizes diagnostic advances of RCM, compares studies dealing with diagnostic applicability, and discusses further research goals of this exciting new imaging technique.