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Reflectance confocal microscopy: an effective tool for monitoring ultraviolet B phototherapy in psoriasis.

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ABSTRACT

Background: In vivo reflectance confocal microscopy (RCM) is a novel, noninvasive imaging technique which enables imaging of skin at a cellular resolution comparable to conventional microscopy. Objectives We performed a pilot study to evaluate RCM as a noninvasive tool for monitoring ultraviolet (UV) B phototherapy in psoriasis.

Methods: In six patients with psoriasis, lesional and nonlesional skin was selected for RCM imaging using a standardized protocol. Well-known histological features of psoriasis were visualized: parakeratosis, acanthosis, agranulosis, papillomatosis, presence of epidermal inflammatory cells, increased number of papillary capillaries and increased capillary blood flow. RCM imaging was performed before the first irradiation with UVB phototherapy, after nine irradiations, at clearance and 12 weeks after clearance. In four patients, 4-mm punch biopsies were obtained and stained with haematoxylin-eosin. Additionally, immunohistochemical staining was performed with monoclonal antibodies specific for CD31, CD3, filaggrin, K16, Ki67 and CD1a for correlation to RCM images.

Results: There was a high correlation between clinical, RCM and histological features. Normalization of RCM and histological features corresponded highly to clinical improvement of psoriasis.

Conclusions: This study is the first to establish the use of RCM as an effective tool for noninvasive monitoring of UVB phototherapy in patients with psoriasis. Potentially, RCM could be used in many other skin diseases for monitoring therapeutic response on a cellular level in a clinical or research setting.