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### In vivo reflectance confocal microscopy: usefulness for diagnosing hair diseases.

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#### ABSTRACT

**BACKGROUND:** Reflectance confocal laser scanning microscopy (R-CSLM) is a new diagnostic technique which allows visualization of "optical intersections" within the epidermis and superficial layers of the dermis.

Outlines of cells and their architecture are imaged and may be analyzed both horizontally and vertically to the skin surface.

The method proved useful in early melanoma detection. We evaluated the potential usefulness of this method in a short series of patients with hair diseases.

**MAIN OBSERVATIONS:** Two healthy persons and 6 patients with hair diseases (1 with alopecia areata, 1 with androgenic alopecia and 4 with genetic hair shaft abnormalities) were examined with the use of VivaScope 1500.

In all patients one scalp location and one location in the mid forearm were evaluated. R-CSLM examination gave in all cases high quality images of the hair shaft intersections, at 1 $\mu$ m intervals, which allowed detailed analysis of the hair structure.

Hair follicles could be partly visualized at a depth of up to 200 $\mu$ m, which allowed analysis of only superficial parts of the hair follicles. An additional hurdle was bright reflection within the follicular ostia, which decreased the perception of details in these images.

Hair could be best visualized, when analyzed on flat surfaces.

Receiving good quality images from convex surfaces on the scalp required additional effort from the patient (to not move) and from the physician (to obtain best possible fit of the "optic window" to the scalp).

**CONCLUSIONS:** These preliminary data show that R-CSLM may develop into a valuable tool in evaluation of hair shaft diseases.

Further development is needed to apply this technique in abnormalities of the hair follicle and the perifollicular area.