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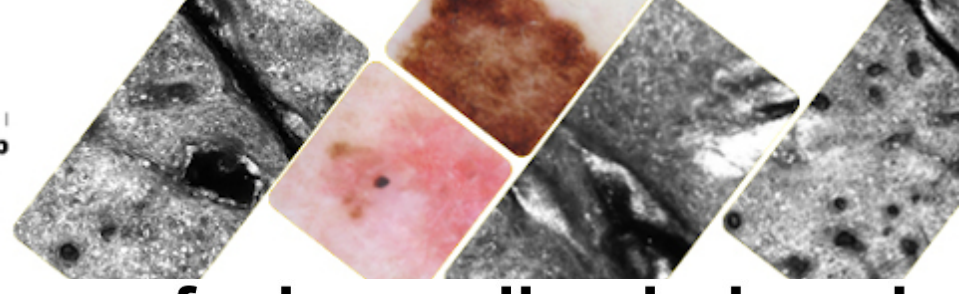

Non-invasive imaging of a severe case of minocycline-induced hyperpigmentation

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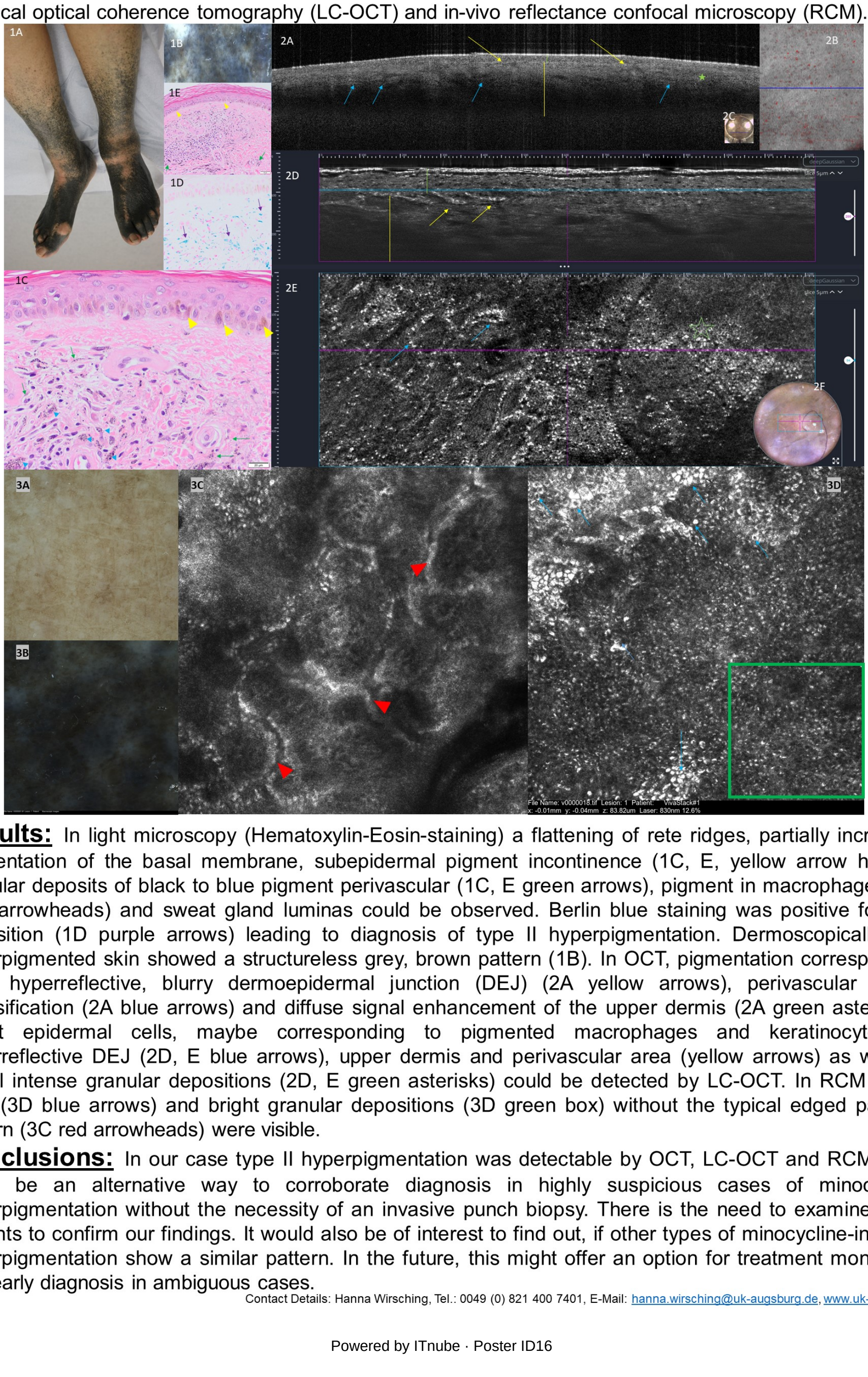
Introduction & Objectives: This 82-year-old man was referred to our hospital because of black hyperpigmentation of his skin. For treatment of rosacea he had been taking minocycline 100 mg twice daily for around 6 years. Minocycline-induced hyperpigmentation is a well-known adverse effect of therapy and can be clinically subdivided into three to four different main patterns of skin. Our objective was to find out whether this type of hyperpigmentation could be detected by non-invasive imaging techniques and to determine its pattern in the different imaging techniques correlating it to light microscopy.

Material & Methods: We examined affected skin by light microscopy of a punch biopsy and by non-invasive in-vivo imaging techniques, including dermoscopy, optical coherence tomography (OCT), Line-field confocal optical coherence tomography (LC-OCT) and in-vivo reflectance confocal microscopy (RCM).



Results: In light microscopy (Hematoxylin-Eosin-staining) a flattening of rete ridges, partially increased pigmentation of the basal membrane, subepidermal pigment incontinence (1C, E, yellow arrow heads), granular deposits of black to blue pigment perivascular (1C, E green arrows), pigment in macrophages (1C blue arrowheads) and sweat gland luminas could be observed. Berlin blue staining was positive for iron deposition (1D purple arrows) leading to diagnosis of type II hyperpigmentation. Dermoscopically, the hyperpigmented skin showed a structureless grey, brown pattern (1B). In OCT, pigmentation corresponded to a hyperreflective, blurry dermoepidermal junction (DEJ) (2A yellow arrows), perivascular signal intensification (2A blue arrows) and diffuse signal enhancement of the upper dermis (2A green asterisks). Bright epidermal cells, maybe corresponding to pigmented macrophages and keratinocytes, a hyperreflective DEJ (2D, E blue arrows), upper dermis and perivascular area (yellow arrows) as well as signal intense granular depositions (2D, E green asterisks) could be detected by LC-OCT. In RCM bright cells (3D blue arrows) and bright granular depositions (3D green box) without the typical edged papillae pattern (3C red arrowheads) were visible.

Conclusions: In our case type II hyperpigmentation was detectable by OCT, LC-OCT and RCM. This could be an alternative way to corroborate diagnosis in highly suspicious cases of minocycline hyperpigmentation without the necessity of an invasive punch biopsy. There is the need to examine more patients to confirm our findings. It would also be of interest to find out, if other types of minocycline-induced hyperpigmentation show a similar pattern. In the future, this might offer an option for treatment monitoring and early diagnosis in ambiguous cases.

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