

Non-invasive live imaging for therapeutic response in plaque psoriasis with Line-field confocal optical coherence tomography (LC-OCT) and Dynamic optical coherence tomography (D-OCT)

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Introduction & Objectives: Up to date there is only few data concerning non-invasive live imaging using LC-OCT of plaque psoriasis and its therapeutic responses. The primary endpoint of this study is the characterization of plaque psoriasis by Line-field confocal optical coherence tomography (LC-OCT) compared to dynamic optical coherence tomography (D-OCT) under treatment with Calcipotriol and Betamethason-dipropionate cream and under systemic treatment with Interleukin-17- and -23 inhibitors.

Material & Methods: An observational study cohort of 70 patients, assigned to two groups (one group being treated only topically with Calcipotriol and Betamethason-dipropionate cream and the other group being treated systemically with Interleukin-17- or 23-inhibitors) is being conducted. Therapeutic response is being evaluated by assessment of the local psoriasis severity index and by non-invasive imaging (LC-OCT, D-OCT). Examination is being conducted before initiation of treatment, after 4 and 12 weeks of therapy.

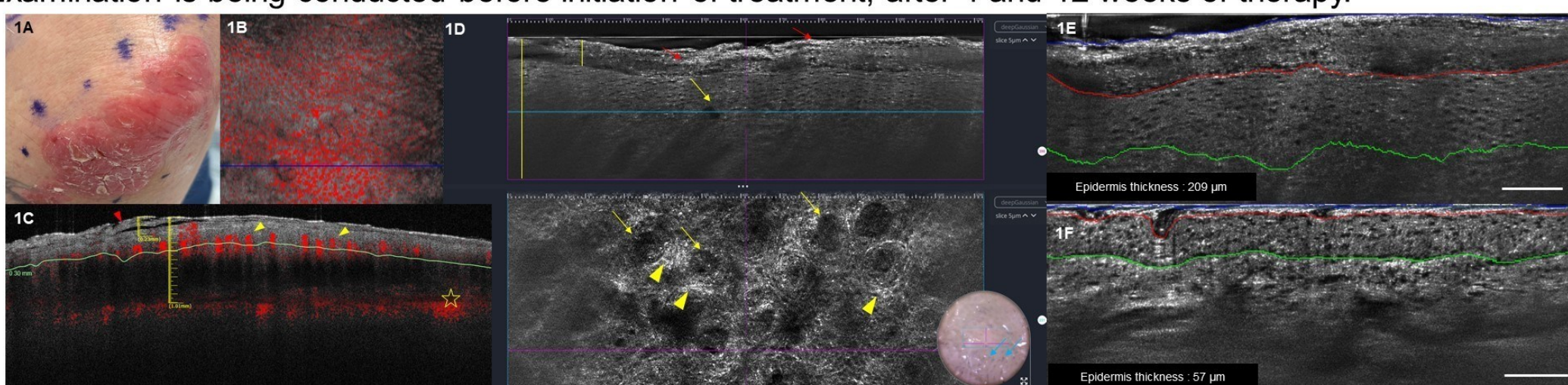


Figure 1: Initial findings of the study plaque before starting systemic therapy with ixekizumab
1A: Clinical picture, 1B, 1C : D-OCT (horizontal and vertical view), 1D: LC-OCT, 1E&F: AI supported analysis of acanthosis and hyperparakeratosis in study plaque (1E) & healthy control lesion (1F).

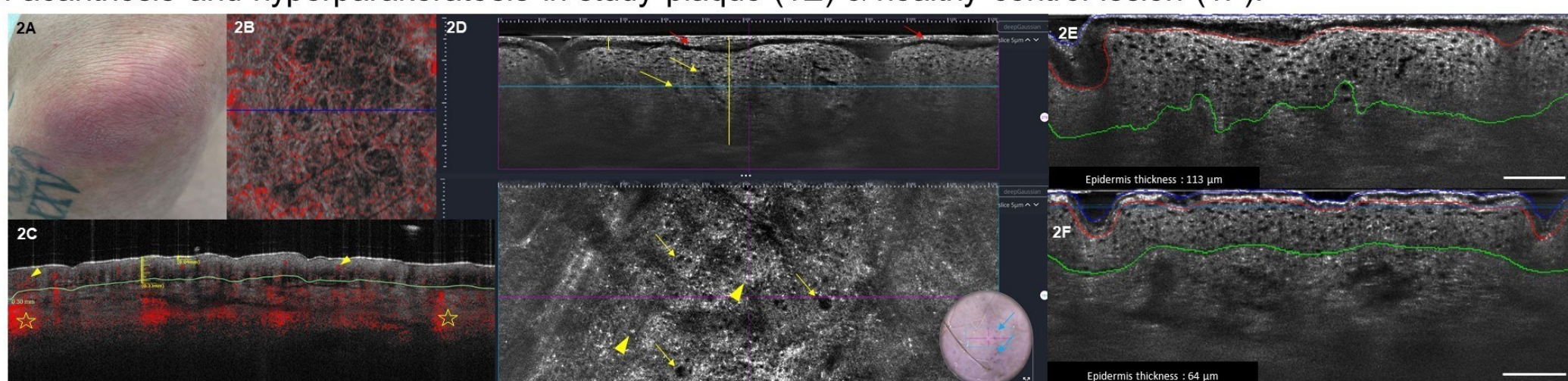


Figure 2: Follow up findings of the study plaque after 4 weeks of treatment with ixekizumab
2A: Clinical picture, 2B, 2C: D-OCT (horizontal and vertical view), 2D: LC-OCT, 2E&F: AI supported analysis of regression of acanthosis & hyperparakeratosis in study plaque (2E) & healthy control lesion (2F).

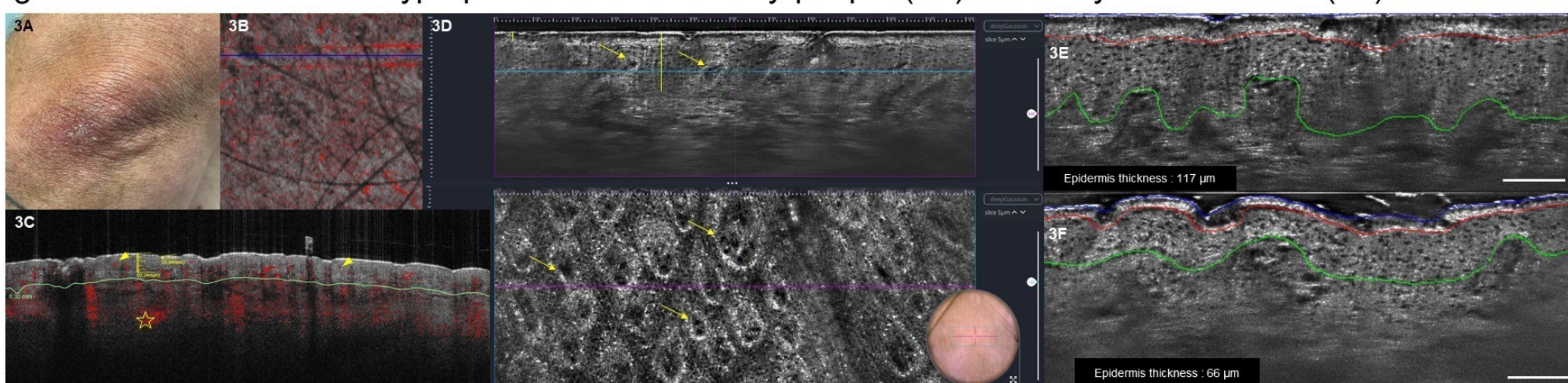


Figure 3: Follow up findings of the study plaque after 12 weeks of treatment with ixekizumab
3A: Clinical picture, 3B, C: D-OCT (horizontal and vertical view), 3D: LC-OCT image. 3E&F: AI supported analysis of regression of acanthosis & hyperparakeratosis in study plaque (3E) & healthy control lesion (3F).

Results & Conclusions: First results indicate that the decrease of acanthosis and hyperparakeratosis as well as hypervascularization can be measured by D-OCT and LC-OCT. Artificial-intelligence (AI) supported analysis of LC-OCT scans of plaque psoriasis regarding therapeutic response seems to be possible. The evaluation of skin changes occurring under topical and systemic therapy over time might reveal specific changes, which - in the future could be used as therapeutic response markers. Especially regarding the nowadays clinical decision of continuation or termination of long-term therapy this might offer a further therapeutic evaluation tool. AI-supported analysis of LC-OCT scans in plaque psoriasis might be useful for faster evaluation in clinical practice.

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