**Characterizing the microcirculation of atopic dermatitis using angiographic optical coherence tomography**

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**Background:** The microcirculation within localised skin lesions often presents a unique morphology when compared to that of healthy skin. In the case of inflammatory conditions such as atopic dermatitis (AD), epidermal thickening is likely to influence both the depth and shape of the underlying vessels. Optical coherence tomography (OCT) provides a non-invasive view into the tissue, however structural measures of epidermal hyperplasia (thickening) are made challenging due to the lack of a delineated dermal-epidermal junction in AD patients. Instead, angiographic extensions to OCT may allow for direct measurement of vascular depth, potentially presenting a more robust method of estimating the degree of subclinical inflammation.

**Objective:** To investigate microcirculatory changes within AD patients using OCT.

**Methods:** Volumes of angiographic OCT data were collected from 5 healthy volunteers and compared to that of 5 AD patients (Mean EASI severity of 8.5±3.3). Test sites included the cubital and popliteal fossa, which are commonly affected by AD. Quantitative parameters such as capillary loop depth and superficial vascular plexus depth were derived from each dataset and compared between groups.

**Results:** Capillary loops were significantly (p=0.003) deeper in AD patients (80.5±19.9μm) compared to healthy controls (59.9±18.2μm). Similarly, the superficial vascular plexus is deeper in AD patients (199.6±60.5μm) than healthy (108.2±19.27μm), likely because of subclinical inflammation.

**Conclusions:** Quantifying subtle changes within vascular morphology and depth may give clinicians an indication of subclinical disease progression and aid in evaluating the efficacy of treatments.