Impact of Staphylococcus aureus colonisation on barrier function and cytokine profile in atopic dermatitis skin

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Atopic dermatitis (AD) is a widespread skin disease that is characterized by lesions at specific body sites, which are typically driven by a type 2 immune response. While the active state is well researched and a broad variety of treatment options exists, lesions often recur in a matter of weeks after treatment cessation. Recent research suggests that clinically healed AD skin is still distinguishable from healthy skin through increased subclinical inflammation. To understand the pathophysiology of relapses in atopic dermatitis, a field for which hardly any research exists, we conducted a study involving more than 20 patients with excretory active (ex-lesional) AD, who underwent either topical therapy or phototherapy, and were biopsied before new lesional outbreaks. Using single-cell sequencing, we correlated the expression profile of the healed skin with the patients’ subsequent time until relapse. With the complementing multiplex analysis of blood cytokines we aim to assess the relevance of the systemic immune response for the reappearance of flares. Our preliminary data suggest that certain AD associated molecular markers in blood and skin indeed precede clinical relapse. By sharing our first results of the study, we hope to pave the way to a deeper understanding of flare development and new therapeutic interventions to delay or even prevent AD relapses in a targeted manner.