Ad polarized alarmin gene expression increases the risk of atopic dermatitis (AD) in children 

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Elevated TSLP and IL-33 signaling ... pediatric AD.

Atopic dermatitis biomarker analysis points to elevation of TSLP and IL-33 signaling and suggests a role for type 2 innate lymphoid cells

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Atopic dermatitis (AD) is a chronic, inflammatory skin disease of unknown etiology, affecting approximately 10% of the world’s population. The pathogenesis of AD is characterized by dysregulated immune responses and skin barrier dysfunction. Epithelial-derived "danger signaling" cytokines called alarmins are a class of proinflammatory cytokines that are released following tissue damage. These cytokines activate downstream signaling pathways that are involved in the induction of inflammation and immune responses. Alarmin activity can be assessed through gene expression or alarmin peptide levels, providing insight into the activation status of alarmin-responsive immune cells.

**Objective**

To investigate the role of alarmin activity in the development of AD, we aimed to:

1. Identify and validate biomarkers of alarmin activity in AD
2. Compare alarmin activity in lesional and nonlesional skin of AD patients with healthy controls
3. Examine the role of alarmin activity in the development of AD

**Methods**

- **Patients and samples**: AD patients were recruited from National Jewish Health in Denver, CO, USA, and healthy controls were recruited from similar demographics. Skin samples were collected from lesional and nonlesional skin sites.
- **Gene expression analysis**: Using microarrays, gene expression levels were compared between AD lesional and nonlesional skin and healthy controls.
- **Alarmin peptide expression**: TSLP and IL-33 peptide levels were measured using liquid chromatography-tandem mass spectrometry (LC-MS).

**Results**

- **Demographics and clinical characteristics**: Demographics were similar between AD patients and healthy controls.
- **Gene expression analysis**: Top genes upregulated in AD lesional skin included TSLP, IL-33, and other alarmin-related genes.
- **Alarmin peptide expression**: TSLP and IL-33 peptide levels were significantly elevated in AD skin compared to healthy controls.

**Conclusions**

- Alarmin activity may play a role in the development and maintenance of AD.
- Elevation of TSLP and IL-33 signaling in skin biopsy and skin tape strips from patients with AD
- Increased TSLP and IL-33 peptide expression measured in skin tape strip samples from patients with AD

**References**


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