

Psychodermatology in psoriasis and atopic dermatitis: the link between mind and skin

Psicodermatología en psoriasis y dermatitis atópica: el vínculo entre mente y piel

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Abstract

Psoriasis and atopic dermatitis (AD) are chronic inflammatory diseases that illustrate the interaction between the immune system, the nervous system, and psychoemotional factors, forming the skin-brain-immune axis, a fundamental concept in psychodermatology. Chronic stress and activation of the hypothalamic-pituitary-adrenal (HPA) axis disrupt immune-neuroendocrine regulation, promoting the release of pro-inflammatory cytokines and worsening skin dysfunction. In psoriasis, the Th1/Th17 pathway predominates, while in AD, the Th2 pathway is more active, both associated with emotional disorders such as anxiety, depression, and insomnia. The aim of the study was to analyze the psycho-neuro-immune interaction in these diseases to propose a patient stratification model that guides personalized therapies within the framework of precision medicine. A narrative review was conducted with a systematic search of the literature in databases such as PubMed, SciELO, Scopus, and Web of Science, considering articles published between 2020 and 2025 that explored the relationship between stress, the HPA axis, immune pathways, and skin manifestations. The results showed that stress and HPA axis dysfunction are closely related to skin inflammation in both diseases, with psoriasis dominated by the Th1/Th17 pathway and AD by the Th2 pathway. The evidence supports the need for an integration of immune and emotional approaches in the management of psoriasis and AD, enabling a more effective and personalized treatment that addresses both the physiological and psychoemotional aspects of patients.

Keywords: psychodermatology; psoriasis; atopic dermatitis; chronic stress; precision medicine

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Resumen

La psoriasis y la dermatitis atópica (DA) son enfermedades inflamatorias crónicas que ilustran la interacción entre el sistema inmunitario, el sistema nervioso y factores psicoemocionales, formando el eje piel-cerebro-inmunidad, concepto fundamental en la psicodermatología. El estrés crónico y la activación del eje hipotálamo-hipófisis-adrenal (HPA) alteran la regulación inmunoneuroendocrina, lo que favorece la liberación de citoquinas proinflamatorias y agrava la disfunción cutánea. En la psoriasis, la vía Th1/Th17 predomina, mientras que en la DA, la vía Th2 está más activa, ambas asociadas con trastornos emocionales como ansiedad, depresión e insomnio. El objetivo del estudio fue analizar la interacción psico-neuro-inmunológica en estas enfermedades para proponer un modelo de estratificación de pacientes, que oriente terapias personalizadas dentro del marco de la medicina de precisión. Se realizó una revisión narrativa con búsqueda sistemática de la literatura en bases de datos como PubMed, SciELO, Scopus y Web of Science, considerando artículos publicados entre 2020 y 2025 que exploraran la relación entre el estrés, el eje HPA, las vías inmunes y las manifestaciones cutáneas. Los resultados mostraron que el estrés y la disfunción del eje HPA están estrechamente relacionados con la inflamación cutánea en ambas enfermedades, con la psoriasis dominada por la vía Th1/Th17 y la DA por la vía Th2. La evidencia respalda la necesidad de una integración de enfoques inmunológicos y emocionales en el manejo de la psoriasis y la DA, permitiendo un tratamiento más eficaz y personalizado que aborde tanto los aspectos fisiológicos como los psicoemocionales de los pacientes.

Palabras clave: psicodermatología; psoriasis; dermatitis atópica; estrés crónico; medicina de precisión



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INTRODUCTION

Psoriasis and atopic dermatitis (AD) are chronic inflammatory diseases that illustrate the complex interaction between the immune system, the nervous system, and psychosocial factors, forming the skin-brain-immunity axis, the foundation of modern psychodermatology. Chronic stress and activation of the hypothalamic-pituitary-adrenal (HPA) axis alter immunoregulatory cytokine regulation, promoting the release of pro-inflammatory cytokines that worsen skin dysfunction. In psoriasis, the Th1/Th17 pathway predominates, while in AD the Th2 pathway is predominant, both are associated with anxiety, depression, and insomnia.

However, current literature addresses these factors separately, which limits the development of integrated models. This study proposes a precision psychodermatology approach, aimed at personalizing therapeutic strategies according to the patient's immunopsychological profile.

OBJETIVE

General Objective:

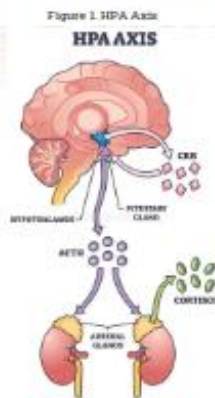
To analyze the psycho-neuro-immunological interaction in psoriasis and atopic dermatitis in order to propose a patient stratification model that guides personalized therapies within the framework of precision medicine.

Specific Objectives:

- To correlate the clinical severity of the disease with immunological profiles (Th1/Th17 and Th2) and the patient's psychological burden (stress, anxiety, depression).
- To identify the dysregulation of the Hypothalamic-Pituitary-Adrenal (HPA) axis as the key biological mechanism linking stress with cutaneous inflammation.
- To structure a psychodermatological case model that integrates these findings in order to personalize the therapeutic approach.

METHODOLOGY

- Type of study:** narrative bibliographic review with systematic search and an analytical-descriptive approach.
- Sources of information:** PubMed, Sciflo, Scopus, and Web of Science (period: 2020-2023).
- Inclusion criteria:** studies in English or Spanish, peer-reviewed, that analyzed the relationship between stress, the HPA axis, immune pathways (Th1/Th17 and Th2), and cutaneous manifestations in psoriasis and atopic dermatitis.
- Selection:** 35 articles were selected and organized into matrices (Excel, Mendeley, Zotero).
- Analysis:** through narrative synthesis and theoretical triangulation among the immunological, dermatological, and psychological axes, integrating the findings into an immunopsychological stratification model oriented toward precision medicine.



RESULTS

The review identified a bidirectional relationship between stress, dysregulation of the HPA axis, and cutaneous inflammation. Psoriasis showed a predominance of Th1/Th17 pathways, while atopic dermatitis showed predominance of Th2, both associated with symptoms of anxiety, depression, and insomnia. Recent studies confirm that chronic stress increases IL-6, TNF- α , and cortisol, reinforcing the mind-skin connection. The integration of immunological and emotional variables allows the delineation of differentiated immunopsychological profiles, which form the basis for clinical stratification in precision medicine.

Table 1. Differential Immuno-Psychological Profiles

Characteristic	Psoriasis	Atopic Dermatitis
Immune Pathway	Th1/Th17	Th2
Key Mediators	IL-17, TNF- α	IL-4, IL-13
Psychological Comorbidity	Depression	Anxiety, Sleep Disorders
Model	Psychodermatological Amplification	Pruritus-Scratch Cycle

Figure 2. Psycho-Neuro-Immunological Feedback Loop Model



Figure 3. Plaque of Psoriasis Vulgaris



CONCLUSIONS

The integration between the mind, skin, and immune system redefines the understanding of inflammatory skin diseases. Beyond describing correlations, this analysis proposes a paradigm shift: recognizing that the psychological component is not merely an accessory factor, but a central biological modulator.

Psychodermatology, supported by precision medicine, offers the possibility of stratifying patients according to their immunopsychological profile and guiding interventions that balance both the inflammatory response and emotional well-being. This approach inaugurates a more human, predictive, and personalized vision of dermatological care.

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