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ASSOCIATION BETWEEN CHRONIC STRESS AND THE INTENSITY AND RECURRENCE OF PSORIATIC SYMPTOMS

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ABSTRACT

Psoriasis is a chronic inflammatory skin disease that significantly impairs quality of life and often presents with systemic manifestations. While its exact etiology remains unclear, stress is increasingly recognized as a major factor in triggering and exacerbating the disease. This paper reviews the current scientific literature on the complex bidirectional relationship between psychological stress and psoriasis, with particular focus on the underlying neuroendocrine mechanisms and clinical consequences. Dysregulation of the hypothalamic–pituitary–adrenal (HPA) axis and the sympathetic–adrenal–medullary (SAM) system plays a key role in stress-related immune activation, promoting inflammation and impairing skin barrier function. Patients identified as "stress responders" experience more frequent and severe flare-ups and often show reduced responsiveness to standard dermatologic therapies. Moreover, the visible and chronic nature of psoriatic lesions contributes to emotional distress, forming a vicious cycle of stress and symptom aggravation. Integrative therapeutic approaches—including relaxation techniques, psychotherapy, and pharmacological treatment with antidepressants or anxiolytics—have demonstrated potential in reducing symptom severity and improving patient well-being. These findings support the implementation of a multidisciplinary model of care that addresses both dermatological and psychological dimensions of psoriasis for more effective, patient-centered management.

KEYWORDS

Psoriasis, Stress, HPA Axis, SAM Axis, Psychodermatology, Stress Response, Integrative Therapy

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Introduction

Psoriasis is an inflammatory, chronic disease with an estimated prevalence of about 2–3% in the general population.[1] In everyday dermatological practice, it is one of the most commonly encountered skin disorders.[2]

It primarily affects the skin, but systemic symptoms and widespread distribution of skin lesions should always be expected. The first symptoms of psoriasis typically appear before the age of 40 and manifest as well-demarcated, red, scaly skin lesions, most commonly located on the knees, elbows, scalp, feet, hands, and around the joints in cases involving the musculoskeletal system. Patients report symptoms such as itching, irritation, burning, and pain. The diagnosis of psoriasis may be associated with the presence of the Koebner phenomenon and the Auspitz sign.[3–5]

The etiology of psoriasis is not fully understood, but it is believed to be multifactorial, involving both genetic and environmental factors. Among these, stress is considered an important factor influencing the onset and exacerbation of psoriasis.[6] It is recognized as a trigger that can provoke the development of various dermatological conditions, such as atopic dermatitis, acne vulgaris, and chronic urticaria. In each of these diseases, there are patients who experience a worsening of skin symptoms directly following stress, as well as those whose emotional state does not appear to affect the natural course of the disease. Therefore, two groups are distinguished: "stress responders" and "non-responders to stress."[7] Research findings show that as many as 37 to 78% of patients with psoriasis respond to stress.[8] At the same time, due to its chronic and visible nature, psoriasis can itself be a source of stress, creating a vicious cycle of mutual interaction between psychological and dermatological factors.

Understanding the impact of chronic psychological stress on the severity and frequency of psoriasis flare-ups is crucial for a comprehensive approach to treating the disease. This approach includes not only pharmacological therapy but also psychological support and stress reduction techniques, which can significantly improve patients ’quality of life.

The aim of this paper is to analyze current scientific literature on the relationship between stress and the course of psoriasis, with a focus on their mutual interaction, and to identify potential preventive and therapeutic strategies that may help minimize the negative impact of stress on the progression of the disease.

The crucial role of stress

Based on research, stress can be divided into three main categories:

1.life events that cause intense tension, such as serious health problems, job loss, or financial difficulties;

2.psychological disorders or specific personality traits that predispose individuals to experiencing stress;

3.insufficient support from one's social environment.[9]

Stress can be assessed using various tools, including subjective evaluation of its intensity and sources, perceived level of psychological tension, and the identification of stressful life situations. [10, 11, 12]

Regardless of how stress is defined, research consistently indicates a link between stress and the occurrence of psoriasis.[9, 13–19] According to the majority of patients, stress is the most significant factor contributing to the exacerbation of psoriasis symptoms—more so than other potential triggers, such as infections or weather conditions.[13]

In a study conducted by Verhoeven et al., a high number of daily stressors was associated with more extensive skin lesions, more intense itching, and higher scores on the PASI scale. Meanwhile, Gaston et al. identified a correlation between the severity of psychological stress and the clinical advancement of psoriasis. They also emphasized a temporal relationship in which stress acts as a precursor to the onset or exacerbation of disease symptoms.[20] In a research study conducted by Gupta et al., the investigators identified differences between patients who reported stress as a factor worsening the course of their psoriasis (so-called"stress responders") and those who did not perceive such an influence ("non-responders"). Over a six-month period, stress responders experienced a greater number of disease flare-ups and reported higher levels of daily stress related to psoriasis. They were also more likely to base their well-being on external approval. Additionally, psoriatic lesions in these patients tended to be more severe in areas such as the scalp, face, neck, forearms, hands, and intimate regions.[9]

It is also worth noting that stress may not only exacerbate psoriasis symptoms but also reduce the effectiveness of treatment. A study by Fortune et al. showed that psychological stress inhibited skin improvement in patients undergoing PUVA therapy (psoralen + UVA radiation). Moreover, in patients with higher levels of worry, the improvement in health occurred nearly twice as slowly.[21]

Stress Physiology in Relation to Psoriasis

During stress, the body activates the HPA axis (hypothalamic–pituitary–adrenal) and the SAM axis (sympathetic–adrenal–medullary), both of which are involved in regulating the immune response.[22–25]

In a stressful situation, the hypothalamus releases CRH (corticotropin-releasing hormone), which stimulates the pituitary gland to secrete ACTH (adrenocorticotropic hormone), leading to an increase in cortisol levels produced by the adrenal glands.[26] CRH also plays a role in stimulating the release of noradrenaline in the peripheral sympathetic nervous system, as well as noradrenaline and adrenaline in the adrenal medulla, resulting in elevated concentrations of these hormones in the body during stress.[27–29]

Studies indicate that in patients with psoriasis, stress leads to weakened activation of the HPA axis and simultaneously an enhanced response of the SAM axis. This is reflected in decreased cortisol levels and increased levels of adrenaline and noradrenaline.[22, 23]

An abnormal hormonal response to stress may play a significant role in the inflammatory pathogenesis of psoriasis, particularly in stress-prone patients. A decrease in cortisol levels and an increase in adrenaline and noradrenaline concentrations can intensify inflammatory processes in the skin by activating mast cells, impairing the epidermal barrier, and increasing cytokine secretion.[24]

Moreover, CRH inhibits keratinocyte apoptosis, promotes angiogenesis through the activation of VEGF, and increases vascular permeability, facilitating the infiltration of inflammatory cells into psoriatic lesions.[26]

How stress and psoriasis create a self-perpetuating cycle.

Psoriasis can act as a significant stressor due to its chronic course and the visible, often stigmatized skin lesions that contribute to social stigmatization. Such experiences negatively impact patients 'psychosocial functioning, leading to difficulties in interpersonal relationships and a deterioration in mental health.[30]

Given that psoriasis imposes a significant psychological burden and stress can contribute to the intensification of disease symptoms, the entire pathological process can take the form of a self-perpetuating vicious cycle.[31] Further progression of the disease may deepen existing psychosocial difficulties, while the patient's emotional state can influence the severity of psoriasis symptoms.[32]

Regulation of stress responses

The simplest and most effective method of assessing whether stress contributes to the exacerbation of psoriasis symptoms in a patient is to directly ask the question:”Do you notice that stress often worsens your symptoms? ” A positive response may serve as the basis for a more in-depth analysis of the role of stress in the course of psoriasis and for considering the implementation of appropriate therapeutic interventions.[33]

It is important to emphasize that the terms”stress responders” and”non-responders” refer solely to the impact of emotional stress on the intensification of psoriasis symptoms. They are not equivalent to a diagnosis of mental health disorders, which requires a separate clinical assessment, distinct diagnostic tools, and a different therapeutic approach.[33]

Patients who exhibit worsening psoriasis symptoms in response to stress, despite the absence of psychiatric disorders, it is advisable to provide information about the potential health benefits of stress reduction, particularly in relation to dermatological improvement. Recommended methods for alleviating emotional tension include practices such as yoga, breathing techniques, and meditation. In cases requiring more advanced therapeutic support, it may be appropriate to consider interventions such as psychotherapy or pharmacological treatment.[33]

Therapeutic approaches

Psychotherapy can play a significant role in supporting the treatment of patients with psoriasis. Group therapy in particular shows potential as an effective form of psychological support, offering participants both education about the disease and tools to better cope with its chronic nature. Participation in group sessions encourages the exchange of experiences with other patients, which promotes the development of stress management skills and strengthens self-esteem.[34]

Data from case reports suggest that the use of relaxation techniques and stress-reduction methods—including hypnosis and thermal biofeedback—may lead to clinical improvement in the course of psoriasis.[35, 36]

Kabat-Zinn and colleagues demonstrated that stress-reduction techniques can accelerate the resolution of psoriatic lesions in patients undergoing UVB or PUVA therapy. In their study, individuals who practiced meditative relaxation exercises during light therapy experienced faster clinical improvement compared to patients who received standard treatment alone.[37]

Pharmacological treatment can serve as a valuable support in psoriasis therapy. Research findings indicate clinical improvement in patients following the use of oral antidepressants, including imipramine—a tricyclic antidepressant, moclobemide- a monoamine oxidase inhibitor, and extended-release bupropion.[38-41] Selective serotonin reuptake inhibitors (SSRIs) are the preferred treatment option for stress reduction, especially in psoriasis patients with coexisting depression. They may also benefit individuals without depressive symptoms whose skin lesions worsen due to stress. SSRIs such as fluoxetine, paroxetine, sertraline, and escitalopram are known for better tolerance and a more favorable safety profile compared to other classes of antidepressants.[42]

Additionally, anxiolytic medications like alprazolam may be used short-term in patients who respond to stress with heightened tension. Due to its rapid onset and low potential for accumulation, this drug can be effective[43]; however, because of the risk of sedation and dependence, its use should be time-limited.[33]

Conclusions

Chronic psychological stress plays a significant role in the pathogenesis and progression of psoriasis, affecting both the severity of symptoms and the frequency of flare-ups. Research data clearly indicate a strong link between stress and dermatological deterioration in a substantial portion of patients, suggesting that psychological factors should be routinely considered in the diagnostic and therapeutic process of this disease.

In”stress-reactive” patients, the course of the disease tends to be more severe, with a higher number of flare-ups and a delayed response to treatment. The physiological mechanisms responsible for these phenomena include, among others, dysregulation of the HPA (hypothalamic-pituitary-adrenal) and SAM (sympathetic-adrenal-medullary) axes, as well as an altered hormonal response, which may contribute to the intensification of inflammatory processes in the skin.

Integrating stress-reduction methods into a comprehensive treatment plan for psoriasis—such as relaxation techniques, psychotherapy, or pharmacological interventions—can significantly improve patients ’ clinical condition and quality of life. Particular importance is placed on therapies aimed at enhancing psychological resilience, reducing emotional tension, and developing effective coping skills for managing the disease.

In light of the presented data, implementing an interdisciplinary approach to psoriasis treatment is well-justified. This approach, alongside traditional pharmacological methods, also includes the assessment of psychological factors and the introduction of appropriate psychotherapeutic or pharmacological interventions. Such a holistic strategy increases the likelihood of effectively managing the disease and reducing its negative impact on patients 'lives.

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