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Exploring the Biopsychosocial Impact of Recalcitrant Eczema in a 13-Year-Old Patient: A Case Report

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Abstract

INTRODUCTION: A 13-year-old female patient presents with a complex case of severe eczema ongoing for over a year. This case report integrates the biopsychosocial model, focusing on the biological, psychological, and social determinants affecting flare onset and guiding the treatment plan.

METHODS: Consent was obtained from the patient and her mother. A comprehensive review of the patient's medical file, including past medical and surgical history, family, and social history was conducted. A multidisciplinary approach drawing on opinions from dermatology, primary care, and social work, was used to optimize treatment.

RESULTS: Through a biological perspective, the patient has widespread excoriation and lichenification throughout the body, likely attributed to hormonal changes associated with menarche and family history. Psychologically, the patient described a shift from her previously calm demeanor to a more agitated and anxious state. Socially, the patient reports social withdrawal and the stigma associated with her flares.

DISCUSSION: This case highlights the importance of incorporating the biopsychosocial model when treating severe and relapsing cases of eczema in pediatric populations. Dealing with chronic, worsening flares, as reported in the case, highlights the vital need for a multidisciplinary approach to address the emotional and physical impacts.

CONCLUSION: The patient's case represents a common pediatric presentation in general practice and illustrates the necessity of incorporating the biopsychosocial model when addressing treatment options for chronic skin conditions such as eczema.

Introduction

One of the main principles in primary care is treating patients with a holistic approach. While several models have been developed to improve patient outcomes, the biopsychosocial model has shown superior outcomes and a stronger doctor-patient relationship.¹ First introduced by George Engel in 1977, this model marked a major shift in the treatment of chronic diseases by emphasizing the interplay of biological, psychological, and social dimensions in health and healing.¹ In Ireland, skin conditions account for 15-20% of cases encountered daily in general practice.² Many of these skin conditions have a biological basis that is closely linked to mental health, stigma and long-term social isolation. Therefore, understanding and applying the biopsychosocial model is crucial to enhance patients' quality of life.

Recent literature continues to support the biopsychosocial model in managing chronic conditions in pediatric populations, particularly where psychosocial stressors exacerbate biological symptoms. For example, a study on pediatric sickle cell disease found that parenting stress is influenced by a combination of child pain frequency, missed school days, and caregiver mental health,

underscoring the need for comprehensive care approaches.³

Case Background

A 13-year-old female Irish-Caucasian patient with treatment-resistant eczema presented to general practice in Mallow.

FROM A BIOLOGICAL PERSPECTIVE, the patient began experiencing severe, itchy, episodic flares on the face and body since menarche, which worsened over 12 months. These episodes are likely attributed to both immunological and genetic factors.

FROM A PSYCHOLOGICAL PERSPECTIVE, the patient reports persistent daytime fatigue as her eczema has affected her quality of sleep. This fatigue has negatively impacted her performance in school and increased irritability and anxiety.

FROM A SOCIAL PERSPECTIVE, the patient reports social anxiety and withdrawal due to a lack of confidence in her body image. This has led her to avoid certain activities such as shopping with her family and participating in physical education classes.

Case Details

PRESENTING COMPLAINT

A 13-year-old female presents with severe, episodic flares of eczema, unresponsive to topical treatments, persisting since the onset of menarche 12 months ago. These flares are characterized by intense pruritus and a widespread distribution across the face and body, and have significantly impacted her self-esteem and daily activities. She previously had eczema as a toddler, which resolved by age four with topical treatments.

FAMILY HISTORY

Family history reveals a strong predisposition to atopic conditions, including asthma in her father and younger sister.

PAST MEDICAL HISTORY

The patient's medical history is significant for other atopic conditions, including asthma and hay fever.

PREMORBID BEHAVIOR

The patient states that “since the flares started, I am not the same person I used to be.” She reports increased agitation and withdrawal, in contrast to her previously energetic and happy personality.

ENVIRONMENTAL AND SOCIAL FACTORS

The patient reports having a supportive family and school counselor; however, she experiences a sense of isolation as she struggles with her flares, leading to increased withdrawal and concern about peer judgment. This is further highlighted by her avoidance of physical education classes to prevent exposing her skin, which suggests underlying social anxiety and concerns about stigma.

CURRENT MANAGEMENT

Her treatment regimen includes topical therapies coupled with antihistamines and inhalers. She was admitted for one week at the South Infirmary Victoria University Hospital to begin treatment with Methotrexate at 10mg that was later reduced to 7.5mg due to deranged liver function tests (LFTs).

Clinical Findings

PHYSICAL EXAMINATION

Severe eczema affecting the limbs, torso, legs, and face. On examination, there is diffuse facial erythema resembling a sunburn, along with widespread excoriation and lichenification, particularly on the legs and ankles. Lesions are non-purulent and non-edematous.

LABORATORY FINDINGS

Routine blood test was normal. LFTs were normal.

Biological Considerations

There is a complex interplay of genetic, hormonal, and immunological factors. A strong family history of atopic conditions is noted, as her father and younger sister both have asthma, coupled with her own past medical history of asthma and hay fever. This suggests a hereditary component closely linked to atopy.⁵ The onset of the patient's symptoms coinciding with menarche suggests the possibility of hormonal influence. Hormones such as estrogen and progesterone can play a role in the pathogenesis of eczema, as they impact the integrity of the skin barrier.⁵ Additionally, the patient's episodic history of widespread excoriations, lichenification, and intense pruritus could indicate a skewed immunological profile.⁶ Particularly, an overactive Th2 response has been linked to eczema, as it can lead to chronic inflammation and poor wound healing.⁶ This immunological dysfunction is the basis for systemic therapies for eczema, such as methotrexate, which is an effective treatment option⁷; however, the patient's deranged LFTs underscore the challenges of balancing efficacy and safety in managing her condition.⁷

Psychological Considerations

From a psychological perspective, atopic dermatitis is associated with sleep disturbances and impaired daytime functioning, leading to compromised function and mood.⁸ The impact of sleep disruption on this patient is seen as she navigates through life challenges, like school and puberty. Frustration and anxiety are experienced by those with chronic skin conditions due to itching, discomfort, and perceived social stigma.⁹ This may further contribute to, or be exacerbated by, sleep disturbances, resulting in changes in behavior and social interactions.⁹

Moreover, the patient reports feeling agitated due to her perceived social stigmatization linked to her skin. She experiences difficulties coping with her condition, mentioning a loss of her previous “cheerful” identity. This shift can worsen her stress and reduce her quality of life, further contributing to the disease state.¹⁰ Additionally, she perceives her treatment-resistant eczema as a personal inadequacy and a drastic shift in her life, leading to feelings of frustration, social isolation, and diminished day-to-day life satisfaction.

Social Considerations

The patient's struggles with her treatment-resistant eczema highlights the significant social challenges faced by

many patients with chronic dermatological conditions which can impact a patient's social interactions, their relationships, and ultimately their self-perception. There is also frequent stigma associated with visible chronic eczema, which can lead to bullying and social isolation as a result.¹¹ In this case, the patient reports avoiding certain activities like shopping and physical exercise in order to hide her skin, which raises concerns about the long-term effects on her social development and peer relationships. This pattern of withdrawal is well-documented in patients with chronic skin conditions, particularly those that are visible.¹²

Peers may harbor negative perceptions, often incorrectly associating dermatological conditions with poor hygiene or contagiousness.¹³ Although this patient reports having a supportive family and access to a school counsellor, she expresses feelings of isolation, as she lacks someone who fully understands and shares her experiences. This feeling of perceived solitude is only further compounded by the disruptive nature of her flare ups. The stress of living with treatment-resistant eczema, combined with the repetitive frustration of ineffective treatment, can lead to a vicious cycle that negatively affects mental health.^{11,12}

Conclusion

This case highlights the importance of the biopsychosocial model in managing chronic skin conditions in the pediatric population. A multidisciplinary team, including dermatologists, primary care physicians, and school counselors, is essential to improve psychological and social outcomes for childhood skin conditions.⁹

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