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Case Report on Sunscreen Induced Contact Dermatitis

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ABSTRACT

Background: PCOS-related acne is commonly treated with topical retinoids, antibiotics, and sunscreen, but chemical UV filters like oxybenzone can cause hypersensitivity reactions.

Case Presentation: A 20-year-old female with PCOS developed facial redness, itching, exfoliation, and fever (102°F) after applying a sunscreen containing oxybenzone overnight. Lab findings showed elevated eosinophils (13.1%), indicating an allergic reaction.

Management: Treatment was discontinued, and she was prescribed Desonide, Allegra, Dolo 650, and Excela Moisturizer. The ADR was moderate, predictable, and probably preventable.

Conclusion: This case highlights the need for patch testing, hypoallergenic sunscreen selection, and patient education to prevent sunscreen-induced hypersensitivity in acne-prone individuals.

Keywords: Contact dermatitis, Sunscreen, PCOD, Oxybenzone

INTRODUCTION

Sunscreen-induced contact dermatitis is a rare but significant adverse reaction to sunscreen application, characterized by localized skin inflammation due to irritant or allergic mechanisms. While sunscreen is essential for preventing ultraviolet (UV)-induced skin damage, certain ingredients can trigger hypersensitivity reactions, leading to contact dermatitis. Studies suggest that sunscreen-related allergic contact dermatitis affects approximately 1–5% of patients undergoing patch testing for suspected allergic contact dermatitis. Photoallergic contact dermatitis to sunscreens is less common but has been reported in 0.5–2% of cases in photo patch testing studies. Incidence rates vary by region, influenced by sunscreen formulations, climate, and population genetics. Chemical UV filters (e.g., oxybenzone, avobenzone, octocrylene) are among the most frequent allergens in sunscreen related reaction. Preservatives (e.g. Methylisothiazolinone) and fragrances also contribute to allergic responses. Physical blockers (zinc oxide, titanium dioxide) are generally well tolerated and less likely to cause reactions. The risk factors are Gender and Age which are more common in women, likely due to higher sunscreen use and increased exposure to cosmetic products. Sunlight Exposure and Pre-existing Skin Conditions are also a one of the major risk factors.[1]

CASE REPORT

A 20-year-old female presented with a chief complaint of absent menstruation for the past three months. She also reported obesity, with a weight of 80 kg, severe hormonal acne on the face, depression, and facial hair growth, all of which had developed over the past three months. The patient has no past history of any medical conditions, medication use, or social history. However, she has a known allergy to dust.

She consulted a gynaecologist on November 3, 2022. A pelvic ultrasound was performed, revealing a 5 mm cyst in the uterus. The doctor diagnosed her with polycystic ovary syndrome (PCOS) in its early stage. She was advised to make lifestyle changes, including weight reduction, to help manage the condition.

In December 2023, she consulted a dermatologist for severe acne. She was prescribed Tivenca Gel (once daily in the morning), Episoft Sunscreen with Moisturizer (once daily in the morning), and Deriva CMS Gel (once daily at night) for 15 days.

During the same month, she applied another sunscreen overnight without any additional cream. This sunscreen contained titanium dioxide as a physical blocker oxybenzone as chemical UV filter. The next morning, she developed mild fever, facial redness, itching, and exfoliation of the skin.

General Examination:

- Temperature: 102°F
- Blood Pressure: 120/80 mmHg Laboratory Findings:
- Platelet count: 459,000/cu mm
- WBC count: 6,200/cu mm
- Haemoglobin: 11.2 g/dL
- Polymorphs: 47.1%
- Lymphocytes: 32.4%
- Eosinophils: 13.1%

Figure:1: Sunscreen induced contact dermatitis

ADR Management

For the management of the adverse drug reaction (ADR), all previous treatments were discontinued. She was prescribed Desonide (1-1-1), Allegra 150 mg (1-0-1), Dolo 650 mg (as needed for fever or pain), and Excela Moisturizer (1-1-1) along with Dapsone for 7 days. She was also advised to avoid sunlight for a few days and to refrain from using any chemical creams or makeup.

ADR analysis

Table:1: Causality assessment of suspected ADR

Suspected drug	Suspected Reaction	Naranjo's scale	WHO - probability Scale	Karch and Lasagnas scale
Oxybenzone	Allergic contact dermatitis	Probable	Probable	Probable

Severity: Moderate

Predictability: Predictable Preventability: Probably preventable

DICUSSION

Patients with PCOS-related acne often have compromised skin barrier function and are more prone to irritation and inflammation due to hormonal imbalances. chemical UV filters, particularly oxybenzone, may exacerbate inflammatory responses in these individuals.A study from the North American Contact Dermatitis Group (NACDG) found that benzophenones (e.g., oxybenzone) were a leading cause of sunscreen-related allergic reactions.[1]A simple patch test before applying new skincare products could have identified sensitivity to oxybenzone. Patient education on reading ingredient labels and choosing oxybenzone-free alternatives is essential. Upon recognizing the cutaneous hypersensitivity reaction, all previous treatments were immediately discontinued, and the patient was prescribed Desonide cream (1-1-1) a mild corticosteroid to reduce redness, itching and inflammation. Allegra 150 mg (1-0-1), a non-sedating antihistamine, was administered to control allergic reactions. Dolo 650 mg (SOS) was prescribed for fever management, while Excela Moisturizer (1-1-1) was included to help restore the skin barrier and maintain hydration. Along with pharmacological intervention, the patient was advised to avoid direct sunlight, chemical creams, and makeup to prevent further irritation. Additionally, patient education on proper sunscreen use was emphasized, including the importance of avoiding prolonged exposure to chemical UV filters and opting for hypoallergenic formulations, particularly those containing only physical blockers like zinc oxide and titanium dioxide.

CONCLUSION

This case highlights the importance of recognizing chemical sunscreen-induced hypersensitivity reactions, particularly in individuals with pre-existing dermatological conditions like PCOS. Oxybenzone and other chemical UV filters can trigger immune- mediated skin reactions, necessitating a careful approach to sunscreen selection. Proper patient education, patch testing, and ingredient awareness play a crucial role in preventing such ADRs. Future dermatological and gynaecological management of PCOS patients should emphasize holistic skincare approaches to minimize adverse effects while effectively managing acne and other dermatological manifestations.

REFERENCE

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