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CASE REPORT

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Isotretinoin-associated conjunctivitis: A rare but severe adverse effect

Correspondence
Syed Muhammad Aftab Alam Shah, The Third Xiangya Hospital of Central South University, Department of Dermatology Changsha, Hunan, China.
e-mail
saftabalam32@gmail.com

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ORCID ID of the author(s):
SMAAS: 0009-0007-2319-8493
JL: 0000-0002-4757-6141

Syed Muhammad Aftab Alam Shah[1], Jianyun Lu[1]

1. *The Third Xiangya Hospital of Central South University, Department of Dermatology Changsha, Hunan, China.*

Abstract

Isotretinoin, a derivative of retinoid and the biologically active form of vitamin A, is the ideal drug for severe, moderate, and mild acne, especially resistant acne. Highly effective as it is, it has many possible side effects, which may significantly impact the quality of life of the patient. This case report describes a patient who, while being treated with isotretinoin for moderate to severe acne vulgaris, developed progressive conjunctivitis and facial dermatitis. While the acne lesions of the patient showed initial improvement, the patient developed worsening ocular irritation and facial erythema, which was very distressing. Discontinuation of isotretinoin led to gradual resolution of dermatitis and conjunctivitis. This report highlights the potential for serious ocular and dermatologic side effects of isotretinoin therapy, with a stressed need for early diagnosis, close monitoring, and early intervention to avoid long-term consequences. As these side effects are infrequent, further study on predictive risk factors and management is necessary to maximize the safety profile of isotretinoin in the treatment of acne.

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Introduction

Isotretinoin is recognized as the 13-cis isomer of retinoic acid, the active form of vitamin A. It is commonly prescribed for severe acne, as well as for mild to moderate cases (1). This medication works by inhibiting the growth of the bacterium Propionibacterium acnes, reducing the size of sebaceous glands, lowering sebum secretion, and preventing the formation of new comedones. Additionally, it is thought to have anti-inflammatory properties. Isotretinoin typically requires about two months of administration before showing effects (2), with treatment often continuing for at least four months. Isotretinoin is known as one of the most infamous teratogenic drugs, recognized for its potential to cause serious birth defects, including malformations of the heart, craniofacial structure, and nervous system (3). Common side effects include mouth, lips, nose, or skin dryness (4). Moreover, there are less common but more severe side effects, which may include inflammatory bowel disease, elevated triglycerides, bone loss, increased intracranial pressure, sensitivity to sunlight, diabetes, anemia, leukopenia, and organ damage affecting the liver, pancreas, intestine, and esophagus (5). Isotretinoin is also associated with well-documented mucocutaneous and ophthalmologic side effects, such as dry eye, vision impairment, blepharitis, conjunctivitis, and keratitis (6). These adverse effects are linked to isotretinoin-induced meibomian gland dysfunction, tear film instability, and mucosal atrophy (7). This case report discusses a female patient who suffered from severe conjunctivitis, eyelid swelling, and facial dermatitis, which progressively worsened during the course of isotretinoin treatment but improved following the medication's discontinuation.

Case description

A 30-year-old female with no significant medical or ocular history, presented to the Dermatology Outpatient Clinic at Xiangya Third Hospital on September 2, 2024, with complaints of severe acne vulgaris. She had no previous history of eye disorders or significant skin conditions other than acne. On examination, she was diagnosed with acne vulgaris. Given the persistence and severity of her acne, she was put on acne vulgaris treatment. The patient's treatment regimen included isotretinoin 10 mg twice daily, Xinghua Gelatin Capsules(TCM) (0.32g, two tablets twice daily), and Chouyang oil dressing for skin lesions. Given isotretinoin's teratogenic risks, pregnancy precautions were also discussed. In the second week of treatment, the patient experienced mild eye and skin dryness, a known side effect of isotretinoin. However, by the third week, she began to develop more pronounced ocular symptoms, including redness of the eyes, eyelid swelling, excessive tearing, and a burning sensation in both eyes (Figure 1). These symptoms progressively worsened, and by weeks four to five, she developed persistent conjunctivitis, photophobia (sensitivity to light), and significant discomfort. At the same time, her facial erythema & inflammation, which was initially localized to the areas affected by acne, began to spread and worsen, eventually covering her entire face. The skin became inflamed around her eyelids, causing further distress (Figure 2). Her acne initially flared up but later showed partial improvement. Given the increasing severity of the ocular and facial symptoms, In the sixth week, isotretinoin was discontinued (Figure 3). After discontinuing isotretinoin, the patient was prescribed lubricating eye drops, anti-inflammatory ointment, and oral antihistamine for her eyelid inflammation. She was also advised to follow a gentle skincare routine, which included moisturization to help alleviate facial irritation. Her ocular symptoms gradually resolved over the following two to four weeks, with the redness, swelling, and excessive tearing improving. The facial erythema, which had previously covered her entire face, also improved significantly, although a few acne lesions remained, which continued to improve with proper skincare. This case underscores the potential for significant ocular and dermatologic side effects associated with isotretinoin therapy in patients with no previous history of ocular problems. While isotretinoin is a highly effective treatment for acne vulgaris, its ability to induce adverse effects such as conjunctivitis and facial dermatitis highlights the importance of close monitoring during therapy. In this case, discontinuing isotretinoin and appropriate symptomatic management resolved both the ocular and dermatologic symptoms, illustrating the need for early recognition and intervention.

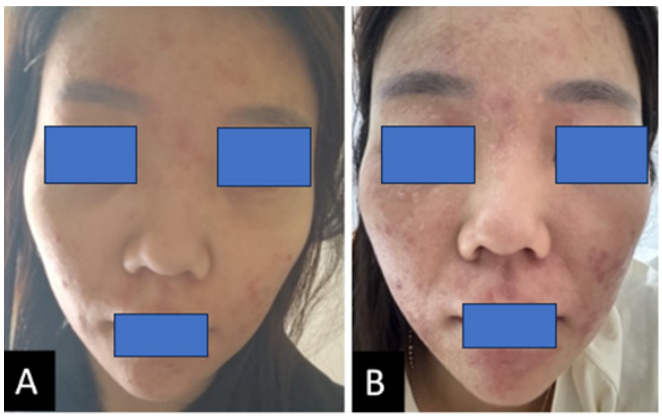

Figure 1: Figure A and B: Symptom Progression During Treatment

(A) Second Week: Mild eye and skin dryness, a common side effect of isotretinoin. (B) Third Week: Increased ocular symptoms, including eye redness, eyelid swelling, excessive tearing, and a burning sensation.

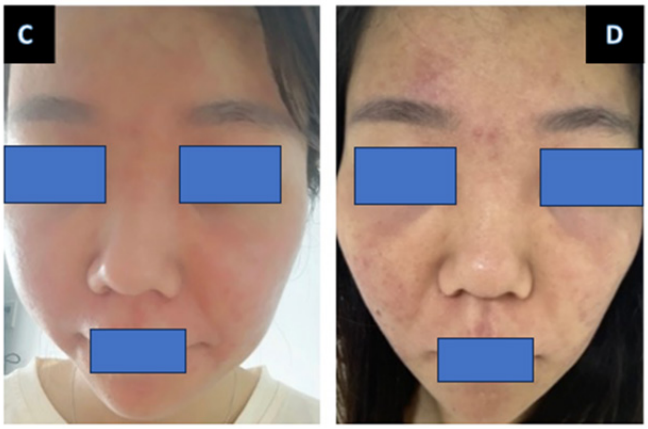

Figure 2: C and D: Symptom Worsening in Weeks 4th & 5th. (C) Week 4th (Ocular Symptoms): Progressive conjunctivitis, photophobia, and significant ocular discomfort. (D) 5th week (Facial Symptoms): Worsening facial erythema and inflammation, spreading from acne-affected areas to the entire face, with additional eyelid inflammation.

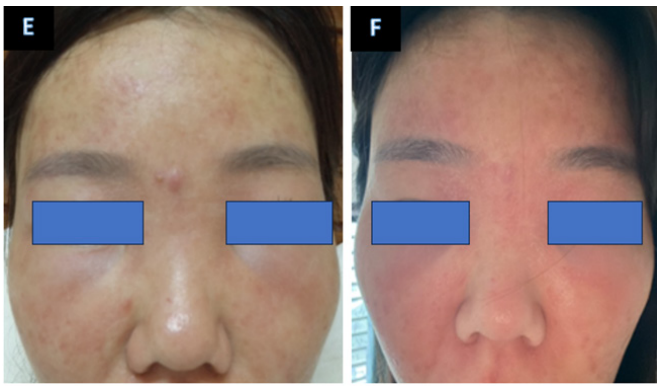

Figure 3: Figures E and F: Ocular and facial symptoms worsened after six weeks of isotretinoin treatment, leading to the discontinuation of the medication due to increasing severity.

Discussion

Isotretinoin, a retinoid derivative of vitamin A, is a highly effective and well-documented treatment for severe acne vulgaris yet is also linked with many ocular and mucocutaneous adverse effects (1). Although dry eyes, conjunctivitis, and facial dermatitis are known side effects, the severity in patients can be unpredictable (1-3). Here, the patient presented with progressive ocular side effects of conjunctivitis, swelling of eyelids, and facial flushing on isotretinoin treatment that progressed over several weeks of treatment.

The pathophysiologic processes of these side effects are varied. Isotretinoin is known to cause meibomian gland dysfunction with alteration of the normal secretion of lipids essential to stabilize the tear film (6). The dysfunction leads to dry eyes, irritability, and conjunctival inflammation. Also, isotretinoin causes mucosal atrophy, which in the conjunctiva leads to additional inflammation and dryness. The drug's action on the skin systemically sensitizes, causing facial burning, peeling, and erythema (6,7). The summation of all these actions accounts for the development of the patient's ocular and dermatologic symptoms. Isotretinoin has proven to be extremely effective in the management of severe acne, but patients receiving treatment with it must be closely observed for the development of these side effects. Early identification of the symptoms of conjunctival injection, eyelid edema, and facial irritation is necessary to avoid additional complications (5,7). In our case, isotretinoin was stopped and symptomatic therapy with lubricating eye drops, anti-inflammatory ointment, and gentle skin care ensued. These alleviated the ocular symptoms and reduced the facial irritation, showing that proper

management can reduce the severity of isotretinoin side effects. Although the patient here had no past history of eye disorders, symptom development with the use of isotretinoin leads us to infer a causative link between the drug and side effects. This further serves to highlight diligence in monitoring the skin, eyes, and mucosal surfaces while under treatment. On the occurrence of ocular or cutaneous reactions, either a decrease of isotretinoin dosage or drug withdrawal needs to be contemplated, and supportive therapy with artificial tears and anti-inflammatory agents can help in symptom relief. Isotretinoin prescribers need to warn patients about ocular and mucocutaneous effects and also ensure that patients are familiar with prodromal symptoms like dry eyes, irritation, and facial flushing. Early treatment is necessary to avoid worsening symptoms, and dose modification or cessation must be contemplated in the event of severe or lingering side effects.

Conclusions

Isotretinoin is an effective treatment for acute acne, but its ocular and dermal side effects represent a potential requirement for meticulous follow-up. Both patients and clinicians should be aware of such risks, with ophthalmologic evaluation to be contemplated, especially in those at high risk. Treatment includes the use of preservative-free artificial tears, lubrication, and conservative skin care. If symptoms are persistent, consideration of dose reduction or cessation should be entertained. Acute severe ocular symptoms require referral to an ophthalmologist. Isotretinoin can be restarted at a lower dose upon resolution of the symptoms.

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Informed consent: Informed consent was obtained from the patient to publish this case report and accompanying images.

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Contributions

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Data analysis and interpretation: SMAAS, JL

Collection and/or assembly of data: SMAAS, JL

Writing the article: SMAAS, JL

Critical revision of the article: SMAAS, JL

Final approval of the article: SMAAS, JL

All authors read and approved the final version of the manuscript.

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