

Bacitracin: A Causative Agent of Purpuric Allergic Contact Dermatitis

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Background: Purpuric contact dermatitis (CD) is an unusual presentation of CD.

Case: We present a case of purpuric CD occurring after topical usage of bacitracin. We want to emphasize the clinical presentation, besides the classic eczematous form of allergic CD.

Conclusion: Purpuric CD may be suspected when there are purple rashes located in areas related to contact with topical medications.

Keywords: bacitracin, contact dermatitis, allergic contact dermatitis, purpuric contact dermatitis, noneczematous contact dermatitis

Introduction

A VARIETY OF noneczematous clinical variants of contact dermatitis (CD), including purpuric lesions (which are an infrequent manifestation), have been defined.^{1,2} We present a case of purpuric CD occurring after topical usage of bacitracin.

Case Report

An 11-year-old boy was referred to the pediatric allergy clinic due to red-purple plaques on the lower eyelids after treatment for blepharitis. He had previously used various therapies, including topical ophthalmic antibiotherapy and eye shampoo, many times to treat recurrent symptoms of blepharitis. He had allergic rhinitis symptoms for 2 years. He had red, burning, and itchy eyes 2 weeks ago, and he was examined by an ophthalmologist and diagnosed with blepharitis. Ophthalmic examination revealed that the eyelids and eyelashes were scaly and dry with crusting of the lashes. The lid margins were erythematous. The patient was treated with warm wet compresses, mechanical eyelash cleaning, and topical antibiotherapy applied to the lid margin (neomycin–bacitracin combination therapy). On the second day of treatment, in addition to augmentation of the redness in the eyelids, swelling of the eyes and face had evolved. The patient's topical ophthalmic antibiotherapy was discontinued, and he was treated with topical dexamethasone and olopatadine. He was referred to the pediatric allergy clinic on the second day of the topical corticosteroid treat-

ment. On physical examination, he had purple plaques and microvesicles with a sharp line of demarcation over the erythematous and edematous skin of both lower eyelids. Deep red to purple plaques and microvesicles over the erythematous and edematous skin of both lower eyelids on the third day of the topical corticosteroid treatment are shown in Fig. 1A.

Conjunctival petechiae and edema (Fig. 2A) were also detected. Two days after the cessation of the topical antibiotic treatment, the edema of the face started to regress. Within 2 weeks, the edema and purpuric plaques on the eyelids and hyperpigmentation regressed completely. During the follow-up period, dryness, itching, and desquamation of the eyelids continued for 3 weeks (Fig. 3). Topical corticosteroids were used for 10 days, and antihistamines and topical emollients were continued for 6 weeks. The lesions healed without leaving residual hyperpigmentation (Figs. 1B and 2B). Ten weeks later, a patch test was performed (thin-layer rapid use epicutaneous test) with a diagnosis of sensitivity to bacitracin. Patch testing against the neomycin yielded a negative result. The skin prick test with common aeroallergens was performed with a positive result for grass pollen.

Discussion

Bacitracin is 1 of the 2 most common topical antibiotics that is frequently used to treat skin infections, such as stasis ulcers, otitis externa, burns, and blepharitis.^{3,4} According to the epidemiologic studies of allergic contact

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FIG. 1. (A) Deep red to purple plaques and microvesicles with a sharp line of demarcation over the erythematous and edematous skin of both lower eyelids. (B) Skin lesion sites after treatment.



FIG. 3. Dryness and desquamation of the eyelids.

dermatitis (ACD), the rate of bacitracin allergy increased from 1.5% during 1985–1989 to 7.8%–11.8% during 2011–2015.⁴ Among pediatric ACD, the US Pediatric Contact Dermatitis Registry stated that in 6.2% of cases of ACD, bacitracin was the causative agent.⁵ The frequency of ACD to topical medications varies geographically and changes with self-medication habits. Older age, disturbed skin barrier integrity, and chronic dermatoses are the predisposing factors for the contact allergic reactions. Legs, eyes, and perianal areas are the particular sites at risk for the contact allergy to topical drugs.⁶ Herein we report a patient who had ACD presenting with skin reaction localizing at the eyes due to bacitracin. History of recurrent application of topical bacitracin to the eyes for the treatment of blepharitis was the predisposing factor for the sensitization.

Clinical features of allergic and irritant CD may be similar and need to be distinguished from each other. However, both forms often coexist. Chronic irritation may give rise to diffusion of potential allergens and cause ACD. Patch testing is the gold standard for the diagnosis of ACD.^{7,8} In this case, a positive patch test to bacitracin suggested a diagnosis of ACD.

ACD usually presents as an eczematous process; however, noneczematous clinical variants have been reported. Of all these variants, the erythema multiforme-like is the most common form, followed by the purpuric, the lichenoid, and the pigmented types.¹ Noneczematous CD of various types have been described with topical drugs, such as pyrrolnitrin,

sulfonamide, promethazine, neomycin, mafenide acetate, ethylenediamine, and mephenesin; however, purpuric CD due to bacitracin has not been reported previously.¹

Purpuric CD, one of the represented forms of noneczematous CD, can be either irritant (reported with povidone-iodine) or allergic (reported with textile dyes or black rubber).^{1,2,9,10} For both forms, irritant or allergic, the presentation is characterized by palpable purpuric elements and pigmentation. The other cutaneous manifestations included papular-purpuric and papulovesicular rashes. When compared with the irritant form, lesions of the allergic form are more infiltrated with diffuse and polymorphic manifestations and longer standing.¹ In this case, the purpuric CD was a manifestation of an allergic reaction to bacitracin, which was proven by the positive patch test and relevant clinical findings. The reaction to the patch test was not purpuric in this patient, but purpuric patch test reactions have been described with other allergens.¹¹ The mechanism for purpuric CD is unknown.¹ Rubber compounds, textile compounds, plants, and some other agents (paraphenylenediamine, fiberglass, Peru balsam, epoxy resin, oxyquinoline, proflavine, cobalt, and benzoyl peroxide) have been reported as causative agents in purpuric CD previously.^{1,2,9,12–15} Bacitracin has not been reported as a causative agent of purpuric CD in the literature.

Purpuric lesions are an infrequent presentation of CD; therefore, some of the cases remain undiagnosed. To the best of our knowledge, this is the first reported case of purpuric CD associated with the use of bacitracin. We want to emphasize the unusual clinical presentation, besides the

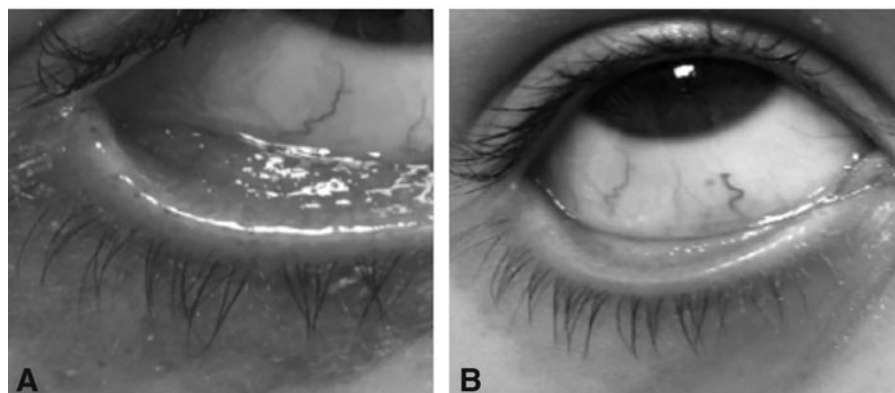


FIG. 2. (A) Conjunctival petechiae and edema. (B) Conjunctiva after treatment.

classic eczematous form of ACD. Purple rashes located in areas related to contact with objects or medications should raise the suspicion of possible ACD. In evaluating the etiology of localized purpuric lesions, the patch test may be helpful for the diagnosis.

Consent for Publication

The mother of the patient has given her written consent to publish this article.

Consent Statement

Informed consent and releases have been obtained from the parent and the patient to publish photographs.

Authors' Contributions

Shared authorship contributed equally. Authorship credit was based on (1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; (2) drafting the article or revising it critically for important intellectual content; and (3) final approval of the version to be published. The requirements for authorship have been met. Permission for publication is obtained from all authors.

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