
Case report

Severe allergic contact eyelid dermatitis caused by swimming goggles

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Background: Contact dermatitis of the eyelids is the most common cutaneous reaction that affects the eyelids. It is frequently caused by the cosmetics used on face, hair, and fingernails. Rarely, eyelid contact dermatitis can be caused by direct contact with either irritant or allergen.

Objective: To report a case of severe eyelid dermatitis caused by swimming goggles.

Methods: Patch skin tests were performed in duplicate using a small piece of black rubber foam padding from the swimming goggles. Allergy skin prick tests for inhalant aeroallergens were also performed.

Results: The results of the patch skin tests were strongly positive. The results of allergy skin prick tests for inhalant aeroallergens were positive for both seasonal and perennial aeroallergens.

Conclusions: This case illustrates that sensitization to the black, foam rubber padding on swimming goggles can occur after long-term contact with the goggles and should be considered in the differential diagnosis of eyelid dermatitis in an appropriate setting.

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INTRODUCTION

Contact dermatitis is the most common cutaneous reaction that affects the eyelids.¹ It is usually caused by facial cosmetics, hair dyes, and fingernail polish. Herein, we report a case of severe eyelid dermatitis caused by swimming goggles.

CASE REPORT

A 64-year-old, male college professor presented for evaluation of severe itching and swelling of the eyelids. For the past 6 weeks, this patient had experienced severe pruritus, erythema and edema of the eyelids, and periorbital skin. He had minimal conjunctival irritation without tearing or purulent ocular discharge. He had tried nonprescription topical agents without much benefit. He had undergone evaluation by an ophthalmologist and was prescribed sulfacetamide-prednisolone ointment. Subsequently, he was prescribed oral antihistamines (fexofenadine, cetirizine) and 2.5% hydrocortisone ointment. Despite all these measures, his symptoms did not abate. He had worn protective swimming goggles and reading glasses for many years. The goggles were equipped with black foam rubber padding that fits around the eyes. He had no history of rubber latex or nickel sensitivity. Except for mild exercise-induced asthma, he had no history of eczema, food, or drug allergy. He previously underwent left hip replacement surgery, right knee arthroplasty, and inguinal herniorrhaphy. A physical examination revealed the patient to be

a healthy, white man. The periorbital skin and eyelids were edematous with erythema, crusting, scaling, and lichenification of the skin. Mild conjunctival injection was present without any discharge. With the exception of swollen boggy pale turbinates, the results of the rest of the examination, including vital signs, were normal.

Patch skin tests were performed in duplicate using a small piece (square-shaped piece approximately 1 × 1 cm) of black foam rubber padding from the swimming goggles. The skin test results were strongly positive. The pruritus started within 24 hours. At 72 hours, the skin test site revealed an erythematous, papulovesicular eruption (a grade 3+ reaction based on erythema, edema, papules, and vesicles that covered the test area). The same skin test material produced negative reactions on the skin of nonatopic and atopic control subjects. The results of allergy skin prick tests for inhalant aeroallergens were positive for both seasonal and perennial aeroallergens. The patient then switched to using nonrubber, plastic-padded swimming goggles, and within 2 days, he noted tremendous improvement of eyelid erythema and edema. Gradually, he was able to discontinue use of antihistamines and topical hydrocortisone without any recurrence of the symptoms.

DISCUSSION

Allergic eyelid contact dermatitis is rarely caused by direct contact with either irritant or allergen. There have been a few case reports in the English-language literature of eyelid dermatitis caused by swimming goggles,^{2–4} but none recently. There have been no reports in the allergy literature pertaining to this issue. The diagnosis of allergic eyelid contact dermatitis in the patient described herein was established by the

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following criteria: clinical history of chronic intermittent contact with black rubber, padded swimming goggles; localized pruritus, erythema, edema, crusting, scaling, and lichenification of eyelids and periorbital skin; clinical improvement on removal of contact with the swimming goggles; and strongly positive patch skin test results when performed in duplicate.

The patch skin tests that use a standard series of allergens were not performed, since the diagnosis was established by using the actual rubber foam padding from the swimming goggles. Furthermore, standard patch skin testing trays are not readily available in an allergist's office. Many compounds (antioxidants, accelerators, blowing agents) are used in the manufacturing of black synthetic rubber. Sensitivity to any of these compounds can cause allergic contact dermatitis. Thiourea and its derivatives have been used in the rubber industry for many years and are frequently reported as allergens.⁵ Based on the knowledge of two previous reports,^{2,4} our patient probably was sensitized to thiourea or antioxidant amines, although other ingredients in the black rubber padding of swimming goggles may have played a causative role.

CONCLUSION

This patient has worn swimming goggles for several years. The allergic contact dermatitis reaction started recently at the site of contact and the skin surrounding the eyelids. This case illustrates that sensitization to the black foam rubber padding on swimming goggles can occur after long-term contact with

the goggles and should be considered in the differential diagnosis of eyelid dermatitis in an appropriate setting.

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