

Eyeglass frame allergic contact dermatitis: does tacrolimus prevent recurrences?

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A 35-year-old man developed well-demarcated, oedematous and erosive erythematous lesions on the nasal bridge and retroauricular regions bilaterally. His eyeglass frame was repaired by an optician 2 weeks prior to symptom onset. Patch testing revealed a positive reaction to scrapings of nose pads and temples of the frame in petrolatum. Because the patient did not take our exhortation to change eyeglass frames, we advised him to cover their nose pads and temples with vinyl tape to prevent direct skin contact. Although topical corticosteroid therapy produced clinical resolution temporally, recurrences were not prevented. After starting tacrolimus ointment therapy, recurrence has not occurred for 9 months. Tacrolimus may be effective for allergic contact dermatitis patients who cannot avoid repeated allergen exposure, as it may not only reduce inflammation but inhibit recurrences.

Key words: allergic contact dermatitis; eyeglass frame; tacrolimus ointment. © Blackwell Munksgaard, 2005.

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Case Report

A 35-year-old, otherwise healthy man presented at our Dermatology Department in February 2004, with 1-month history of pruritic face lesions. His eyeglasses, consisting of metal frames and plastic temples, were repaired by an optician 2 weeks prior to the onset of signs and symptoms. Physical examinations revealed well-demarcated, oedematous erythematous lesions of the nasal bridge and erosions on retroauricular regions bilaterally (Fig. 1). We diagnosed contact dermatitis from nose pads and temples of the eyeglass frames on the basis of morphology.

Course and Patch Testing

Topical corticosteroid therapy (0.1% hydrocortisone butyrate cream) produced clinical resolution 2 weeks after his initial visit. After lesion healing, we patch tested scrapings of the nose pads and temples (as is) in petrolatum and the standard series of the Japanese Society for Contact Dermatitis (1). These were applied on the back for 2 days, with vinyl plaster (Patch tester TORII[®], Torii Pharmaceutical Co., Ltd, Tokyo, Japan). The results were read utilizing the International Contact Dermatitis Research

Group scoring system 2 and 3 days after application (2). Positive reactions to the scrapings and 1% paraphenylenediamine were seen. Because the patient did not take our suggestion that he change the frames, we advised him to cover the nose and temple pads with vinyl tape to prevent direct skin contact. New lesions developed, however, several times over the following 2 months. Although those lesions were less oedematous than the initial, e.g. without exudates, they were regarded as recurrences because of the same anatomic sites. Subsequently, we started 0.1% tacrolimus ointment (Astellas Pharmaceutical Co., Tokyo, Japan) 11 weeks after his initial visit. Figure 2 shows clinical feature 2 weeks after initiating tacrolimus therapy. Except for mild pigmentation, no eczematous lesions were seen on the nose and postauricular regions. Subsequently, recurrences have been prevented for 9 months by external application with tacrolimus ointment mainly when he felt mild itching.

Discussion

Causes of eyeglass allergic contact dermatitis include metals, plastics, dyes and waxes (3, 4). Doherty and Freeman (5) reported spectacle frame dermatitis due to paraphenylenediamine,



Fig. 1. Edematous erythematous lesions on both sides of the nasal bridge and erosive erythema on both retroauricular regions.



Fig. 2. Improvement 2 weeks after the start of tacrolimus therapy.

to which our patient positively reacted. In our case, however, paraphenylenediamine did not seem to be an allergen because the nose pads and temples were not black but transparent. Because we did not test him to the plastic series, the causative chemical was not identified. We suspected that it was the additives of plastics, e.g. plasticizers, solvents UV stabilizers, antioxidant or acrylates.

Tacrolimus ointment is a topical immunomodulator designed specifically for atopic dermatitis patients (6). Subsequently, reports have demonstrated effectiveness for other inflammatory skin disorders, e.g. lichen planus, psoriasis vulgaris, alopecia areata (7), and allergic contact dermatitis (8, 9). In addition, tacrolimus pretreatment suppresses allergic contact dermatitis reactions (10, 11). Tacrolimus inhibits not only T cells but epidermal Langerhans' cells (12).

Tacrolimus ointment is contraindicated in eroded/ulcerous lesions, and for patients with severe renal impairment or hyperkalemia, pregnancy and those under ultraviolet therapy (13). In some countries, a black box warning may be added because of malignancies in animal

carcinogenicity studies (14). Taken together, tacrolimus may be considered as a useful method for contact dermatitis patients, in particular for those who cannot avoid repeated allergen exposure, as it may not only reduce inflammation but inhibit recurrences of contact dermatitis. This case report and these references should not be overgeneralized until more controlled experimental data become available.

References

1. Sugiura M. Group study with standard allergen series of the Japanese Society for Contact Dermatitis and gold sodium thiosulfate by patch testing in 1999. *Environ Dermatol* 2002; 9: 105–115.
2. Wilkinson D S, Fregert S, Magnusson B et al. Terminology of contact dermatitis. *Acta Derm Venereol* 1970; 50: 287–292.
3. Ritchel R L, Fowler J F. *Fisher's Contact Dermatitis*, 5th edition. Philadelphia: Lippincott Williams & Wilkins, 2001.
4. Nakada T, Maibach H I. Eyeglass allergic contact dermatitis. *Contact Dermatitis* 1998; 39: 1–3.
5. Doherty E, Freeman S. Spectacle frame dermatitis due to paraphenylenediamine. *Australas J Dermatol* 1988; 29: 113–115.
6. Bekersky I, Fitzsimmons W, Tanase A, Maher R M, Hodosh E, Lawrence I. Nonclinical and early clinical

- development of tacrolimus ointment for the treatment of atopic dermatitis. *J Am Acad Dermatol* 2001; 44: S17–S27.
7. Ruzicka T, Assmann T, Lebwohl M. Potential future dermatological indications for tacrolimus ointment. *Eur J Dermatol* 2003; 13: 331–342.
 8. Alomar A, Puig L, Gallardo C M, Valenzuela N. Topical tacrolimus 0.1% ointment (protopic) reverses nickel contact dermatitis elicited by allergen challenge to a similar degree to mometasone furoate 0.1% with greater suppression of late erythema. *Contact Dermatitis* 2003; 49: 185–188.
 9. Saripalli Y V, Gadzia J E, Belsito D V. Tacrolimus ointment 0.1% in the treatment of nickel-induced allergic contact dermatitis. *J Am Acad Dermatol* 2003; 49: 477–482.
 10. Lauerma A I. Immunomodulation of contact dermatitis. *Curr Probl Dermatol* 1995; 22: 51–53.
 11. Lauerma A I, Maibach H I, Granlund H, Erkkö P, Kartamaa M, Stubb S. Inhibition of contact allergy reactions by topical FK506. *Lancet* 1992; 340: 556.
 12. Panhans-Gross A, Novak N, Kraft S, Bieber T. Human epidermal Langerhans' cells are targets for the immunosuppressive macrolide tacrolimus (FK506). *J Allergy Clin Immunol* 2001; 107: 345–352.
 13. Protopic[®] ointment, 2002: 0.1% (Tacrolimus hydrate ointment), 4th version; (Fujisawa Pharmaceutical Co., Ltd).
 14. United States of America Food and Drug Administration office of the Commissioner Pediatrics advisory committee sixth meeting 2005, Rockville, Maryland, USA.

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