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Persistent periorbital allergic contact dermatitis in a dental technician caused by airborne thiuram exposure

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Although occupational allergic contact dermatitis on the hands caused by thiurams in protective gloves remains frequent in healthcare workers (1), airborne exposure and dermatitis is rare. We have previously reported a nurse with facial allergic contact dermatitis caused by airborne spread of these rubber accelerators (2). Here, we present a similar case of periorbital and facial dermatitis from a different occupational setting, and wonder whether airborne spread of rubber accelerators may be more common than previously assumed.

Case Report

A 48-year-old non-atopic woman was referred with hand eczema and periorbital dermatitis. She had been working as a dental technician producing dental prostheses for 26 years, and, throughout a workday in a small dental laboratory with up to 6 patients daily, she used powder-free latex gloves for ~2 hr/day with up to 20 wet–dry cycles. She had no previous skin disease.

The patient presented with severe dermatitis lasting for 6 months, located on the dorsal aspects of the hands, followed by facial dermatitis. There was no clearance of the hand dermatitis over the weekends or during holidays. Patch testing was performed with the European baseline series, including departmental extensions to it, and the more specialized series with rubber chemical accelerators, fragrances, and toothpaste and dental materials, including acrylates and methacrylates. An additional review of

29 material safety data sheets showed that, throughout a workday, the patient was in skin contact with dental materials containing polyethylene glycol, titanium dioxide, zirconium chloride, and zinc chloride. Finn Chambers[®] (8 mm; Smartpractice, Phoenix, AZ, USA) on Scanpor[®] tape (Norgesplaster A/S, Alfarma, Vennesla, Norway) were used. The patch tests were applied to the upper back, and occluded for 48 hrs. Readings were performed on day (D)2, D3, and D7, according to ICDRG recommendations (3). Positive patch test reactions to thiuram mix (2+ on D2, 1+ on D3, and 1+ on D7), tetraethylthiuram disulfide (+2 on D2, +1 on D3, and +1 on D7) and dipentamethylene thiuram disulfide (+2 on D2, +1 on D3, and +1 on D7) were observed and also a doubtful reaction (+?) to bis-diethyl dithiocarbamate zinc. All other patch test results were negative. Additionally, a prick test with natural rubber latex proteins was negative.

The patient was diagnosed with occupational allergic contact dermatitis caused by these rubber accelerators, and she was advised to avoid the above-mentioned allergens. Therapy with potent topical corticosteroids along with a change of protective gloves from latex gloves to accelerator-free nitrile gloves resulted in clearance of dermatitis on the hands after 2 months. However, in the following months, the patient experienced periodical flare-ups of moderate periorbital dermatitis and often also facial dermatitis at work (Fig. 1). At 1-year follow-up, the patient still suffered from chronic periorbital dermatitis with moderate oedema and erythema, but no longer had hand eczema. It was unlikely that the periorbital dermatitis was caused by cosmetics, as she did not use cosmetics. The periorbital dermatitis diminished on holidays. In the small dental laboratory of approximately 15–20 m², a colleague continued to use latex protective gloves, as she was not informed otherwise. The patient was therefore diagnosed with persistent periorbital allergic contact

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Fig. 1. Photograph of a flare-up episode with facial dermatitis at the workplace taken by the patient herself: erythematous dermatitis with accentuation of the nasolabial folds and perioral area, and on the right side of the face.

dermatitis caused by airborne spread of rubber accelerators resulting from the colleague's continuing use

References

- 1 Molin S, Bauer A, Schnuch A, Geier J. Occupational contact allergy in nurses: results from the Information Network of Departments of Dermatology 2003–2012. *Contact Dermatitis* 2015; **72**: 164–171.
- 2 Jensen P, Menné T, Thyssen J P. Allergic contact dermatitis in a nurse caused by airborne rubber additives. *Contact Dermatitis* 2011; **65**: 54–55.
- 3 Wilkinson D S, Fregert S, Magnusson B et al. Terminology of contact dermatitis. *Acta Derm Venereol* 1970; **50**: 287–292.
- 4 Giorgini S, Martinelli C, D'Erme A M, Lotti T M. A case of airborne allergic contact dermatitis by rubber additives. *G Ital Dermatol Venereol* 2010; **145**: 133–134.

of the protective gloves that the patient had been using previously. After the colleague had been advised to use the same accelerator-free nitrile gloves, the periorbital dermatitis cleared, according to the patient. The case was recognized by the National Board of Industrial Injuries for worker compensation, and the patient was advised to avoid work with direct or airborne contact with rubber accelerators.

Discussion

Airborne allergic contact dermatitis caused by rubber accelerators is rarely reported in domestic and occupational settings (2, 4). In this particular case, the patient had most likely been sensitized by direct skin contact on her hands, with subsequent elicitation of facial and periorbital dermatitis after airborne contact with rubber accelerators. The co-worker kept using protective gloves with rubber accelerators in a relatively small room, and this probably resulted in the presence of rubber accelerators in the atmosphere. The lack of elicitation of hand eczema may be attributable to differences in penetration of the face and hands by the rubber chemicals. Also, the patient's use of accelerator-free nitrile gloves may have protected her hands from any airborne or indirect exposure to the rubber accelerators.

This case emphasizes that airborne exposure should be considered in cases of periorbital contact dermatitis where the patient is in an environment with airborne rubber accelerators, especially if no obvious other causative exposure, for example to cosmetics, can be established.