

Airborne irritant contact dermatitis from benzalkonium chloride

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Key words: airborne; irritant contact dermatitis; benzalkonium chloride; laboratory worker; occupational. © Munksgaard, 1997.

Case Report

A laboratory technician, without previous skin diseases and non-atopic, developed urticaria on her face and neck 4–6 h after washing a laminar air flow (LAF) bench with a benzalkonium chloride (BAC) solution. The same evening, severe itching began. The skin became red and vesicles appeared on the chin and on the front of the neck. The symptoms lasted for 2 days. No symptoms were recognized on the hands or the arms, and she showed no symptoms of the airways and mucosa.

Environmental exposures: while bending halfway into the LAF bench, the patient sprayed a solution of BAC 2% mixed with ethanol 67% and distilled water inside the LAF bench and wiped up with a cloth. Following this procedure, she washed her hands. She did not use gloves while disinfecting the LAF bench. She works daily with industrial enzymes, bacteria and fungi.

RAST and scratch tests for relevant enzymes were negative, apart from a temporary reaction caused by dermographism. Patch test to BAC 0.1% aq. was negative (Scanpor[®] tape and Finn Chambers[®] were used, 2 days application, readings done at days 2 and 3).

The patient continues to work with BAC and enzymes, but she now pours the BAC directly onto the wipe cloth to avoid aerosol formation. So far no symptoms have reappeared.

Discussion

To the list of agents causing airborne dermatitis (1), we have hereby added BAC (2). Although the concentration of BAC in the application solution was low, evaporation of the volatile solvents (water and alcohol) may have resulted in an increased concentration of the irritant on the exposed area. In high concentrations, BAC is considered to be corrosive. Consequently, we think it is probable that BAC caused the eczema. Formation of and exposure to aerosols should be avoided when handling irritants.

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Systemic contact dermatitis caused by nickel in a stainless steel orthodontic appliance

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Case Report

A 14-year-old atopic boy began orthodontic treatment with 2 permanent bands on the 1st maxillary molars, and an extraoral face bow (Fig. 1) to be worn at night. All appliances were stainless steel, usually 18% chromium and 8% nickel.

At the 1st follow-up visit 4 weeks later, he showed crusted yellowish vesicles on and around the lips (Fig. 1), and reddish eczema with scaling and fissures on the palms and soles. The dermatitis had developed soon after insertion of the appliance. The patient had seen a doctor and been prescribed local medication for the eczema. 5 weeks later, at the next visit, the eczema had

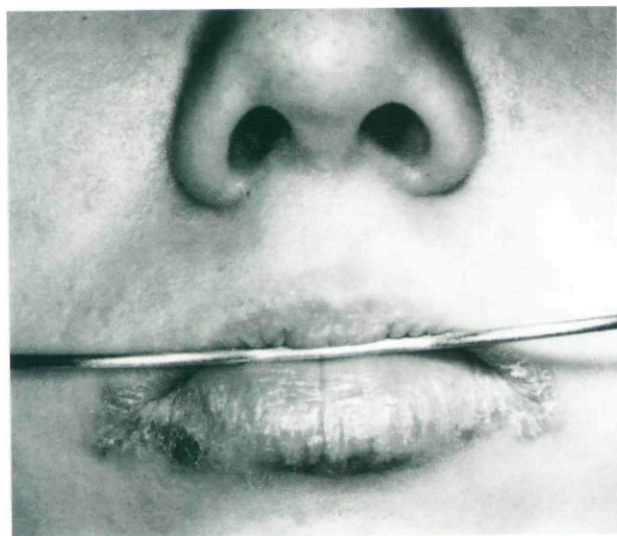


Fig. 1. Cheilitis caused by nickel in stainless steel face bow.

remained unchanged, and the patient was referred for patch testing. At the next appointment 2 weeks later, the boy's mother said that, soon after last visit, the dermatitis had worsened and spread to the scalp, abdomen and legs. The face bow had then been discontinued and the dermatitis had started to settle immediately. At this appointment, the intraoral bands were also removed, and in a short time, the eczema had disappeared.

Patch testing showed positive allergic reactions to nickel and cobalt. The face bow was tested by the dimethylglyoxime spot test for nickel (Chemotechnique Diagnostics, Malmö, Sweden) but was negative.

Discussion

Nickel is the commonest cause of contact allergy in European women, and occurs 10× more often in them than in men (1–2). In general, nickel-sensitive subjects tolerate orthodontic treatment with nickel-containing devices, though there are reports of allergic skin reactions from orthodontic or dental prostheses (3–5). Few reports of allergic contact dermatitis from stainless steel utensils have been published (6–12).

In vitro studies have indicated release of nickel and chromium into saline from simulated metallic orthodontic appliances (13). Our patient had a strong local and generalized allergic reaction, which was most likely caused by nickel from the face bow. Accordingly, our

patient developed both systemic (14) and local allergic contact dermatitis. The dimethylglyoxime test of the stainless steel face bow was negative, but a negative test does not exclude the possibility that significant amounts of nickel are released, e.g., into the saliva (6).

Considering the widespread use of nickel-containing stainless steel in orthodontics, the development of severe dermatitis, as in the present case, may be regarded as extremely rare.

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