

Two unusual cases of allergic contact stomatitis caused by methacrylates

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Allergic contact dermatitis caused by methacrylates classically results in hand dermatitis in dental practitioners. We present two unusual cases of contact allergy to methacrylates.

Case Reports

Case 1

A 57-year-old female presented with facial oedema, cheilitis and stomatitis that started after three overnight applications of the 'Evolution'[™] home tooth-whitening kit. Her symptoms slowly resolved without treatment 3 days after she stopped using the product. The whitening kit includes an individualized plastic dental mould, which is prepared by the dentist, and a whitening gel, which contains 2-hydroxyethylmethacrylate (2-HEMA). 2-HEMA is used to create a gel-like substance and to stabilize the pH, to improve bleaching efficacy. The gel is applied to the mould, and sits in the mouth overnight.

Patch testing with the British baseline series and an 'acrylates' series was performed, with allergens from Chemotechnique Diagnostics (Vellinge, Sweden) applied in Finn Chambers[®] (Epitest, Oy, Finland) on Scanpor[®] tape (Actavis, Vennesla, Norway), according to ICDRG guidelines. Readings at day (D)2 and D4 showed positive (+) reactions to 2-HEMA and ethyleneglycol dimethacrylate on D4.

Case 2

A 51-year-old female described four episodes of discomfort of the buccal mucosa along with nausea, malaise and palpitations following repeated exposures to 'Temp Bond

Clear'[®], a temporary filling used during complicated root canal treatment. Initially, symptoms developed on the day after insertion of the filling. However, with repeated exposure, the onset became more rapid, occurring within hours after the fourth exposure, when the patient resorted to removing the filling herself, with immediate relief.

The temporary filling consists of a base and a catalyst. The base contains 2-HEMA. After the catalyst is added to the base, it polymerizes, solidifying within 2 h. Patch testing with the British baseline series and an 'acrylates' series as above resulted in ++ reactions to 2-HEMA and to 2-hydroxypropyl methacrylate on D4. The patient has a history of previous temporary fillings without reactions, which were considered to be a likely cause of sensitization.

Discussion

(Meth)acrylates are individual chemical monomers that undergo polymerization to form plastic materials. Polymerized 'acrylates', defined here as also comprising methacrylates and cyanoacrylates, are not sensitizing whereas the monomers are sensitizing. 2-HEMA is a methacrylate monomer that is commonly found in, for example, dental bonding products, acrylic nails, electrosurgical grounding plates, soft contact lenses, and drug delivery systems. There is cross-reactivity between methacrylates, as found in our cases. By the use of a short methacrylate screening series, 2-HEMA has been shown to be effective in identifying the majority of cases caused by dental allergens (1). Given the rising rates of sensitization caused by acrylic nail use, it has been suggested that 2-HEMA should be added to the baseline series (2, 3).

In allergic contact stomatitis, symptoms are less prominent than physical signs, for example burning sensation, numbness, pain, and loss of taste. Therefore, it is often not diagnosed. Systemic symptoms are rare. One study has shown that methyl methacrylate causes reduced gastrointestinal motility, which could directly result in nausea and malaise when methyl methacrylate

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is ingested; this could account for some of the more atypical symptoms seen in our second case (4). In dentistry, resin-based adhesive requires polymerization intraorally. However, at least 30% unpolymerized residual monomer may leach into the surrounding oral environment, facilitating sensitization. Despite this, allergic contact stomatitis caused by methacrylates is rare. This may be because of the dilutional effect of saliva or the relatively

low density of T cells and Langerhans cells in the oral mucosa (2, 5).

In summary, we present two unusual cases of type IV hypersensitivity to 2-HEMA. Allergic contact stomatitis caused by teeth-whitening products has not previously been reported, and although allergic contact stomatitis caused by dental products is well documented, systemic symptoms are rare.

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