

Allergy to a tooth root devitalizing material

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● ALLERGY in dentistry may be caused by anesthetics, preservatives, latex, gutta-percha, filling materials, disinfectants, metal restorations, resins, bonding agents, fibrin tissue, and fissure sealants.

A tooth root devitalizing material (Caustinerf Fort, Septodont, France) was applied in a 52-year-old woman with no history of atopic diseases. It contains paraformaldehyde, lidocaine, and excipient fibers (phenol, titanium dioxide, polyethylene fibers, and vinyl acetate chloride copolymer). After about 9.5 h, the woman started to experience generalized urticaria that was associated with angioedema by the next morning (23 h after the intervention). These symptoms had disappeared completely in the next 48 h with continued therapy. On day 4, the devitalizing material was extracted. Eighteen days later, it was applied again and the same clinical presentation occurred. On both occasions, several hours after the intervention, the woman had taken an analgesic, nimesulide, and metamizole.

The patient underwent oral (nimesulide, metamizole, potassium metabisulfite, sodium benzoate, and benzoic acid) and parenteral (lidocaine hydrochloride 2%) dose-provocation testing; the latex prick test; prick and patch tests with 1% aqueous solution of formaldehyde, paraformaldehyde, and phenol, titanium dioxide (7% aq.), and polyvinyl chloride acetate copolymer (7% aq.); and patch tests with paraformaldehyde in the same

concentration as in Caustinerf Fort (46%), the European standard series of contact allergens, Caustinerf Fort, and Toxavit (containing paraformaldehyde, lidocaine hydrochloride, creosol, eugenol, and glycerol). Patch tests were read after 30 min (open patch), 24 h, and 72 h, and were assessed by the International Contact Dermatitis Research Group scoring system. Anti-latex IgE and total serum IgE were determined by the UniCAP system (Pharmacia, Uppsala, Sweden); C3 and C4 concentration and C1-inhibitor functionality by radial immunodiffusion (Behringwerke, Germany); and CH50 activity by laser nephelometry (Blood Transfusion Institute, Belgrade, Yugoslavia).

The patch test with Caustinerf Fort was positive (3+) after 24 h. All other tests and analyses were negative or within normal range, except the C3 concentration, which was slightly raised.

The results of the skin tests proved our patient to be allergic to the original devitalizing material – Caustinerf Fort. Hypersensitivity to any of its components was not proved. So far, there have been several reports of allergic reactions following tooth root filling with formaldehyde- or paraformaldehyde-containing material, mainly with negative skin tests to its components, but with positive antiformaldehyde IgE in a few of them (1–4). The results of these reports indicate that prick and patch testing with the components of tooth-filling materials containing formaldehyde (including formaldehyde in standard concentrations) cannot identify the cause of hypersensitivity, whereas positive antiformaldehyde IgE points to it. Concerning hypersensitivity to formaldehyde (which is released from paraformaldehyde), we performed a patch test with paraformaldehyde in the concentration of Caustinerf Fort (46%; after testing with 1%), and a patch test with

another devitalizing material containing paraformaldehyde in the same concentration – Toxavit. They were both negative, a result which does not support formaldehyde hypersensitivity. A possible cause of the allergic reaction in our patient is sensitization to one of the components of Caustinerf Fort acting as a hapten (e.g., formaldehyde), while another one behaves as a carrier. This might be likely with some other devitalizing material of similar content (other than Toxavit). It is also possible that the antigen was some component of Caustinerf Fort not reported by the manufacturer. Hypersensitivity to metabolically changed component(s) cannot be excluded. We advised the patient to undergo vital instead of mortal nerve extirpation if another tooth root devitalization became necessary.

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