

Chronic foot eczema caused by Bis-GMA from composite work protection boots

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CASE REPORT

A 59-year-old male construction worker was referred to the contact dermatitis clinic with a history of chronic foot eczema of 2 years duration. The patient had no personal or family history of atopic dermatitis and psoriasis. The application of high-potency topical corticosteroids such as clobetasol 0.05% cream did not improve eczema. The patient noticed that eczematous lesions began after exchanging the work protection boots with metal toe caps he had been using for new ones with toe caps made of composite material (Black Hammer SRC 8007; Black Hammer, Newcastle, UK). In addition, the patient reported significant improvement of the lesions during holidays.

Physical examination showed erythematous and hyperkeratotic eczema located on the dorsal surfaces of both feet, extending to the toes (Figure 1). Blood tests were all normal, and fungal culture was



FIGURE 1 Hyperkeratotic eczema located on the dorsal surface and toes of both feet. Note the proximal part of both feet free of eczema

negative after 21 days. Patch tests were performed with the European Comprehensive Baseline Series (Chemotechnique Diagnostics, Vellinge, Sweden), a methacrylate series, and a shoe series (both by Chemotechnique Diagnostics). The results were interpreted according to the criteria of the International Contact Dermatitis Research Group. Patch tests were read on day (D) 2 and D4. The patient showed positive patch test reactions to epoxy resin, bisphenol A type 1% pet. (+++/+++), and bisphenol A-glycidyl methacrylate (Bis-GMA) 2% pet. (+++/+++).

We diagnosed contact allergic eczema to Bis-GMA caused by composite from the work protection boots. The change of the work boots back to different ones with a metal toe cap led to a complete clearance of the lesions after 3 months.

DISCUSSION

Bis-GMA is a methacrylic monomer which is used since 1960 as a dental sealant and a component some dental composite resin.¹ It has also been used in preparations for artificial nails,² and in printing materials.³ Bis-GMA sensitization as cause of allergic contact eczema in dental technicians has been reported.⁴ Recently, the development of allergic contact eczema after the use of medical dressings and adhesives has been described.⁵

The use of composite toe caps in work boots became the alternative to steel toe caps. Composites, or composite resins, are synthetic materials mixed heterogeneously. This material provides stiffness and resistance, which is why it is used as a protective material. The composites are manufactured from an organic matrix and Bis-GMA mixed with inorganic fillers such as quartz, zirconite, and aluminum silicate. Other compounds include silanes used as binding agents, and benzoyl peroxide and tertiary amines used as initiator-activating substances.

In the light of the results obtained in our patient, we present the first case of allergic contact eczema to Bis-GMA and chronic foot eczema related to the composite material of the protective

boots. It is important to identify new sources of allergens in patients who are part of risk groups for allergen sensitization, such as construction workers.

CONFLICTS OF INTEREST

None to declare.

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