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Occupational hand dermatitis caused by benzoyl peroxide in transformer coil binding tape

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Case Report

A 59-year-old male was referred with bilateral hand dermatitis. There was marked erythema, vesiculation, and crusting, mainly affecting the dorsa of his hands with a sharp cut-off at the wrist level.

He was patch tested according to International Contact Dermatitis Research Group guidelines with Finn[®] Chambers and the British baseline series, glues and plastics and metals series (Chemotechnique Diagnostics, Vellinge, Sweden). On day 4, there was a +1 reaction to benzoyl peroxide. There was no past history of use of topical acne treatments or implantation of a dental or orthopaedic prosthesis. Although he reported asymptomatic varicose veins, he has never had a leg ulcer.

He worked in a factory manufacturing electrical transformers. His job involved the assembly of transformer coils by manually winding copper wire onto a large cardboard core, and wrapping binding tape around the resultant copper coil. The coils had to be pulled tightly and held together with bare hands under tension while the binding tape was wrapped around the coil. Inspection of the relevant safety data sheets provided by the company revealed that benzoyl peroxide was a component of the binding tape.

A factory visit confirmed his history of benzoyl peroxide exposure resulting from contact of the hands with binding tape, and his hand dermatitis improved within weeks of his moving to a different section of the

manufacturing plant. There has been no recurrence after 2 years.

Discussion

Benzoyl peroxide has several useful chemical functions, namely its bleaching ability, antiseptic activity, and an ability to initiate polymerization through free radical formation. Benzoyl peroxide-induced occupational dermatoses have been reported in the manufacture of dental and orthopaedic prosthesis, in the candle-manufacturing and plastics/fibre glass industry, and, to a lesser extent, in bakers, although its usage has now been banned in the baking industry.

Benzoyl peroxide can be found in adhesive tapes (1), but it has not previously been reported to cause occupational dermatoses in the manufacture of electrical transformers.

Benzoyl peroxide is known to cause irritant reactions during patch testing, so recognizing a true positive reaction to BPO involves a thorough assessment of its exposure and relevance. This can be further confounded by conflicting evidence of contact sensitization to benzoyl peroxide (2).

This is the first report of allergic contact dermatitis caused by benzoyl peroxide exposure in the manufacture of electrical transformers. This case highlights the importance of both thorough history-taking and confirmation by site visit in the investigation of positive patch test reactions to benzoyl peroxide.

References

- 1 Greiner D, Webber G, Kaufmann R, Boehncke R. Benzoyl peroxide as a contact allergen in adhesive tape. *Contact Dermatitis* 1999; **41**: 233.
- 2 Ockenfels, H M. Patch testing with benzoyl peroxide: reaction profile and interpretation of positive patch test reactions. *Contact Dermatitis* 2009; **61**: 209–216.

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