

Severe contact allergy to footwear responding to handmade shoes

ANTHONY M. R. DOWNS AND JANE E. SANSOM

Department of Dermatology, Bristol Royal Infirmary, Bristol BS2 8HW, UK

Key words: shoe dermatitis, handmade shoes; multiple contact allergies; prevention; chromate; thiuram mix; mercapto mix; allergen replacement. © Munksgaard, 1999.

Case Report

A 60-year-old hospital porter presented with a 17-year history of foot dermatitis, which had initially been localized to the toes and plantar forefoot. This had followed a relapsing-remitting course, with exacerbations often accompanied by secondary infection and loss of work. He had had 5 courses of local PUVA therapy. In 1992, he was patch tested to the European standard, facial and preservatives and shoe series and was positive at D4 to potassium dichromate, thiuram mix and mercapto mix (including MBT) and to components of his own shoes. He could not wear canvas shoes or polyvinyl chloride (PVC) boots at work because of local health and safety guidelines. His dermatitis improved when resting barefoot at home. He was started on cyclosporin A 200 mg oral daily, which allowed him to work.

A local cobbler (Charles MacWatt originalsTM) was approached. The patient was patch tested against possible materials supplied by the cobbler and found to be non-reactive to gray fullgrain pigskin (leather lining), chrome-tanned cowhide (leather upper), vegetable-tanned flexibands (cow leather insole), natural plantation crepe (natural rubber from Sri Lankan rubber trees to mould into soles), natural rubber solution (latex glue) and nylon (stitching material). A pair of industrial workshoes and sandals were made for him at reasonable cost. His cyclosporin A was discontinued 2 months after receiving his shoes, and his dermatitis has not relapsed.

Discussion

Shoe glues are usually composed of either neoprene (which contains *p*-tert-butylphenol formaldehyde resin (PTBP)) or natural rubber latex (1). During chrome tanning, several chrome/hide protein crosslinking complexes

are formed. The relative %s of these complexes depend on temperature, pH and concentration. Additional masking agents or a second tan with vegetable (plant and fruit extracts) tannins may also be used. This results in variable saturation of chrome on the leather surface and throughout the material (2). Some chrome-tanned leathers may therefore have little if any chrome on their surface and still be suitable for chrome-allergic patients, as in our case.

Alternative shoe materials in shoe dermatitis are canvas (1) and PVC (3). Shoes without common sensitizers, such as colophony (4), MBT (5) and PTBP (6), are readily available from shoe manufacturers such as ClarksTM, though the diverse sources of materials used, often undergoing several processes in different countries, may make information on components not entirely accurate (1). By enlisting a local cobbler to make replacement shoes for this individual, we were able to discontinue a potent immunosuppressive drug.

References

1. Podmore P. Shoes. In: Rycroft R J G, Menné T, Frosch P J (eds.): *Textbook of contact dermatitis*, 2nd edition. Berlin: Springer-Verlag, 1995.
2. Thorsten T C. *Practical leather technology*, 2nd edition. Malabar, Florida: Robert E. Krieger Publishing Co, 1985.
3. Mathias C G T, Maibach H I. Polyvinyl chloride work boots in the management of dermatitis in industrial workers. *Contact Dermatitis* 1979; 5: 249–250.
4. Saha M, Srinivas C R, Shenoy S D et al. Footwear dermatitis. *Contact Dermatitis* 1993; 28: 260–264.
5. Lear J T, English J S C. Hand involvement in allergic contact dermatitis from mercaptobenzothiazole in shoes. *Contact Dermatitis* 1996; 34: 432.
6. Downs A M R, Sansom J E. Palmoplantar dermatitis may be due to phenolformaldehyde resin contact dermatitis. *Contact Dermatitis* 1997; 39: 1478.