

Allergic contact dermatitis probably caused by mercaptobenzothiazole in thermal undergarments

Christa Tomc¹, Laura Kwasniak², Pezhman Shoureshi² and Susan Nedorost²

¹Osteopathic Medical Student, IV, Ohio University Heritage College of Osteopathic Medicine, Athens, OH 45701, USA and ²Department of Dermatology, University Hospitals Case Medical Center, Cleveland, OH 44106, USA

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Case Report

A 39-year-old Caucasian presented with a 2-year history of hand and foot dermatitis and an intermittent, more generalized, rash on his torso and extremities (Figs. 1, 2). He had been patch tested 12 years previously, at which time he reacted to rubber accelerators. At work, he frequently sweated heavily and often wore rubber gloves and wading boots. In some seasons, he wore layers of clothing with thermal undergarments.

Discussion

With Finn Chambers[®] on Scanpor[®] tape, the patient underwent patch testing with an extended Chemotechnique North American Baseline series, the Chemotechnique textiles series, and his own garments (Fig. 3). The patches remained in place for 2 days, and readings were performed at 3 and 7 days. Positive reactions were observed at 3 and 7 days to 2-mercaptobenzothiazole (MBT), mercapto mix, thiuram mix, propolis, and the patient's own undergarments.

Contact allergy to rubber in elastic textiles is well described. Spandex (elastane, Lycra[™]), is a polyurethane polymer formed by a di-isocyanate addition polymerization process that usually does not contain rubber chemicals such as MBT (1, 2). However, in the 1960s, Allenby reported 11 cases of contact dermatitis caused by a specific brand of brassiere containing the polyurethane elastomer spandex. Patients had positive patch test reactions to both spandex and MBT, whereas they tested negative to other components found in the brassiere, including Lycra yarn. MBT is rarely used as a cross-linker for polyurethanes,



Fig. 1. Dermatitis involving the legs in areas of contact with the thermal undergarment.

and MBT salts used to prevent mildew in fabrics are not regarded as being very likely to cause contact dermatitis (3). After the 1960s, most US brands of spandex fibre contained no MBT, and nor was it used in its processing (4, 5). There is also a series of 9 cases of contact dermatitis caused by Lycra in patients who had negative patch test results with MBT; 4 of the cases were only positive after being tested while wearing either the offending brassiere or a piece of it sewn to a cotton bra, showing

Correspondence: Christa Tomc, Ohio University Heritage College of Osteopathic Medicine, Grosvenor Hall, Athens, OH 45701, USA. Tel: (740) 707-2602; Fax: (614) 544-1799. E-mail: ct229107@ohio.edu

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Fig. 2. Dermatitis involving the arms (2) in areas of contact with the thermal undergarment.



Fig. 3. Label of the undergarment.

that usage conditions may be needed to release textile allergens (6).

Our patient was probably sensitized to MBT from the past use of gloves containing the rubber accelerator. Subsequently, this sensitization may have led to his reaction upon exposure to elastane found in his thermal

garments. The manufacturer of his apparel indicated that the components of their elastane are sourced from numerous locations, and that the exact content of the textile could not be determined. Given that our patient had positive patch test reactions to both MBT and his own garments, clinicians should be aware of MBT in elastane as a potential cause of textile dermatitis.

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