

Short Communication

Contact allergy to IPPD and diphenylthiourea in an orthopaedic brace

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Case Report

A 58-year-old woman, with no personal history of skin problems or atopy, required an orthopaedic hip brace 6 days after a right total hip replacement, as the new joint had become dislocated. She reported having perspired heavily whilst being immobile in the brace, and 4 days later, she developed a severe painful erythematous vesicular eruption at sites of contact with the neoprene lining of the brace on her thigh and waist. The rash failed to improve with potent topical corticosteroid, but finally settled with a course of oral corticosteroid. She was provided with a new brace without neoprene.

2 months after her course of corticosteroid, she was patch tested to an extended European standard series and additional rubber, isocyanates and clothing series. The brace to which she had reacted had already been destroyed. She had ++ reactions at D2 and D4 to N-isopropyl-N-phenyl-para-phenylenediamine (IPPD) 0.1% pet. and a ?+ reaction at D2 and + at D4 to diphenylthiourea (DPTU) 1% pet. (Table 1). The orthopaedic brace manufacturer confirmed that the lining material that had been in contact with the patient's skin

at the time of the reaction did contain both IPPD and DPTU.

Discussion

DPTU contact sensitivity has been reported from both rubber (1, 2) and non-rubber products (3–5). Villareal (2) reported a case of DPTU sensitivity from neoprene in an orthopaedic knee brace. Bolhaar & Van Ginkel (6) reported 3 cases of allergy to rubber additives in orthopaedic braces, 2 of whom had positive patch tests to diethylthiourea (DETU) on D3 and 1 to diphenylguanidine: none reacted to DPTU. Patients sensitive to ethylenethiourea (ETU) have cross-reacted to DPTU (5). Carlsen et al. (7) reported a case of IPPD sensitivity in a man treated with an orthopaedic textile bandage padded with black neoprene-like rubber. Orthopaedic braces have also been reported as causing sensitivity to para-tertiary-butylphenol-formaldehyde resin (8) and Disperse Blue 85 (9).

References

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Table 1. Patch test results

Substance (all pet.)	D2	D4
N-isopropyl-N-phenyl-para-phenylenediamine (IPPD) 0.1%	++	++
carba mix	–	–
thiuram mix	–	–
diphenylthiourea 1%	?+	+
dibutylthiourea 1%	–	–
N'N'-diphenyl-para-phenylenediamine (DPPD) 1%	–	–
cyclohexyl thiophthalimide 1%	–	–
phenyl-β-naphthylamine 1%	–	–
1'-3-diphenylguanidine 1%	–	–
bis(diethyldithiocarbamato)zinc 1%	–	–
bis(dibutylthiocarbamato)zinc 1%	–	–
diethylthiourea 1%	–	–
thiourea 0.1%	–	–
hexamethylenetriamine 1%	–	–

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