

Allergic contact dermatitis caused by a black rubber handbrake handle

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N-isopropyl-*N'*-phenyl-*p*-phenylenediamine (IPPD) is an antioxidant used in rubber manufacturing.¹ Several reports have documented contact allergy to IPPD, mainly among workers in rubber factories and the automobile industry,² and the allergy is recognized as an occupational disease. We report an unusual case of allergic contact dermatitis of the calf induced by friction with the handbrake of a vehicle.

CASE REPORT

A 41-year-old, non-atopic man presented with a 4-year history of recurrent erythematous, sometimes bullous and scaly, pruriginous dermatitis on the outside of the right calf worsening in spring and summer and healing in winter (Figure 1A). Medical history did not identify any triggering factors. Topical corticosteroids temporarily improved his dermatitis. Several differential diagnoses were considered, including eczema, fixed-drug eruption, mycosis fungoides, and epidermolysis bullosa. Histological analyses of the lesion suggested lichen simplex chronicus or fixed-drug eruption. In the context of a summer relapse, we concluded that it was a fixed-drug eruption of actinic origin. Following a winter relapse, another histological

assessment demonstrated eczema. Photobiological investigations (applying up to 6 J UVA/cm²) did not reveal photosensitivity. Patch tests using IQ Ultra Chambers (Chemotechnique Diagnostics, Vellinge, Sweden) applying the European baseline series showed a positive reaction to IPPD 0.1% pet. on day (D) 2 (++) and D4 (++), without cross-reaction to *p*-phenylenediamine (PPD) (Figure 1C). In a reassessment of the patient's history, he recalled a black rubber product rubbing against his calf daily: the handle of the handbrake of his vehicle (Figure 1B,D). The contact increased in spring and summer when he was often wearing shorts. We thus diagnosed allergic contact dermatitis caused by IPPD, contained in the black rubber handle. Prevention of further contact and treatment with topical corticosteroids led to complete resolution of the lesions.

DISCUSSION

IPPD is an antioxidant used in black rubber such as industrial gloves, tires, sports equipment, and so forth, as well as in acrylic products and cutting oils. The prevalence of IPPD sensitization in the general population is about 0.9%. Several reports have documented contact allergy to IPPD in sports equipment and automobile products.¹ More atypical



FIGURE 1 (A) Clinical lesion: erythematous and scaly dermatitis. (B) The vehicle. (C) Positive patch test reaction to *N*-isopropyl-*N'*-phenyl-*p*-phenylenediamine (0.1% pet.). (D) Handbrake handle rubbing against calf

cases include reactions to motorcycle³ and bicycle⁴ handles and fishing rods.⁵ For chronic, treatment-resistant eczema, patch tests that include the European baseline series can reveal a triggering factor, as it can be difficult to demonstrate contact allergy based on a medical history alone. In conclusion, we report a case of allergic contact dermatitis to IPPD induced by contact with friction to a handbrake. Our case emphasizes the importance of patch tests, especially using the European baseline series, in view of an unusual and therapy-resistant eczema.

CONFLICT OF INTEREST

The authors declare no conflict of interests.

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