

Three cases of allergic contact dermatitis to 4,4'-diaminodiphenylmethane

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4,4'-Diaminodiphenylmethane (CAS 101-77-9) is an aromatic diamine used in the manufacture of plastics, diisocyanates, dyes, and adhesives (1). The hepatotoxic effects of 4,4'-diaminodiphenylmethane in man caused the 'Epping jaundice incident' (2) in 1965 in which 84 people became ill, some seriously, with jaundice after having eaten bread made from flour accidentally contaminated with 4,4'-diaminodiphenylmethane during transit. Although the substance is a recognized sensitizer and did cause problems in the shoe and rubber industries in the 1970–80 period, we had not previously seen 4,4'-diaminodiphenylmethane-positive patch tests in shoe-related contact allergy in the past 20 years (3) until 2008, when we have seen three patients. All of them wore Asian-manufactured shoes.

Clinical Cases

Case 1

A 7-year-old boy presented with an itchy rash affecting both feet following use of a pair of new plastic sandals.

Case 2

A 31-year-old man had a history of intense pruritus affecting his soles after wearing a new pair of sandals. Five months later, he bought a different pair of shoes from the same shop, and 5 days later, he developed a severe itchy rash on his feet.

Case 3

A 67-year-old lady presented with a suspected shoe contact dermatitis. She had bought a pair of shoes from China and after a few months, developed irritation on the dorsal aspect of her toes.

In all three cases, patch testing with 2-day occlusion using Curatest[®] chambers and the European baseline series and a shoe and diisocyanate series (Chemotechnique Diagnostics, Malmö, Sweden) gave negative results except 4,4'-diaminodiphenylmethane 0.5% pet. (++) on D2 and D4). As the anatomical distributions of all three patients' complaints were suggestive of allergic contact dermatitis, diagnoses of allergic contact dermatitis caused by 4,4'-diaminodiphenylmethane were made, although there was no information on the presence of this substance or chemically related substances in the shoes.

Discussion

Millions of pairs of shoes arrive in Europe from Asia each year. The presence of diisocyanates in shoes has been described (4,5). In Spain, we rarely see contact dermatitis cases from 4,4'-diaminodiphenylmethane. This allergen is not included in the shoe series of Chemotechnique Diagnostics but we suggest its inclusion in the shoe series.

References

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Table 1. Excipients in Anoheal[®] cream and Adizem-XL[®] capsules

Anoheal	Liquid paraffin Cetomacrogol Emulsifying wax Propylene glycol Glycerol monostearate Phenoxyethanol Water
Adizem-XL	Microcrystalline cellulose Ethyl cellulose Colloidal anhydrous silica Polysorbate 80 Dibutyl sebacate Magnesium stearate Sodium dodecyl sulfate Gelatin Shellac Soya lecithin 2-Ethoxyethanol Dimethicone Iron oxide (E172) Titanium dioxide (E171)