



Fig. 1. Eczema surrounding the ulcer and extending to the thigh with a sharp upper limit coinciding with the upper limit of the elastic compression bandage.

Allergic contact dermatitis to rubber-containing bandages in patients with leg ulcers

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Allergic contact dermatitis occurs in 40–82.5% of patients with venous insufficiency of the lower limbs, mainly because of lanolin (wool alcohols), fragrances, and antimicrobial agents (1–4). However, other allergens may be involved, as in the cases reported below.

Case Reports

We investigated 7 patients, 4 men and 3 women (ages 47–75 years, mean 66.5 years), with venous insufficiency and associated leg ulcers lasting for more than one year. They all presented with acute or subacute eczema of the lower limbs, extending from the dorsum of the foot to the upper leg or thigh, with a sharp upper limit (Fig. 1). The area around their ulcers, where additional gauze protection was being applied, was relatively free of eczema.

Patch testing was undertaken with the Portuguese baseline series of contact allergens, topical medicament series, and leg ulcer dressings used

by the patients. Allergens were applied in Finn Chambers[®], Epitest Ltd, and readings were performed at D2 and D3 or D4 according to the International Contact Dermatitis Research Group (ICDRG) guidelines. All patients reacted to rubber components – carba mix (5), thiuram mix (6), and/or mercapto mix (1) and to its constituents and 6 of them to other allergens as well (Table 1).

As all patients were sensitized to rubber components and their leg dermatitis had an upper limit coinciding with the bandages they had been using, we performed further patch tests with samples of the high compression bandages and the elastic tubular net Bend-a-Rete[®] (3M Company, Minnesota, USA) they had been using, with positive results (+/++) in all of them (Table 1).

After modification of topical medicaments according to the patch test results, an improvement of their dermatitis was seen. However, some areas of eczema, namely those localized to the upper leg and thigh, only resolved when the rubber-containing bandages and tubular net were avoided or thicker cotton gauze was applied under the compressive bandages. Ulcer healing improved thereafter.

There was no apparent other explanation for rubber dermatitis in these patients.

Discussion

Although they are not among the most common sensitizers, positive patch tests to rubber components

occur in 11–15.6% of patients with leg ulcers (1–3, 6). They are considered important sensitizers in this setting with exposure being repeated contact with gloves used by health-care personnel and rubber-containing compression bandages used in venous insufficiency (1, 3, 5). Although we were unable to obtain information on the rubber components used in the elastic tubular net and compression bandages, positive patch tests to samples of them and improvement of the dermatitis upon skin protection by cotton gauze under the elastic compression are strong arguments in favour of their association with the allergic contact dermatitis in these patients.

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Table 1. Positive patch tests

Patch tests	Patient 1 (♀, 57 years)	Patient 2 (♂, 72 years)	Patient 3 (♀, 72 years)	Patient 4 (♂, 75 years)	Patient 5 (♂, 75 years)	Patient 6 (♂, 47 years)	Patient 7 (♀, 68 years)
Rubber allergens in baseline series	Carba mix	Thiuram mix, carba mix	Thiuram mix, carba mix	Thiuram mix	Thiuram mix, carba mix, mercapto mix, MBT	Carba mix	Thiuram mix, carba mix
Rubber additives series	Not tested	TMTM, TMTD, TETD, Ziram/ZDEC	TMTM, TMTD, TETD	TMTM, TMTD, TETD	TMTM, TMTD, TETD, DPT/MOR	ZDEC	TMTM, TMTD, ZDEC
Other allergens within the Portuguese baseline series	Colophonium MP, F. mix I, lanolin, formaldehyde, MDBGN	Neg	Nickel, colophonium, F. mix I	Neg	Lanolin, clioquinol, MDBGN	Cobalt, lanolin	Nickel, lanolin
Topical medicaments series	Povidone, PG, benzoic acid, Silvaderme®	Gentamycin, bacitracin, BHA, Decubal® cream	BHA, PG, Silvaderme®	Neg	Neg	Povidone, p-chloro-m-cresol	Bacitracin
Leg ulcer dressings Bandages	Unna boot bandage Bend-a-rete	Neg Elastic compression, Bend-a-rete	Varihesive® gel Elastic compression, Bend-a-rete	Neg Elastic compression, Bend-a-rete	Neg Elastic compression, Bend-a-rete	Neg Elastic compression, Bend-a-rete	Neg Elastic compression

BHA, Butylated hydroxyanisole; DPT, diphenylthiourea; F. mix I, fragrance mix I; MBT, 2-mercapto-1,2,3,4-tetrahydro-1,3,4-thiazole; MDBGN, methyl-2-bromo glutaronitrile; MOR, 2-(4-morpholinyl-mercaptop) benzothiazole; MP, myroxylon pereirae; Neg, negative results; PG, propylene glycol; TETD, tetraethylthiuram disulfide; TMTD, tetramethylthiuram disulfide; TMTM, tetramethylthiuram monosulfide; ZDEC, zinc diethyldithiocarbamate.

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