

Allergic contact dermatitis from dithiocarbamate fungicides in a bricklayer

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Key words: allergic contact dermatitis; bricklayer; pesticide; occupational; fungicide; dithiocarbamate; mancozeb; zineb; maneb. © Munksgaard, 1999.

Case Report

A 24-year-old bricklayer developed acute eczema predominantly on the face, neck, vee of the chest, forearms and hands, after working in a vineyard during the application of pesticides, which cleared with systemic corticosteroids. Sulfur, Remiltine C[®], containing mancozeb and copper, and Gramoxone 2000[®], containing paraquat, had been used. He also had a history of hand dermatitis that had begun 2 years previously, which was worsened by contact with cement, and he had started to wear rubber gloves without improvement. He had both a personal and a family history of atopy. He was patch tested, using Finn Chambers[®] and Scanpor[®] tape, with the Portuguese standard series, and rubber and rural series, with the following positive results:

	D2	D4
potassium dichromate 0.5% pet.	++	++
cobalt chloride 1% pet.	—	++
nickel sulfate 5% pet.	++	++
thiuram mix 1% pet.	++	++
tetramethylthiuram monosulfide (TMTM) 1% pet.	++	+
tetramethylthiuram disulfide (TMTD) 1% pet.	++	+
zinc ethylenebisdithiocarbamate – zineb 1% pet.	++	+++
manganese ethylenebisdithiocarbamate – maneb 1% pet.	++	+++

He was also patch tested with the other products used, paraquat, copper and sulfur, with negative results.

Discussion

The dithiocarbamates maneb (manganese ethylenebisdithiocarbamate) and zineb (zinc ethylenebisdithiocarbamate), combined with each other (mancozeb) or with other products or alone, are widely used as agricultural fungicides. The dithiocarbamates are also used as rubber additives, are chemically related to thiurams, and cross-reactions are seen (1).

Despite these fungicides being widely used, allergic contact dermatitis has rarely been reported. The cases reported are in agricultural and horticultural workers, farmers and fungicide factory workers (2–6). Our patient was a bricklayer, previously sensitized to thiurams, who developed an acute dermatitis after working in a vineyard during the application of dithiocarbamate fungicides.

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Contact dermatitis from levobunolol eyedrops

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β -adrenergic receptor antagonists (β -blockers) are particularly useful in the treatment of open-angle glaucoma.

Case Report

A 68-year-old woman presented with blepharitis, and dermatitis of both eyelids and the periorbital area. She

had been using a single-dose, unpreserved ophthalmic preparation for open-angle glaucoma (Vistagan[®] Liquifilm 0.5% O.K., Pharm-Allergan Pharmaceuticals, Ettlingen, Germany), containing 0.5% levobunolol hydrochloride, for 1 year.

We performed patch testing with the European standard series, preservatives and a series of ophthalmic

Table 1. Patch test results

	Vehicle	D2	D3	D7
Vistagan® Liquifilm 0.5% O.K.	as is	++	++	++
levobunolol	0.5% aq.	++	++	++
levobunolol	1% aq.	++	++	++
levobunolol	2% aq.	++	++	++
levobunolol	0.5% pet.	++	++	++
levobunolol	1% pet.	++	++	++
levobunolol	2% pet.	++	++	++
all other constituents of Vistagan® Liquifilm		—	—	—
Arteoptic® (carteolol HCl)	as is	—	—	—
Arutimol uno® (timolol hydrogen maleate)	as is	—	—	—
Betamann® 0.3% EDO (metipranolol HCl)	as is	—	—	—
Betoptima® (betaxolol HCl)	as is	—	—	—
Glauconex® 0.5% (bepunolol HCl)	as is	—	—	—
Glauco-Stulln® (pindolol)	as is	—	—	—

compounds, Vistagan® Liquifilm and all of its constituents, as well as a series of other β -blockers. Readings at 2, 3 and 7 days, revealed positive reactions to Vistagan® Liquifilm and levobunolol hydrochloride (Table 1).

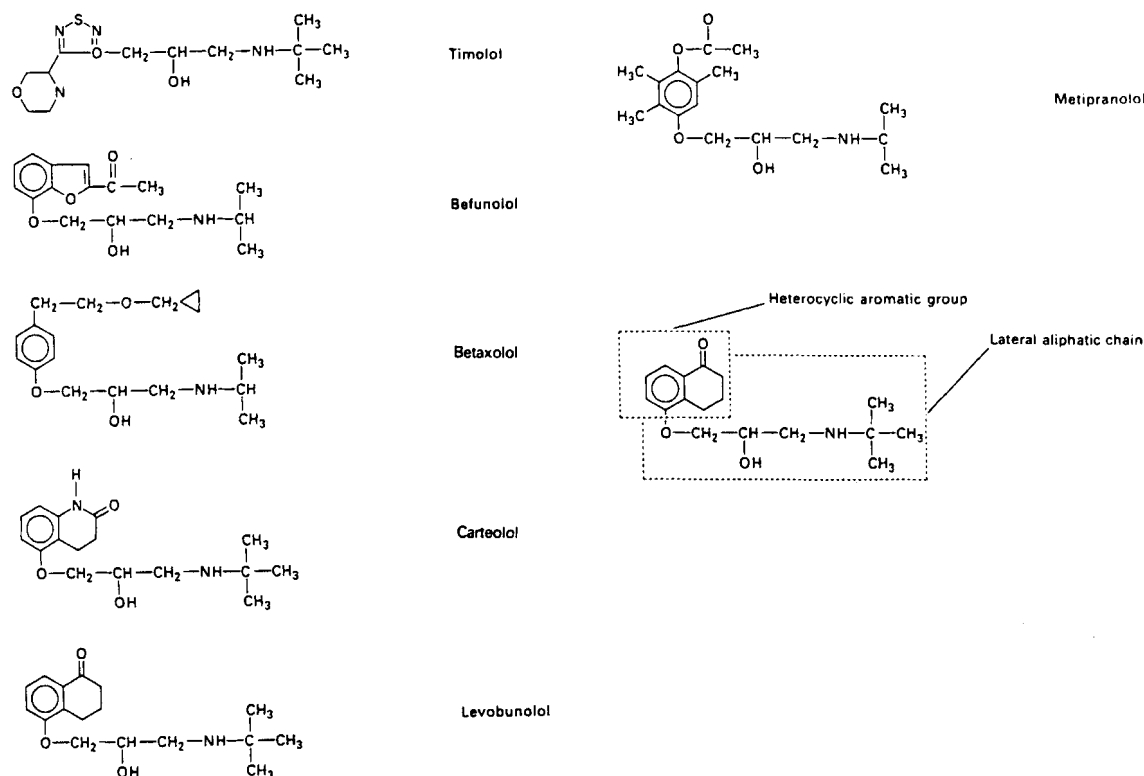
The patient's blepharitis and periorbital dermatitis regressed rapidly upon discontinuation of treatment with levobunolol-containing eyedrops.

Discussion

Contact dermatitis from β -blockers is rarely reported despite their widespread use (1, 2, 4–11). Since Schultheiss' 1st description of contact dermatitis due to levobunolol in 1989 (9), only a few additional case reports have been

published (2, 7, 10, 12). Preservatives, such as benzalkonium chloride, sodium EDTA and thimerosal, are well-known, frequent sensitizers in eyedrops (5). Vistagan® Liquifilm 0.5% O.K., used by our patient, does not contain any preservatives. The ophthalmic agents were applied after skin stripping, as recommended by Frosch et al. (3).

There are varying observations with regard to cross-reactivity among β -blockers (4, 6, 11). The chemical structure of β -blockers is similar to their physiological agonist noradrenaline: all have a heterocyclic aromatic group, which conditions affinity to the receptor. The aliphatic chain of β -blockers, which is common to various molecules, may act as an antigenic determinant, rather

Fig. 1. Chemical structures of β -blocking agents.

than the heterocyclic aromatic group, which diversifies β -blockers from one another (Fig. 1). In contrast to levobunolol, there was no patch test reaction to any other β -blocker in our test series. Upon continuation of glaucoma treatment with the β -blocker pindolol, there has been no relapse of periorbital dermatitis in our patient.

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Patch testing with additional series of allergens

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Key words: allergic contact dermatitis; patch testing technique; standard series; additional series; non-standard substances. © Munksgaard, 1999.

Patch testing with a standard series of allergens allows the identification of substances responsible for dermatitis in a large number of cases, but not in all (1–4). It can sometimes be necessary to test with additional non-standard substances (5–6).

Materials and Methods

To build up additional series, we gathered together data from the major texts of allergological dermatology (7–16), original publications, patch test catalogues and Internet sites (17). This resulted in a series of 71 allergens, subdividable into blocks.

A total of 262 patients (141 at OU of Allergological Dermatology, 121 at INAIL Dermatological Consultancy) suspected of having allergic contact dermatitis took part in the study (138 male, 124 female; mean age, 41 years). All underwent patch tests with an augmented GIRDCA standard series. The allergens used for patch testing were supplied by Chemotechnique Diagnostics (Malmö, Sweden), Trolab Hermal (Reinbek, Germany) and FIRMA SpA (Firenze, Italy). Patch testing was performed with Van der Bend square

chambers (Van der Bend, Brielle, The Netherlands) or Finn Chambers on Scanpor tape (Epitest Ltd Oy, Tuusula, Finland) on the subject's back and left in place for 2 days. Readings took place at 30 to 60 min after the patch tests were removed, and again 1 or 2 days later, and occasionally up to 7 days, according to ICDRG recommendations (18).

All patients were patch tested with 1 or more additional series (or with part of such a series). Between them, 53 different series were used (most frequently: clothing, construction industry, hairdressers, dental prostheses, shoes, metallurgical industry, housewives, textile industry), with a total of 310 series or blocks of

Table 1. Correlation between numbers of patients positive to the standard series and additional series

		Additional series	
		negative	positive
Standard series	negative	76 (29%)	21 (8%)
	positive	85 (32.4%)	80 (30.5%)