

Contact allergy to paratertiary butylphenol formaldehyde resin in an adhesive label

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Key words: Adhesive labels - contact allergy - paratertiary butylphenol formaldehyde resin.

Case report

14 years ago, a now 41-year-old man had had acute dermatitis on his hands and face. When patch tested, he reacted to a glue used to join phenolic resin objects and foam-rubber. The type of glue is unknown. He changed his job and for the last 13 years has been working in a supply depot, putting metal objects in cardboard boxes using tapes and adhesive labels.

In 1982 he developed vesicular dermatitis on the tip of 1 finger and the hypothenar eminence of his left hand. Routine ICDRG patch testing revealed contact allergy to paratertiary butylphenol formaldehyde resin and to the sticky side of one of the used labels. Patch testing with 8 other labels and 3 tapes was negative.

There are two kinds of adhesive labels on the market; solvent and water based. When increased adhesion is required, esters of maleic or phthalic acids, terpenes or phenolic resins are added to the adhesive. These compounds have a tendency to migrate to the surface and contaminate the finger tips. The producer admitted that the adhesive label to which the patient reacted contained paratertiary butylphenol formaldehyde resin, 2% by weight. It is not known, however, for how long he had been in contact with this label. Nor can it be established whether the contact allergy was induced by the glue in his first job or by the labels. However, it is obvious that the present hand eczema was elicited by the labels.

Dermatitis in paperhangers

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Key words: Occupational dermatitis - paperhangers - wallpaper glue - bactericide - fungicide - chloromethoxy propyl mercuric acetate - 2-[(hydroxymethyl)amino] ethanol - formaldehyde releaser - polyethylene glycol monolauroyl ester - defoamer.

Occupational allergic contact dermatitis from chloracetamide in glue was previously reported among Swedish housepainters who hang wallpaper using the glue containing this chemical as a biocide (1, 2). Several years ago, we investigated a cluster of similar cases of dermatitis among members of the paperhanger's union in New York City.

From a total of 211 members (all male), 25 (11.8%) reported in a questionnaire that they were experiencing a skin problem which they thought was work-related. Most of the lesions were on fingers, hands and forearms, and had characteristics of chronic eczematous contact dermatitis (itching, cracking, dryness, rash, etc.).

Observation of their work practice confirmed that they hang wallpaper on a full-time basis and their hands and fingers were constantly in contact with wallpaper paste. The manufacturer of pastes used by

these paperhangers reported that the paste was made of water, starch, refined clay, vinyl acetate and chemical additives listed in Table 1 and Figs. 1-3. Table 1 also shows the concentration of patch test solutions and results on 11 paperhangers (ages from 31 to 59; median 49 years old) who completed both the 48 h and 72 h readings. (When pretested on 6 control subjects, these patch test solutions produced negative reactions.)

Comments

Many kinds of biocidal chemicals are added to paints and wallpaper paste to prevent fouling and mildew formation. A defoaming agent may also be added. Since the general populace hang wallpaper only sporadically, it may not reach a sufficient degree of exposure to cause any dermatological problem. In

Table 1. Patch test results

Chemical	Test solution	Patients results (72 h)					
		1	2	3	4	5	6-11
chloromethoxy propyl mercuric acetate	0.1% aq. (v/v)	-	++	-	-	-	-
2-[(hydroxymethyl)amino]ethanol	5.0% aq. (v/v)	-	+++	++	+++	++	-
polyethylene glycol monolauroyl ester	5.0% aq. (v/v)	++	++	-	-	-	-
vinyl acetate	2.0% aq. (w/v)	-	-	-	-	-	-

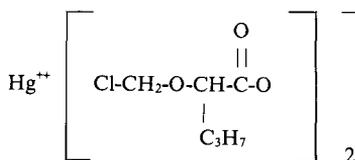


Fig. 1. Structural formula of chloromethoxy propyl mercuric acetate (a biocide)

contrast, full-time paperhangers have continuous exposure to the paste and its chemical additives which may cause allergic contact dermatitis.

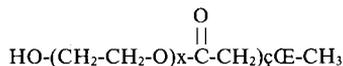
In this limited series of patch testing, 2-[(hydroxymethyl)amino]ethanol was the most allergenic.

Many chemicals are formaldehyde releasers (3). In our series, chloromethoxy propyl mercuric acetate is a likely formaldehyde releaser (it also contains a mercuric ion) and 2-[(hydroxymethyl)amino]ethanol is likely to yield both formaldehyde and ethanolamine in the presence of water and, in particular, under mildly acidic conditions. Although we did not use a standard series of patch tests including formaldehyde,



Fig. 2. Structural formula of 2-[(hydroxymethyl)amino]ethanol (a biocide)

this property may explain the strong sensitizing effect of 2-[(hydroxymethyl)amino]ethanol.

Fig. 3. Structural formula of: polyethylene glycol monolauroyl ester (a defoamer); synonym: *α*-lauroyl-*ω*-hydroxypoly(oxyethylene)

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Photopatch test reactions to tiaprofenic acid*

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Key words: Non-steroidal anti-inflammatory drug - photopatch test - tiaprofenic acid.

Photosensitivity due to the intake of non-steroidal anti-inflammatory drugs (NSAID) has been observed with several agents of this pharmacologic group. The most prominent of these is benoxaprofen which displays a powerful phototoxic action (1). Cases of photosensitivity attributable to piroxicam (2) and to carprofen (3) have occurred.

A 37-year-old woman was admitted with dermatitis of light-exposed skin. For 3 weeks, she had been taking Surgam® tablets (ST; Albert-Roussel Pharma, Wiesbaden, West Germany) that contain tiaprofenic

acid, to which she had a positive photopatch test. Therefore, tiaprofenic acid and/or ST (tiaprofenic acid/ST) were included in our standard photopatch test series (4).

Patients and Method

57 patients with a history of light sensitivity were tested. Tiaprofenic acid (moistened with tap water)/ST (pulverized, moistened with tap water) was applied within the standard photopatch test series and

Table 1. Results of photopatch testing with TPA/ST in 57 patients (12 males, 45 females)

Exposure to 15 J UVA/cm ²	n	Positive reaction to TPA/ST			
		on D 3		occurring later than D3	
		non-irradiated	irradiated	non-irradiated	irradiated
D 1	23	0	8	no reading later than D 3	
D 1+D 14 (13-15)	34	1*	6	0	3 (D 6/D 21/D 22)
Total	57	1	14	0	3

* Flare-up reaction exclusively in irradiated skin started to develop on D 24.

the corresponding control series at day (D) 0. Irradiation with 15 J/cm² UVA provided by a light source free of UVB (UVASUN® 5000, Mutzhas) was performed at D 1, sparing the control series. In 42 patients, additional test sites were exposed to $\frac{1}{2}$ of the minimal erythema dose (MED) for UVB using bulbs containing only a small amount of UVA (Philips TL 20W/12), and to UVA+UVB (doses as above). 34 patients were re-exposed to the same UV-dose as at D 1 two weeks later.

Results

At D 3, positive test reactions to tiaprofenic acid/ST exclusively in irradiated sites were found in 14 cases within the UVA-exposed series; in 1 additional patient, a positive contact reaction to tiaprofenic acid and ST occurred in non-exposed skin. No positive reactions to tiaprofenic acid/ST were seen at D 3 in test sites exposed to $\frac{1}{2}$ MED of UVB, and after exposure to UVA+UVB reactions they were partially suppressed when compared to those obtained with UVA alone. In 3 further patients, positive photopatch test reactions to tiaprofenic acid/ST started to develop after the 2-week irradiation (D 14) at D 16, D 21 and D 22, respectively. Except for the initial patient, there was no use of tiaprofenic acid in any patient with a positive photopatch test reaction.

The test results are summarized in Table 1.

The histological pattern of biopsies taken at D 3 from 2 positive photopatch test reactions to ST was compatible with a photoallergic contact dermatitis without evidence of toxic skin damage. The positive reaction starting at D 16 showed a picture suggestive of a lymphocytic drug reaction.

Comment

The high incidence of 17 positive photopatch test reactions to tiaprofenic acid/ST among 57 patients

tested (30%) is suggestive of a phototoxic action, especially as there was no history of treatment with this drug in most cases. As photosensitivity has been observed with several NSAID, one may speculate that the underlying pathomechanism is related to pharmacologic properties of these agents. However, a photoallergic mechanism has to be taken into consideration with regard to the histological features and the development of positive photopatch test reactions on D 16, D 21 and D 22.

Yet it cannot be concluded from these results that tiaprofenic acid given systemically will cause photosensitivity with a comparable frequency. If this were the case, one would expect a much higher incidence of clinically manifest adverse reactions due to light exposure. Further investigations are needed to allow interpretation of the clinical significance of a positive photopatch test reaction to tiaprofenic acid/ST. Nevertheless, the group as a whole should be included in a list of possibly photosensitising drugs.

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