

the upper arm. The following day, she developed an intense itchy, swollen, erythematous reaction which resolved over 3 weeks. She had never dyed her hair or used any temporary colorant. On returning to the UK, she was patch tested to PPD base 1% pet., and showed a ++ reaction at 2 and 4 days.

Comment

The incorporation of PPD into hair dyes in the EU is permitted to a maximum concentration of 6% (as free

base) in the reconstituted product. We have found only 1 brief report of the use of PPD used as a skin 'tattoo' (2) and draw attention to this practice and the associated risk of skin sensitization.

References

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Occupational contact allergy to nifuroxazide simulating prurigo nodularis

MARTA KIEĆ-SWIERCZYŃSKA AND BEATA KRĘCISZ

The Nofer Institute of Occupational Medicine, 8 Sw. Teresy St., 90-950 Łódź, Poland

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Nifuroxazide is an oral bactericide used in the treatment of acute and chronic diarrhoea. It is marketed under the trade names of Ambatrol, Antinal, Bacifurane, Ercéfuryl, and Panfurex (France). In Poland, it is manufactured by Polfa Co., Grodzisk Mazowiecki, and marketed under the trade name Nifuroksazyd[®] as coated tablets and, for children, as a 4% suspension. Exanthems are specified as a possible side-effect of the drug. Acute generalized exanthematous pustulosis following nifuroxazide intake has also been reported, the patient reacting positively to patch tests with 10% nifuroxazide in pet. and aq. (1).

Case Report

A 47-year-old woman, with no personal or family history of atopy, was referred to our Institute because of extensive dermal lesions on her upper extremities and trunk; these included erythema, papules and numerous erosions (Fig. 1). The lesions were associated with very severe itching. Since 1986, the patient had operated a dispensing apparatus filling glass bottles with liquid medicines. Her duties included checking the correct level of liquid in the bottles, checking the caps and cleaning the dispensing apparatus (bottle breakages were relatively frequent). Several different medicines were dispensed, including ibuprofen, pyrantelum, biseptol, and vit. A, D₃, and E (Polfa Co., Poland). Since 1993, the apparatus had been used to dispense a nifuroxazide suspension. After several months of work, the patient developed skin lesions which she soon associated with nifuroxazide. She was treated with success, but the lesions reappeared when she returned to work.

The 4% Nifuroksazyd[®] suspension contained nifurox-



Fig. 1. Eczematization and excoriation of a papular eruption in a patient with occupational contact allergy to nifuroxazide.

Table 1. Patch test results

Allergen	Concentration and vehicle	D2	D4
European standard colophony	20% pet.	++	++
nifuroxazide	1% aq.	+++	+++
	0.1% aq.	+++	+++
	0.01% aq.	+++	+++
	0.001% aq.	+++	+++
medicament series including nitrofurazone	1% pet.	-	-

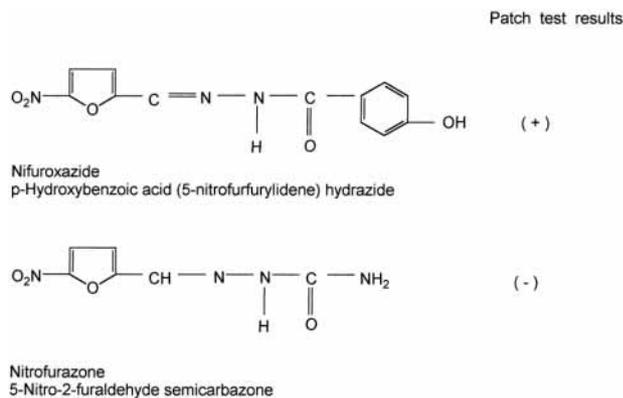


Fig. 2. Chemical structures of nifuroxazide and nitrofurazone.

azide (active component) and banana oil, sodium hydroxide, a polydimethylsiloxan antifoam emulsion, Aseptyna M (methyl-4-hydroxybenzoate), citric acid, carboxypolymethylene, saccharose and water.

The patient was patch tested with the European standard and a medicament series, 5% benzoic acid, 3% methyl-, ethyl-, propyl-, butyl-, and benzyl-4-hydroxybenzoate in pet. (Chemotechnique Diagnostics, Malmö, Sweden), and with 1; 0.1; 0.01 and 0.001% nifuroxazide in aq., as well as with other constituents of the medication: 10% banana oil, 10% antifoam, and 1% carboxypolymethylene. The tests were performed according to ICDRG recommendations. The controls consisted of 20 volunteers tested with Nifuroksazyd[®] and its components. The results of the tests in the control group were

negative. (Table 1). Our patient reacted strongly to all concentrations of nifuroxazide (+++) and to colophony (++) . She did not react to another nitrofurane-nitrofurazone. Our patient was also prick tested with pollens, house dust, *Dermatophagoides pteronyssinus*, *Dermatophagoides farinae*, goose, hen and duck feathers, dog and cat hair, latex, and banana (Allergopharma, Joachim Ganzer KG, Germany). The results of the prick tests were negative. Total IgE was 116 kU/l.

Discussion

The derivatives of nitrofurane belong to the category of bactericidal medicines and are characterized by wide application range and different kinetics. Some are used in the treatment of urinary tract inflammation, some to treat gastrointestinal disorders, and some others are intended for external application.

Descriptions of occupational allergy to furazolidone (2, 3) and to nitrofurazone (4, 5) are available in the literature. Cross-reactions between these bactericidal agents have also been reported (6). We failed to find any report of occupational contact allergy to nifuroxazide. Our patient experienced very severe itching and proliferation of fresh dermal lesions resembling prurigo nodularis on each contact with nifuroxazide. She did not use protective gloves. On patch testing she reacted to very low concentrations of nifuroxazide (0.001%). She did not cross-react to nitrofurazone, a derivative of nitrofurane (Fig. 2), nor to derivatives of hydroxybenzoic acid.

References

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