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Short Communications

Occupational contact sensitization to ethylenediamine in a wire-drawing factory

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Key words: ethylenediamine; CAS 109-78-4 Supersol ADMF; galvanized-steel wire; Kresto L; occupational; allergic contact dermatitis; airborne contact dermatitis. © Munksgaard, 1993.

Between October 1989 and March 1992, 27 out of 56 galvanized-steel wire drawers complained of dermatitis, dating from the use of Supersol ADMF, a lubricant composed of amino soaps of fatty acids and containing ethylenediamine as a surface-active additive (5% bound to phosphatic esters, 0.1% free). 18 patients with dermatitis of the hands (14), forearms (9) and face (3) were examined. Symptoms often occurred after minor skin injuries and varied from pruritic, erythematous or erythematopapular, vesicular eruptions to lichenified fissured eczema. Atopy was present in 3 patients. No previous exposure to ethylenediamine could be established.

All 18 patients were patch tested with the European standard series, including ethylenediamine 1% pet. In 16 patients, patch and open tests with occupational contactants were also performed. 11 of the 18 patients showed a positive reaction (+, ++) to ethylenediamine. 7 of them also reacted to 1 or more other allergens of the standard series. No allergic reactions were found to Supersol ADMF or to any of the other occupational contactants. However, all 16 patients showed irritant reactions to Kresto L, an industrial abrasive soap, at 10% and 1% pet.

Ethylenediamine is a well-known sensitizer, mainly from medicament exposure (Tri-Adcortyl, Mycolog). Occupational contact sensitization does, however, also occur (1–5). We found a remarkably high proportion of allergic contact reactions (11 out of 18 patients tested). The steel wire used by the drawers is galvanized with a thick coat of zinc. Stripping off of zinc during drawing leads to the formation of metallic soaps and free amines. As a result of the increased pH, ethylenediamine is liberated from the phosphatic esters: in the laboratory, free ethylenediamine could be measured in the vaporization phase of circulating lubricant mix sampled from the wire drawing machines. The high concentration of free ethylenediamine in the lubricant mix was responsible for the high rate of sensitization among the galvanized-steel wire drawers. In another plant, where Supersol ADMF was used for the drawing of brass-coated (thin electrolytically coated) steel wire, there was no corresponding incidence of allergic skin reactions.

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Topical NSAID allergic contact dermatitis
Italian experience

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Topical non-steroidal anti-inflammatory drugs (NSAIDs) are now used widely in orthopaedics, rheumatology and over-the-counter (1). The first reports of allergic contact dermatitis from NSAIDs appeared about

15 years ago (2). To date, more than 50 such reports have appeared (3–12). Members of GIRDCA have studied 102 patients (49 men, 53 women), aged 16 to 66 years (mean 37 years), with (photo)dermatitis induced by systemic or topical NSAIDs. The population thus sampled lives throughout Italy: 73 cases were in the north (Milan, Genoa, Bergamo), 2 in the centre (Florence) and 27 in the south (Bari, Naples, Benevento).

All patients were patch tested with the GIRDCA standard series of allergens (13), a series of NSAIDs, and their own medicaments (sometimes individual ingredients). When clinically indicated, patients were also photopatch tested (10 J/m^2 UVA) with the GIRDCA standard photoseries, the previous series of NSAIDs, and their own medicaments.

The commonest diagnoses were non-occupational allergic contact (59 cases) and photoallergic contact dermatitis (29 cases). In 11 cases, the diagnosis was occupational allergic contact dermatitis (never photoallergic): these patients were nurses or physiotherapists. 3 patients were diagnosed as systemic photoallergic dermatitis. In most cases, the NSAIDs had either been prescribed (47 cases) or self-prescribed (44 cases) for inflammatory or traumatic musculoskeletal problems. The primary sites were identifiable in 94 cases: legs, 38; arms, 35; scalp, 13 and trunk, 11. 11 patients had chronic, 34 subacute and 57 acute dermatitis.

In most cases, sensitization was single (86 cases). Multiple sensitization and/or cross-reaction were much rarer (13 cases) and photoallergic contact dermatitis due to previous systemic administration of NSAIDs rarer still (3 cases) (Table 1). The drug most often involved in cases of single sensitization was ketoprofen (21 contact, 20 photocontact). The next most frequent was ibuproxam (21 contact, 20 photocontact), followed by oxyphenbutazone (7 contact), piroxicam (2 contact and 1 photocontact), feprazone and acetylsalicylic acid (2 contact each), tiaprofenic acid (2 photocontact) and 1 case of contact each due to benzydamine HCl, bufexamac, etofenamate, diclofenac, ibuprofen, flufenamic acid, indomethacin and cinoxicam. The combination most frequently found (Table 2) was ketoprofen plus ibuproxam (6 contact, 1 photocontact). We also found photocontact caused by ibuprofen plus naproxen and 1 contact caused by oxyphenbutazone plus phenylbutazone. Previous systemic administration of NSAIDs provoked only photocontact, 2 after tiaprofenic acid and 1 after piroxicam.

Table 1. Cases of allergic contact and photocontact dermatitis

Drug	Contact	Photocontact
ketoprofen	21	20
ibuproxam	21	–
oxyphenbutazone	7	–
piroxicam	2	1
feprazone	2	–
acetylsalicylic acid	2	–
tiaprofenic acid	–	2
bufexamac	1	–
benzydamine HCl	1	–
ibuprofen	1	–
etofenamate	1	–
diclofenac	1	–
flufenamic acid	1	–
indomethacin	1	–
cinoxicam	1	–

Table 2. Association and/or cross-reaction between topical NSAIDs

Drugs	Contact	Photocontact
ketoprofen ibuproxam	6	1
ketoprofen tiaprofenic acid	–	4
ibuprofen naproxen	–	1
oxyphenbutazone phenylbutazone	1	–

Some patients were sensitive not only to the active drug but also to other substances in pharmaceutical preparations (e.g., fragrances). Others reacted to allergens without necessarily any current relevance. The most frequent reactions were to fragrance mix (9), potassium dichromate and balsam of Peru (6 each), nickel sulfate and thiuram mix (4 each), followed by thimerosal (3 cases), PPD mix (2 cases), and 1 each to carba mix, benzoic aldehyde, parabens, formaldehyde and Disperse Blue 124.

Our data and previous reports agree (2–12) that the most frequent causes of (photo)contact allergy are the arylpropionic derivatives, especially ketoprofen and ibuprofen. A further complication of this problem was provided by a report of negative (photo)maximization tests with ketoprofen in 20 healthy volunteers (6), similar results on maximization testing being found with another arylpropionic derivative, flurbiprofen (14).

We cannot yet establish the true incidence of contact sensitization to NSAIDs, but it is likely to be an increasing one.

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Contact dermatitis due to Metasol D3T in a Jay cushion

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Key words: biocides; preservatives; antimicrobials; Metasol D3T; dazomet; Jay cushion; allergic contact dermatitis; disabled. © Munksgaard, 1993.

Metasol D3T (dazomet, Mylone, Crag 974, or DMTT; tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione) is effective against a broad spectrum of bacteria and fungi in coatings, clay slurries, adhesives, glues, latex, emulsions, casein and titanium dioxide slurries (1–3). Jay cushions are used by paraplegics and other disabled in need of support in wheelchairs. Between 10 August 1990 and 27 March 1991, the Flolite fluid pad, an important component of the Jay cushion, had Metasol D3T added to extend pad life. Following reports of skin irritation, Metasol D3T was withdrawn.

Case Report

A 53-year-old male, who had been paraplegic following an accident in 1957, had used a Jay cushion in his wheelchair for 2 years. In November 1990, following wear and tear, the Jay cushion was replaced. The replacement cushion was most satisfactory as far as seating position and comfort were concerned. Very shortly after starting to use the new Jay cushion, he developed an irritating rash on the buttocks, backs of thighs and scrotum, worse when sitting on the cushion. The rash got progressively worse and the Jay cushion was abandoned, he was treated with a topical corticosteroid and changed to a Neoprene-based cushion and has had no further trouble.

Patch tests were carried out to Metasol D3T 0.01%, 0.2% and 0.5% pet. and all were positive at 2 and 7 days. It has been recommended that Metasol D3T 0.1% aq. should be used for patch testing (4). On reading the manufacturer's safety data sheet on Metasol D3T, the hospital pharmacist was concerned about disposal of the aqueous liquid, due to its extreme toxicity to fish and animals if it enters sewers or waterways. We agreed, therefore, to use petrolatum as the patch test vehicle.

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Contact dermatitis from glyceryl di-isostearate

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Key words: allergic contact dermatitis; cosmetics; glyceryl di-isostearate; glyceryl monoisostearate; isostearic acid. © Munksgaard, 1993.

Case Report

A 35-year-old housewife presented with itchy facial erythema. Patch testing showed a positive reaction to a foundation only (Table 1). Further patch testing with its individual ingredients gave a positive reaction to glyceryl di-isostearate 1.77% pet. Her face cleared in a few days with withdrawal of the foundation and application of a mild topical corticosteroid.

Table 1. Results of patch testing

Allergen		D2	D3	D7
foundation A	as is	+	+	+
all other cosmetics used	as is	–	–	–
glyceryl di-isostearate	1.77% pet.	+	+	+
all other ingredients		–	–	–