

Short Communications

Allergic contact dermatitis from methoxy PEG-17/dodecyl glycol copolymer (Elfacos® OW 100)

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Key words: allergic contact dermatitis; CAS 88507-00-0; cosmetics; Elfacos® OW 100; emulsifier; methoxy PEG-17/dodecyl glycol copolymer; ROAT. © Munksgaard, 2001.

Case Report

A 43-year-old woman, with no past history of dermatitis, was referred with acute eczema of the lower limbs and forearms, which had occurred within 24 h of applying a new moisturizing milk. Lesions cleared within 2 weeks of avoiding the cosmetic and applying topical corticosteroids.

Patch tests were performed 1 month later with the Finn-Chamber technique on the upper back with the revised ICDRG series (1), additional allergens and the patient's own topicals (Bioptimale® Lait Hydratant, Yves Rocher, Issy-Les-Moulineaux, France). Readings were performed after 2 and 3 days (D2 and D3) as recommended by the ICDRG, and showed a ?+ reaction at D2 to the moisturizing milk. A repeated open application test (ROAT) was then performed with the cosmetic, which elicited a vesicular eczematous reaction within 3 days.

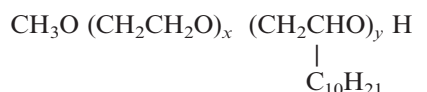
Patch testing was later carried out with the ingredients of the cosmetic, which showed ++ reactions at D2 and D3 to the cosmetic and to methoxy PEG-17/dodecyl gly-

col copolymer as is and at 10% pet. but not at 1% pet. Other ingredients were negative. A ROAT in the ante-cubital fossa with the polymer as is began to be positive after 2 days.

Discussion

This is the 1st case report of contact sensitization to methoxy PEG-17/dodecyl glycol copolymer, which was contained in a moisturizing milk at 2%.

Methoxy PEG-17/dodecyl glycol copolymer, trade name Elfacos® OW 100 (Akzo Nobel, Amersfoort, The Netherlands), consists of poly (glycol ethers) from 1,2-epoxyalkane (C₁₂) and ethylene oxide (Houthoff, personal communication). It conforms to the general formula



where x has an average value of 17, and y an average value of 1 (2). Its average molecular weight is around 1000 D (Houthoff, personal communication) (Fig. 1).

Methoxy PEG-17/dodecyl glycol copolymer is used as an emulsion stabilizer, and skin-conditioning and viscosity-increasing agent in cosmetics (2).

The hapten is likely to be an alkyl epoxide used for polymerization, a by-pass product occurring during polymerization, or some impurity like 1,4-dioxane, obtained from dimerization of ethylene oxide and inherent to all PEG products. Low as the eventual concentration of such a substance would have been in the cosmetic, it might still have been sufficient to elicit allergic contact dermatitis (3, 4). The question remains as to what past exposure induced such sensitization in the first place.

Acknowledgements

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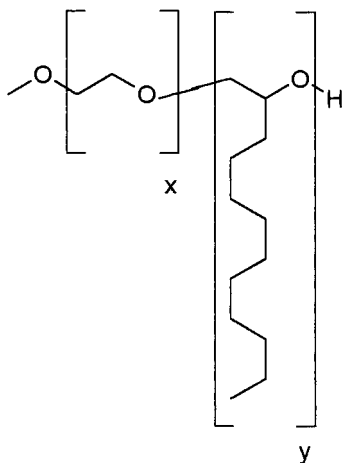


Fig. 1. Chemical formula of methoxy PEG-17/dodecyl glycol copolymer.

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Dermatitis caused by radio-frequency electromagnetic radiation

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Key words: dermatitis; radio waves; electromagnetic radiation. © Munksgaard, 2001.

Case Report

A 40-year-old woman developed skin symptoms a few weeks after the implantation of a neurostimulator. Although, previously, her angina had benefitted from transcutaneous electrical nerve stimulation (TENS) (1), this had eventually led to skin problems. An ESES neurostimulator system (Dual Stim TM) had therefore been implanted, by which a neurostimulatory receiver is activated by radio waves from a transmitter.

After she had used this system satisfactorily for 3 weeks, a red, itchy, sometimes even painful dermatitis appeared on the left side of the abdomen, where the transmitter was placed during activation, corresponding to the location of the implanted neurostimulator. She had these skin symptoms only after starting stimulation, with spontaneous improvement in between times.

Patch tests with the plastic, rubber and glue of the transmitter were negative, as were those with various components of the device from the manufacturer. The neurostimulator was then activated by placing the transmitter on the skin of the left side of the abdomen, the side where the neurostimulator was implanted. This resulted in an eczematous reaction. After repeating the procedure in exactly the same manner on the right side of the abdomen, no such reaction was seen. Placing the transmitter (without activation) on the skin on the back for 1 day resulted in no skin reaction. Nor was there a reaction when the plaster, with which the transmitter was fixed to the skin during activation, was placed on the skin of the back for 2 days. Finally, the dermatitis was again successfully provoked with TENS. Histopathologic examination of eczematous skin provoked by the radio waves showed acute dermatitis with intra-epidermal vesicles and spongiosis.

Comment

The dermatologic hazards of TENS are most commonly irritant, with contact allergy also having been reported to nickel, rubber chemicals and adhesives, as well as to propylene glycol in the conductive gel (2–4). Clearly, our patient reacts instead to electrical current being passed through the skin (5, 6), allergic contact dermatitis having been excluded. Whereas a skin reaction to TENS is fairly common, to our knowledge, no skin reactions to radio waves have been reported.

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Occupational erythema-multiforme-like dermatitis from sensitization to costus resinoid, followed by flare-up and systemic contact dermatitis from β -cyclocostunolide in a chemistry student

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Key words: allergic contact dermatitis; active sensitization; baboon syndrome; beta-cyclocostunolide; chemistry student; costunolide; costus resinoid; erythema-multiforme-like dermatitis; occupational; patch testing; systemic contact dermatitis. © Munksgaard, 2001.

Case Report

A 26-year-old chemistry student, with a past history of atopic dermatitis and asthma, was manipulating costus resinoid when she had accidental exposure to the resinous substance, which rapidly penetrated her over-garment and blouse. She washed her exposed skin, but continued to wear the garment for 6 h. 10 days later, she presented with dermatitis that progressively became a cockade-like, vesicular and, in places, bullous erythema-multiforme-like eruption of the dorsum of her hands, forearms and retro-auricular areas (Fig. 1). Lesions cleared with potent topical corticosteroid. A patch test



Fig. 1. Erythema-multiforme-like dermatitis 11 days after onset.

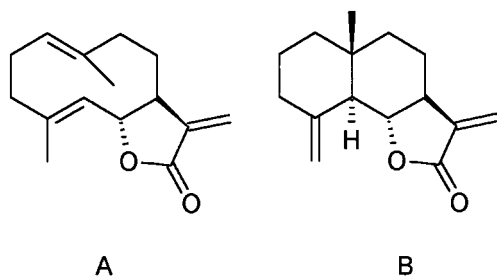


Fig. 2. Chemical structures of costunolide (A) and beta-cyclocostunolide (B).

performed with sesquiterpene lactone mix 0.1% pet. (Trolab[®]) gave a ++ reaction after 24 h, confirming active sensitization to costunolide and/or dehydrocostunolide, each included at 0.033% in the mix.

3 months later, the patient had to perform further analysis on beta-cyclocostunolide, obtained by cyclization of costunolide (Fig. 2). All operations were performed under the laboratory hood with mask, glasses, and latex gloves. The patient, however, had noticed that the atmosphere in the laboratory room smelt of beta-cyclocostunolide. Within 48 h of starting her analysis, she presented as an emergency for relapse of her dermatitis. The previously eczematous areas of her upper limbs had become erythematous and edematous with itching, and she concomitantly developed inflammatory itchy patches in her axillary, antecubital and popliteal areas. Lesions cleared again with topical corticosteroid. A 2nd patch test was performed with beta-cyclocostunolide 0.1% pet., with a +++ reaction at D2/D3. Because of these episodes, the patient decided to leave the laboratory.

Discussion

Costunolide, CAS 553–21–9, is a germacranolide sesquiterpene lactone extracted from costus resinoid, an oil used commercially in perfumery. With alantolactone and dehydrocostunolide, it comprises the sesquiterpene lactone mix, used to screen for Asteraceae (Compositae) sensitivity (1). β -cyclocostunolide, CAS 2221–82–1, is closely related to costunolide. It can be present as such in costus resinoid and/or formed from costunolide in acid medium.

Erythema-multiforme-like allergic contact dermatitis has previously been reported from potent haptens such as in plants (2, 3), topical corticosteroids (4, 5) and non-steroidal anti-inflammatory drugs (6, 7).

Both the flare-up and incomplete baboon syndrome of the 2nd episode are manifestations of systemic contact dermatitis (8, 9), which appears to have occurred by inhalation, as previously reported with mercury (10).

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Occupational contact allergy to methyldibromo glutaronitrile in abrasive cleansers and work creams

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Key words: allergic contact dermatitis; occupational; methyldibromo glutaronitrile; 1,2-dibromo-2,4-dicyanobutane; Euxyl K400; Tektamer 38; barrier cream; abrasive soaps; skin care products; antimicrobials; preservatives; biocides. © Munksgaard, 2001.

Methyldibromo glutaronitrile (MDGN) is an active ingredient in Euxyl K400 (1) and Tektamer 38. It is a preservative in cosmetics and toiletries, and also used in industrial products (2).

Case Reports

Case no. 1

A 34-year-old motor mechanic presented with a 7-month history of a rash on the dorsa of the hands and forearms. He related this to an abrasive soap at work. 2 other colleagues, similarly affected, had not been investigated. He was patch tested to an extended standard series, including Euxyl K400 and materials handled at work, with the following + results: Euxyl K400 0.5% pet., 2-bromo-2-nitropropone-1,3-diol 0.5% pet. and his Deb Protect barrier cream 25% pet. and as is. Both MDGN and 2-bromo-2-nitropropone-1,3-diol were present in his Swarfega Orange general purpose heavy duty cleaner (Deb), which was not patch tested. MDGN was also present in the barrier cream.

Case no. 2

A 62-year-old mechanical engineer had worked at a paper products factory for 21 months. He gave a 4-month history of eczema of the sides of the fingers and periungual areas, with spread to the palms and forearms. Again, he was using the Deb barrier cream and also a Deb Lime general purpose heavy duty hand cleanser at work. He was patch tested to an extended standard series, including Euxyl K400, along with other products, including the Deb

hand cleanser (1% aq.), with the following ++ results: Euxyl K400 0.5% pet. and Deb barrier cream. MDGN was present in both the Deb barrier cream and the Deb hand cleanser, diluting the hand cleanser to 1% aq. having resulted in a false-negative result.

Case no. 3

A 61-year-old engineer, involved in inspecting metalwork, was using Suprega Plus heavy duty hand cleanser at work. He had a 12-month history of eczema on the dorsa of the hands, finger webs and, to a lesser degree, the wrists. His son, working in the same environment, had also experienced similar problems, 12 other colleagues also having a similar rash. He was patch tested to an extended standard series, and an oil and coolant series, which also contains Euxyl K400. He was not patch tested to the hand cleanser but was to his afterwork cream. The following ++ results were seen: Euxyl K400 0.5% pet. and afterwork cream. The hand cleanser was found to contain MDGN. On subsequent enquiry, he had also used Deb Protect as barrier cream. We were unable to identify the afterwork cream, but its positive patch test reaction may indicate the presence of MDGN.

Comment

It may be important to include MDGN when patch testing patients in industry in contact with abrasive soaps and barrier creams. There has been 1 previous report of contact allergy to Tektamer 38 (dibromocyanobutane) in

a 13-year-old girl using a gel as a barrier cream, gel and soap substitute (3). Most other cases described are of facial, periorbital and neck dermatitis from cosmetics, as well as perianal eczema from wipes (4). Occupational hand dermatitis from MDGN has been described in hairdressers (5) and masseurs.

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Mastix is another allergen causing bone-setter's herbs dermatitis

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Key words: mastix; bone-setter's herbs dermatitis; Chinese; Hong Kong; herbal remedies; medicaments; plant extracts; *Pistacia tentiscus*; Anacardiaceae. © Munksgaard, 2001.

Bone-setter's herbs dermatitis is one of the commonest causes of contact dermatitis in Hong Kong (1–3), particularly from myrrh (4).

Case Report

A 45-year-old Chinese housewife had sprained her left ankle 1 week before consultation. She applied bone-setter's herbs, changed 1× daily, for 4 days. Then she noticed acute pruritus, erythema and vesicles. She had had a similar rash after using bone-setter's herbs for 7 days 1 year ago. Examination showed a well-demarcated, bright-red, oedematous plaque, with vesicles, bullae and erosions, around her left ankle where the herbs had been applied. She was diagnosed as having bone-setter's herbs dermatitis and was given oral prednisolone 20 mg o.m. and topical 0.05% betamethasone dipropionate cream. The lesions subsided after 10 days.

We contacted her bone-setter, who agreed to disclose the detailed formula and supplied us with the mixture and individual herbs separately for patch testing. His formula consisted of 12 herbs (乳香 mastix or olibanum、沒藥 myrrha、骨碎補 rhizoma drynariae、無名異 pyrolusitum、密陀僧 lithargyrum、薑黃 rhizoma curcumae lougae、生大黃 radix et rhizoma rhei (大黃)、桃仁 semen persicae、血竭 resina draconis、三棱 rhizoma sparganii、莪朮 rhizoma curcumae、千斤拔 flemingia macrophylla) mixed and warmed with a little water and honey.

1 month later, the patient was patch tested with (a) the bone-setter's herbs, (b) powdered individual ingredients in petrolatum and (c) the honey previously used. Results, read at D2 and D4, were as follows:

Material tested	Results	
	D2	D4
1. bone-setter's herbs	++	++
2. mastix	++	++
3. other ingredients of bone-setters herbs	—	—
4. honey	—	—

Control studies of patch testing with mastix were done on 2 groups of volunteers: (A) 20 patients with bone-setter's herbs dermatitis, who were from various different bone-setters and had been patch tested with their own herbs; (B) 20 patients with dermatitis other than bone-setter's herbs dermatitis. In group A, 7 showed ++ reactions, 12 no reaction and 1 defaulted follow-up. In group B, none were positive.

Comment

The cause of bone-setter's herbs dermatitis in this patient was demonstrated to be mastix, the negative control patients in group B indicating that the reaction was allergic. Mastix is a gum resin from the plant *Pistacia lentiscus* (Anacardiaceae). It is used as a traditional Chinese medicine to relieve pain and swelling (5, 6). The fact that 7 out of 20 patients with bone-setter's herbs dermatitis gave ++ reactions indicates that mastix is a common allergen in such dermatitis from many different bone-setters. It is therefore recommended for screening such patients, and possibly for addition to the standard

series in Hong Kong, as long as no active sensitization is hence detected.

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Patch test results with tixocortol pivalate and budesonide in Germany and Austria

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Key words: allergic contact dermatitis; corticosteroids; tixocortol pivalate; budesonide; patch testing technique; clinical relevance; cross-sensitivity; standard series. © Munksgaard, 2001.

Tixocortol pivalate (class A (1)) and budesonide (class B (1), also detecting, class D (2)) have been proposed as screening agents for contact allergy to corticosteroids (CS) (2), their ideal test concentrations and vehicles remaining a matter of debate (3–5). Selected departments of dermatology of the IVDK (all also members of the DKG) added both agents to the standard series for a limited period, with the results presented and discussed here.

Between November 1996 and March 1997, the 12 centres (above) started to apply tixocortol pivalate 1% pet. (Chemotechnique or Trolab), finishing between July and September 1999. A total of 10,361 consecutive patients were tested, range 281 to 1851 per centre, with the results, based on D3 readings, in Table 1 (discrepancies in nos. tested being due to temporary unavailabilities of allergens).

Agreement between the 2 screening CS was poor (Cohen's simple κ 0.17, 95% CI: 0.09–0.25), with only 14 concordantly positive reactions. Later readings, made in 2980 patients, detected another 8 (weak) positive reactions to budesonide (6 at D4) and 6 to tixocortol pivalate (5 at D4). Clinical relevance, which we defined as

dermatitis caused or worsened by CS, was found in only a minority of cases (Table 1).

608 patients were also tested with a special CS series. Of these, 29 had 41 positive reactions to other CS: amcinonide 0.1% pet. ($n=18$), hydrocortisone-17-butyrate 0.1% pet. ($n=11$), betamethasone-17-valerate 0.12% pet. ($n=4$), triamcinolone acetonide 0.1% pet. and clobetasol-17-propionate 0.25% pet. ($n=3$ each) and hydrocortisone 1% pet. ($n=2$). While budesonide detected 18 of these cases, tixocortol pivalate detected only 7. In 10 cases, neither screening CS was positive at D3; however, in 1 of these, a ++ reaction was seen to tixocortol pivalate at D4, and in 2 others budesonide gave an erythema at D4 and D7, respectively. Conversely, the CS listed were all negative in 30 patients positive to budesonide or tixocortol pivalate.

Comment

In agreement with previous studies (6–8), our data would seem to support the inclusion of both budesonide and tixocortol pivalate as screening substances for CS contact allergy in the standard series. However, the clinical relevance of positive reactions often remained obscure in our patients, prompting the DKG, for the time being, not to include these 2 allergens in the standard series.

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* Centres of the IVDK contributing: Dresden (G. Richter), Duisburg (J. Schaller), Essen (H.-M. Ockenfels, U. Hillen), Göttingen (Th. Fuchs), Graz (W. Aberer, B. Kränke), Hamburg (M. Kiehn, D. Vieluf), Homburg/Saar (P. Koch), Jena (M. Gebhardt, A. Bauer), Lübeck (J. Kreusch, J. Grabbe), München Schwabing (M. Agathos), Osnabrück (W. Uter), Ulm (H. Gall)[†].

Table 1. Patch test results

	No. tested	No. (%) reactions				Clinical relevance ^{a)}	
		?+	+	++/+++	IR	+	++/+++
tixocortol pivalate 1.0% pet.	9284	27 (0.29)	45 (0.48)	28 (0.30)	6 (0.06)	16 of 42	10 of 26
budesonide 0.1% pet.	9909	206 (2.08)	62 (0.63)	37 (0.37)	30 (0.30)	15 of 51	13 of 30

^{a)} Defined as having a documented statement on relevance.

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Cutaneous stings from *Bartholomea annulata*

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Key words: *Bartholomea*; sea anemone; Anthozoa; Cnidaria; sting; marine organisms. © Munksgaard, 2001.

Sea anemones (Cnidaria, Anthozoa) are sessile marine animals with thin wavy tentacles containing nematocysts, releasing on contact a venom capable of penetrating human skin and producing hemolysis and dermonecrosis, or killing small animals (1).

Bartholomea annulata commonly inhabits the Caribbean coast, where it is attached to coral or other firm structures several metres down on the ocean floor. Recently, it has become popular with amateur salt-water aquarists (Fig. 1). In spite of its abundance, no cases of envenomation by *Bartholomea* have been reported.

Case Report

A healthy 28-year-old scuba diver was stung by *Bartholomea annulata* at a depth to 2–3 m on the Caribbean reef near Puerto Morelos, Q. Roo, México, in March 2000. He had been chiseling the coral a few cm from the animal. Threatened by the vibrations, the animal secreted a cloud of filaments containing nematocysts, which flowed over the unprotected diver's skin of the hands, right arm and right chest (Fig. 2), provoking instant pain and burning. These sensations and the concomitant local erythematous, papulovesicular eruption ebbed slightly 90 min later, only to reappear 12 h later still.

Resolution of the lesions, without systemic symptoms but with some desquamation, took 3–4 days. 90 min after being stung, the diver returned to shore, applied vinegar liberally to the wounds, and then stripped the affected skin with cellophane adhesive tape at 20 sites (2). These tape strips were examined microscopically for nematocysts, and tripelenamine cream was applied. Fir-



Fig. 1. Lavender adult *Bartholomea annulata*.



Fig. 2. Papulovesicular lesions on the volar right upper arm.

ed amastigophores, typical of anemones, were identified on only 1 of the tapes (Fig. 3).

Discussion

Sea anemones, members of the Cnidaria phylum, contain venomous nematocysts. This case report illustrates 3 points: *Bartholomea* can induce a toxic cutaneous sting; the victim does not have to touch the tentacles to be stung, mere contact with extruded nematocysts being sufficient; the fact that only 1 of 20 tape specimens was positive demonstrated the lack of persistent active nematocysts adhering to the skin. Indeed, since only fired nematocysts were detected, the advantage of topical vinegar in arresting nematocyst discharge, to prevent additional damage to this patient, could only have been marginal at best.

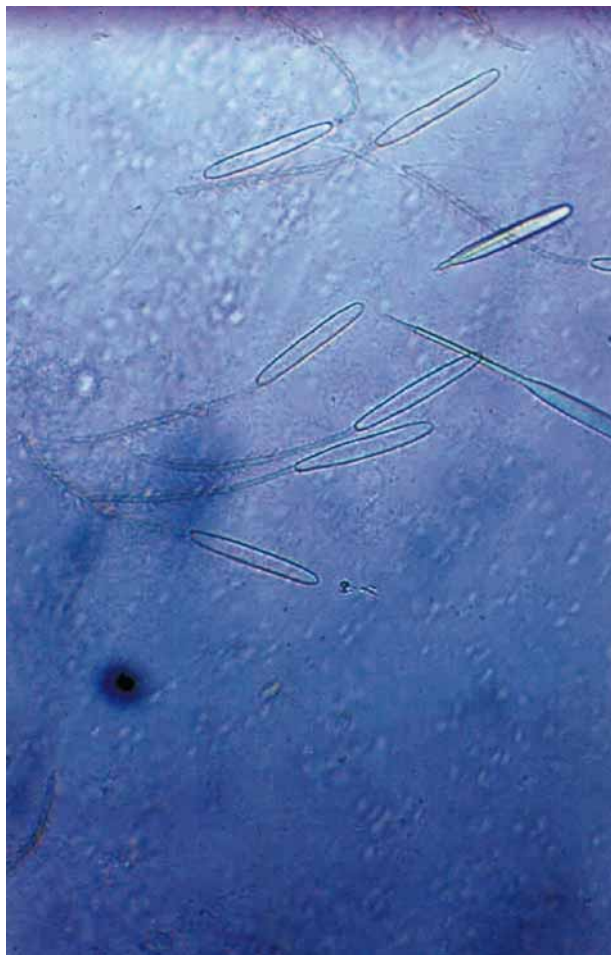


Fig. 3. Fired amastigophores observed microscopically on tape strip.

Acknowledgements

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Do polyethylene glycol gels have a protective effect on the skin?

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Key words: polyethylene glycol gels; transepidermal water loss; stratum corneum barrier; irritant hyperemia; skin protection; skin-care products; prevention; occupational. © Munksgaard, 2001.

Hygroscopic urea and glycerol hydrate protect the skin, protection deriving from stratum corneum regeneration (1–6). Polyethylene glycols (PEGs) are also hygroscopic (7). The PEG ointment *Polyethylenglykosalbe DAB* has been shown to hydrate (8). Does it also have a regenerative protective effect?

Materials and Methods

12 female and 6 male volunteers with healthy skin and mean age 27.4 years (18–39), gave informed consent. No skin cleansing or skin care/cosmetic products were applied for 3 days before or during the study. *Polyethyleng-*

lykosalbe DAB, a 50:50 mixture of PEG 300 and PEG 1500, is hydrophilic, hygroscopic, and readily washed off.

Standardized skin irritation was produced by applying a filter paper soaked with 2% aqueous sodium lauryl sulfate (SLS) solution (Siegfried Chemie Zopfingen, Germany; 97.4% pure) in a 12-mm Finn Chamber for 30 min 1× daily for 2 weeks. After Finn Chamber removal, the skin was dried with a paper towel, and the ointment under study was applied at 2 mg/cm². The test sites were circular 2.26 cm² areas on both volar forearms, their centers located 12–15 cm from the elbow, depending on arm length. Following irritation, 1/2 of

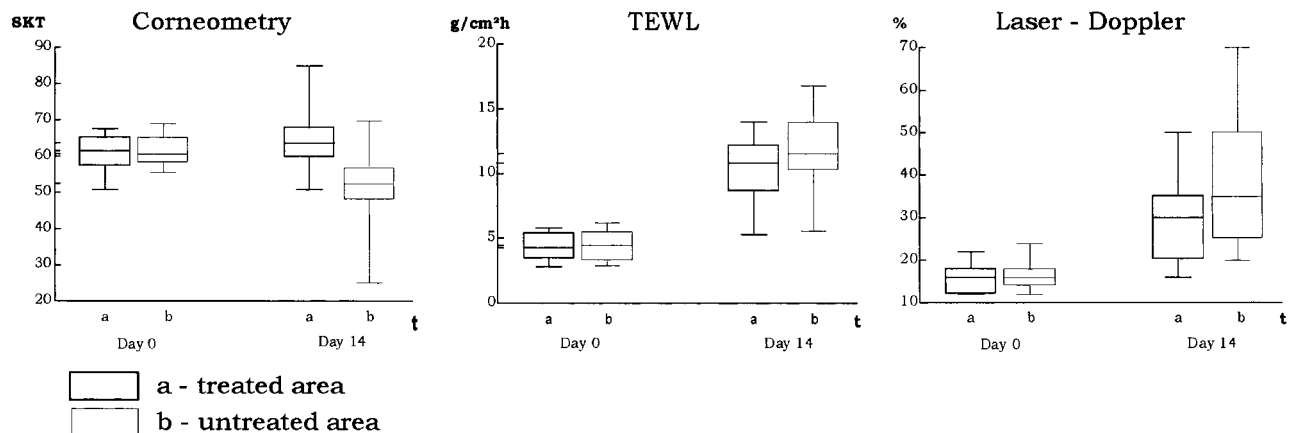


Fig. 1. Changes in corneometry, TEWL and laser Doppler readings from baseline to D14. Depicted are the medians, the 25% and the 75% percentiles, and the minima and maxima.

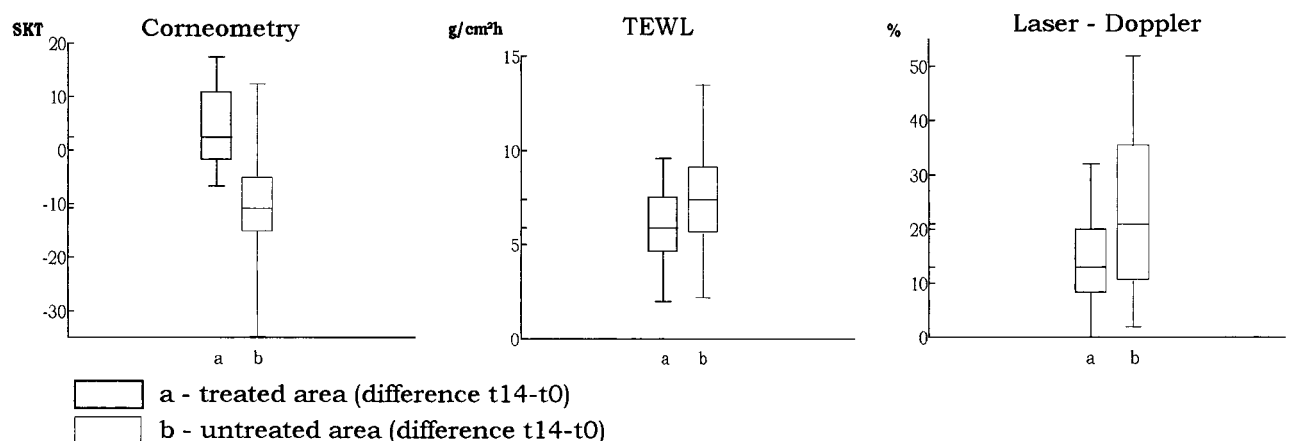


Fig. 2. Measurement differences for corneometry, TEWL and laser Doppler between D14 and baseline readings for both the ointment and the control. Depicted are the medians, the 25% and the 75% percentiles, and the minima and maxima.

the subjects applied the ointment to their right forearm, 1/2 to their left forearm, the other forearm (control) being left untreated.

Stratum corneum water content (Corneometer CM 820), transepidermal water loss (TEWL) (Tewameter TM 210), and cutaneous blood flow (Laser Doppler Flowmeter PF2) were determined, in accordance with guidelines (9–11), at the start and after 14 days' treatment, measurements always being made at the same time and after adaptation of at least 1 h. Between last irritant use and measurement, 12 h elapsed on day (D) 14. Differences between D14 and baseline readings were calculated in absolute terms, untreated arms being compared statistically with treated arms by the Wilcoxon matched pairs signed rank test.

Results

Skin irritation with SLS produced reduction of capacitance as evidence of loss of stratum corneum water content, increase in TEWL as evidence of reduced barrier function of the stratum corneum, and higher laser Doppler readings as evidence of irritant hyperemia (Fig. 1). All 3 effects were significantly reduced by treatment with PEG ointment (corneometry $p < 0.001$, TEWL $p < 0.01$, laser Doppler $p < 0.001$) (Fig. 2).

Comment

The present study has confirmed that *Polyethylenglykol-salbe DAB* hydrates the skin (8), as well as demonstrating that, like glycerol and urea (1–7), it improves stratum corneum barrier function. The present study cannot resolve the controversial issue of the relationship between TEWL and barrier regeneration (1, 3). However, if TEWL does control barrier regeneration, the barrier-improving properties of urea, glycerol, and PEG gels would readily be explained.

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Occupational post-traumatic psoriasis

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Key words: occupational; trauma; mechanical; psoriasis; accident; pain; sensory nerves; latent; hyperkeratosis; dermatitis; pustular. © Munksgaard, 2001.

Trauma, pressure, and friction from occupational procedures may aggravate psoriasis of the hands and fingers, though such cases have only occasionally been reported (1–7).

Case Report

A 46-year-old non-atopic, healthy mechanic lost his grip on a rail truck made of impregnated rough wood and several wooden splinters entered the proximal area of

both palms. His occupational physician prescribed topical corticosteroids and emollients. He did not revisit his doctor until 6 months later, when infected eczematous lesions were observed on both palms. He was prescribed several courses of oral antibiotics. Purulent splinters were discharged from the skin for a whole year following the trauma.

The patient had not had any previous skin problems, but eventually the lesions became hyperkeratotic and sharply delineated, involving the proximal halves of both

palms. Thickening also developed on 5 fingertips, whereas 5 other fingertips remained symptomless. This was accompanied by intermittent pustulation of the lesional skin, which the patient described as severely painful, simulating the intensity of toothache. He also developed a hyperkeratotic lesion under one toe, but no other signs of psoriasis of the nails, scalp, knees or elbows. Cultures from the palmar skin lesions confirmed the lack of fungal infection.

The patient was first patch tested elsewhere and then by us according to the recommendations of ICDRG: a modified European standard series, antimicrobials, plastics and glues, oils and cutting fluids, phenol-formaldehyde resins, epoxy resins, (meth)acrylates and many products used at work; all were negative. Prick tests to common environmental allergens were negative. The patient was treated with very potent topical corticosteroids, emollients, and for 2 months by oral cyclosporin, but therapy had only a moderate effect and relapses were frequent. 2 months of sick leave during therapy had only a minor additional effect. Clinically, the patient's hand lesions were indistinguishable from hyperkeratotic dermatitis of the palms (8, 9), but as they were accompanied by pustular lesions, as in local psoriatic pustulosis, a diagnosis of palmar psoriasis was made.

Currently, nearly 2 years after the accidental trauma, the patient suffers from recalcitrant psoriasis of the palms. Plans are underway to find a satisfactory treatment protocol and an occupation in which mechanical irritation of the hands is minimized.

As the patient had had no skin symptoms before the accident, it was concluded that his palmar skin eruption developed as a sequel to the occupational trauma. Analogous to post-traumatic eczema (7, 10), our patient's skin disease was termed post-traumatic psoriasis. The patient had no known family history of psoriasis.

Discussion

The classification of psoriasiform lesions on the hands is complicated (11). Our patient's clinical symptoms could have been classified as hyperkeratotic dermatitis of the palms (8, 9), but as this was accompanied by lesions on the fingers and on one toe, and showed intermittent pustulosis, we considered it palmar psoriasis. Chronic hyperkeratotic dermatitis of the hands may be a late manifestation of psoriasis (12), though some consider it to be a separate entity.

Occupational trauma may köbnerize psoriasis of the hands and fingers, as in a pharmacist from the pressure of opening and closing containers with child-resistant caps, a foundry shop worker handling a ram to fill moulds with sand, a bus driver from the pressure of the steering wheel, an office worker from pounding a stapler, and a bartender, an electrician, a seamstress, an optician, a paperhanger, a pushcart peddler, a cellist, a surgeon and a dentist from the pressure of various instruments (1–7), as well as in a dental nurse due to al-

lergic contact dermatitis from thiuram in rubber gloves (13).

Trauma may incite new lesions of psoriasis, including psoriatic arthritis (14). In our case, it seems feasible to assume that trauma activated latent psoriasis. According to Finnish legislation, notable worsening of disease or injury other than occupational can be compensated as occupational during the period of this deterioration (15). We thus considered the patient's palmar psoriasis as occupational. Workers themselves may dismiss such trauma as unimportant and unworthy of attention, though complications may arise later. Accordingly, it is important to treat all skin traumas rapidly and effectively. An abnormal feature was the severe pain associated with the pustulation. This may be related to the epidermis and dermis of psoriatic skin being more densely innervated than control skin (16).

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Contact allergy to trometamol

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Key words: allergic contact dermatitis; trometamol; tromethamine; tris-hydroxymethyl-aminomethane (THAM); tris-buffer; pH adjuster; ophthalmic drugs; medicaments. © Munksgaard, 2001.

Case Report

A 71-year-old woman developed an itchy oedematous eczema of the periorbital region and cheeks 1 week after moving into a newly painted apartment. She also had ocular itching, tearing and conjunctival injection. The oculist consulted prescribed prednisolone ophthalmologic ointment (Ultracortenol®) and advised her to continue with her previous therapy consisting of retinol ophthalmologic gel (Oculotect®) and polyvidone K25 eye-drops (Oculac®). Her symptoms persisted, but during a holiday, when she left home for several weeks, her skin lesions subsided. 3 days after returning home, her symptoms recurred.

Suspecting an airborne contact allergy to her recently painted apartment, patch tests were performed (1). An extended European standard series was positive at day (D)2 and D3 for neomycin sulfate (++/+++), turpentine (++/+++), and cetearyl alcohol (+++), but negative to methyl(chloro)isothiazolinones. Series of disinfectants and preservatives and patch tests with undiluted wallpaints were also negative. Further patch tests with cosmetics and ophthalmics used by the patient yielded a +++ reaction to the retinol ophthalmologic gel (Oculotect®) only. Patch tests with the ingredients of this gel

(Table 1) gave ++ reactions to trometamol only (Table 2). Review of her history revealed that she had not applied the ophthalmic gel while on holiday, but that she had used it again on her return home.

Discussion

Trometamol, 2-amino-2-(hydroxymethyl)1,3-propanediol ($C_4H_{11}NO_3$), tris-buffer or THAM, is a biologically inert amino alcohol of low toxicity, which buffers carbon dioxide and acids in vitro and in vivo (2). It is used in cosmetics, as a buffer solution industrially (3, 4), and in medicine as an intracellular as well as extracellular alkalizing agent (5). Trometamol is used in cardioplegic solutions, liver transplantation and chemolysis of renal calculi (2), and also used to increase the water solubility of various substances. Side-effects of the THAM base include tissue irritation and phlebitis at the injection site. After accidental intra-arterial injection, hemorrhagic organ necrosis occurred.

Our patient developed a Type IV hypersensitivity reaction to trometamol, having used the ophthalmologic gel for several months. Withdrawal and re-exposure resulted in clearing and rapid relapse of contact dermatitis. Patch tests showed a concentration-dependent positive reaction to trometamol only. Although trometamol is widely used, to our knowledge allergic reactions have not so far been documented.

Table 1. Patch test results to individual ingredients of Oculotect®

Substance	Concentration	D2	D3
vitamin A	0.10% aq.	—	—
vitamin E acetate	0.10% aq.	—	—
Complexon III	1.00% aq.	—	—
trometamol	0.50% aq.	++	++
Carbopol 980 NF	10.0% aq.	—	—
cetrimide	0.05% aq.	—	—

Table 2. Patch test results to trometamol dilution series

Substance	Concentration	D2	D3
trometamol	1.00% aq.	+	++
trometamol	0.50% aq.	+	+
trometamol	0.10% aq.	—	+
trometamol	0.05% aq.	—	(+)

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