

CONTACT POINTS

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Nummular allergic contact dermatitis after scabies treatment

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Key words: allergic contact dermatitis; corticosteroid; formaldehyde; scabies.

Case Report

A non-atopic 49-year-old man was prescribed Nix[®] (Pfizer, NY, USA) for scabies. The patient applied Nix[®], as recommended by the manufacturer, on 2 occasions 1 week apart for 12 h. After treatment, itching worsened, and within 4 weeks, the patient developed more widespread nummular erythematovesicular dermatitis on the limbs and trunk. He showed partial improvement with the topical corticosteroids Sibicort[®] (hydrocortisone) cream (Orion Corporation, Espoo, Finland), Locoid[®] (hydrocortisone-17-butyrate) (Yamanuchi Europe, Meppel, Holland) and UV therapy, but dermatitis reappeared after stopping such treatment.

Patch testing, using Finn Chambers[®] (Epitest, Tuusula, Finland), was performed with the European standard series and corticosteroids. Positive reactions were seen at D2 and D4 to formaldehyde 1% aq. (++) and at D2, D4 and D7 to tixocortol pivalate 1% pet. (++) and hydrocortisone-17-butyrate 1% alcohol (++)). Therefore, the patient was recommended the use of formaldehyde- and formaldehyde releaser-free skin care products and cosmetics and not to use hydrocortisone or hydrocortisone-17-butyrate creams. After this, he had no further skin symptoms.

Comment

Our patient was allergic to formaldehyde as the preservative in Nix[®] cream, which also contains permethrin 50 mg/g. Allergic contact dermatitis from formaldehyde can be elicited by exposure to formaldehyde either by itself or derived from its releasers (1, 2). This patient was also allergic to hydrocortisone-17-butyrate and tixocortol pivalate. He had never used topical corticosteroids before. Contact allergy to topical corticosteroids is increased in long-term dermatoses (3). However, our patient's patch test results show that corticosteroids may also sensitize after only short periods of topical treatment.

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Occupational allergic contact dermatitis due to thimerosal

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Key words: allergic contact dermatitis; health care workers; medicaments; nurse; occupational; thimerosal; vaccines.

The frequency of positive patch test reactions to thimerosal varies between studies (1, 2). High frequency is primarily due to the widespread use of vaccines containing thimerosal as a preservative. However, in most cases, sensitized patients neither show nor report symptoms attributable to thimerosal allergy.

Case Report

A 32-year-old nurse, with no personal history of atopy, was employed during 1993-98 as a school hygienist. During that period she was involved in educational activities only and did not perform any medical procedures. In 1992, she was thrice vaccinated against viral hepatitis (Enerxig B, SmithKline Beecham Pharmaceuticals, Rixensart, Belgium). On 19 January 1998, she received a 4th dose of the vaccine and did not note any postvaccinal reaction.

Since December 1998 she had been employed at a rural health service centre, performing nursing duties requested by the physicians, such as dressings, injections and, in particular, vaccinations in children. She used latex gloves only during some of these procedures. In December 1999, she was treated for conjunctivitis, but she was not able to recall the names of the eyedrops prescribed. In April 2000, she developed hand eczema and she noted that symptoms were more severe during vaccinations. She was treated with Elocorm[®] and Diprogenta[®] (Schering-Plough Labo N.V., Heist-op-den-Berg, Belgium) topically.

At our Institute, she was patch tested with the European standard series supplemented by thimerosal 0.1% pet., sesquiterpene lactone mix 0.1% pet., palladium 2% pet., benzalkonium 0.1% aq., chlorhexidine 0.5% aq., glutaraldehyde 0.2% pet.

(Chemotechnique Diagnostics, Malmö, Sweden) and an allergen series prepared at our Institute, including lysol 1% aq., chloramine 0.5% ag., glyoxal 1% aq., cefalexin 1% pet., cefradine 1% pet., cefaclor 1% pet., ceftriaxone 1% pet., penicillin 10 000 IU/g pet., ampicillin 0.5% pet., cloxacillin 0.5% pet., amoxicillin 0.5% pet., tetracycline 1% pet., doxycycline 1% pet., oxytetracycline 1% pet., streptomycin 1% pet., kanamycin 10% pet., gentamycin 20% pet., netilmicin 20% pet. and bacitracin 5% pet.

Then, after 1 month, she was patch tested with vaccines against: tetanus; tetanus and diphtheria; tetanus, diphtheria and pertussis (Biomed, Kraków, Poland); rubella (Rudivax, Pasteur Mérieux SV, France); tuberculosis (BCG 10, Biomed Lublin, Poland); measles (Rimevax, SB Biologicals, Rixensart, Belgium); and poliomyelitis (Polio Sabin, SB Biologicals). Application time was 2D, and reactions were read at D2, D4 and D7.

Positive reactions were found to thimerosal and neomycin at D2 (++), D4 (+++) and D7 (+++); kanamycin at D2 (++), D4 (++) and D7 (+); and vaccines against: tetanus; tetanus and diphtheria; and tetanus, diphtheria and pertussis at D2 (++), D4 (+++) and D7 (+++). Patch tests with all remaining allergens were negative. After vaccine patch testing, fresh papules and vesicles appeared on the patient's hands.

Total immunoglobulin E was 11.7 kµl, and RAST (Allergopharma, Joachim Ganzer KG, Reinbek, Germany) with latex (k82), house dust mites (hx2), ethyl oxide, phthalic anhydride, chloramine, formaldehyde (pax6) and penicillin were negative. The patient also had negative prick tests (Allergopharma; Stallergenes, Antony Cedex, France) to a series of allergens (latex, house dust mites, pollens, moulds and animal danders).

Discussion

Thimerosal is commonly positive on patch testing in many countries (3, 4). Significant increases in thimerosal allergy have been found amongst women, health care workers, secretaries and cooks. Thimerosal-allergic persons were more likely, in one study, to be allergic to neomycin, bacitracin and tixocortol pivalate (5).

Occupational allergy to thimerosal is rare. Contact dermatitis of the eyelids from thimerosal in contact lens

fluid in an ophthalmological assistant has been reported (6).

It is quite likely that our patient originally developed allergy to thimerosal when vaccinated against viral hepatitis, and as a result of further contact with this preservative during the vaccination of schoolchildren, she developed allergic contact dermatitis on the hands. The vaccines from Biomed, that she had been exposed to, contained 0.01% thimerosal.

Neomycin is widely used as a topical antibiotic (7). From amongst 4 aminoglycoside antibiotics, our patient reacted to 2, neomycin and kanamycin. Gentamicin, paromomycin, spectinomycin and tobramycin are other known neomycin cross-reactors (7, 8).

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Delayed sensitivity to Prolene®

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Key words: delayed sensitivity; ophthalmology; postoperative complications; Prolene® allergy; suture allergy.

Prolene® suture is a monofilament, synthetic, non-absorbable, sterile surgical suture composed of an isotactic crystalline stereoisomer of polypropylene, a synthetic linear polyolefin. Prolene® sutures are for use in general soft tissue approximation or ligation, including use in cardiovascular, ophthalmic and neurosurgical procedures. Allergic reactions to this material are rare (1).

Case Report

A 68-year-old woman, with no history of atopy or allergy, first presented 20 years ago, 7 days after abdominal surgery, with pain in the suture area and spontaneous rupture of the scar. We have no further details of this episode.

The patient now needed a corneal transplant. For such surgery, ophthalmologists use various types of sutures, which patients retain for 7–12 months. She was referred to our outpatient clinic to investigate the possibility of an allergic reaction to sutures.

The sutures used in our hospital for corneal transplantation are Ethilon® (polyamide 6 monofilament) (Johnson

& Johnson Intl., Brussels, Belgium) or Prolene[®] (polypropylene monofilament) (Johnson & Johnson Intl.). The patient was patch tested with Ethilon[®] as is and colourless Prolene[®] as is, with readings taken at 2 and 4 days. The patch test with Prolene[®] was positive (++), while that with Ethilon[®] was negative. Patch tests with Prolene[®] in 5 healthy controls were all negative. A skin biopsy from the positive patch test to Prolene[®] showed perivascular inflammation, with abundant lymphocytes.

As allergic reactions to this type of suture are not frequent and the patient had to retain such material for many months, we decided to confirm her tolerance to Ethilon[®], in spite of having a negative patch test. Thus, we inserted an Ethilon[®] stitch through the skin of the patient's forearm, for 1 week, with a negative result. We therefore recommended not using polypropylene for future operations.

Discussion

The introduction of fine-gauge, non-absorbable synthetic suture material has permitted the development of improved techniques for closing ocular incisions (1). Colourless polypropylene, to our knowledge, is a pure plastic material with no additives (2). Allergic reactions to various sutures such as nylon (3–6), silk (7–9) and catgut (10) have been described. Allergic reactions to Prolene[®] sutures must be rare.

Skrypuch and Willis (1) reported the case of a 60-year-old woman with unilateral giant papillary conjunctivitis following division of a fine-gauge Prolene[®] suture employed several months earlier to close a cataract incision. No patch tests were performed.

There are several reported cases of occupational asthma in relation to polypropylene exposure (11, 12). Stevens (11) described the case of a patient with asthma due to inhalation of fumes of a soldering flux composed of alkyl aryl polyether alcohol and polypropylene glycol. Malo et al. (12) reported on a 35-year-old woman with occupational asthma, who worked in a plant producing polypropylene bags. They concluded that one of the degradation products of heated polypropylene was the cause.

We report an allergic reaction to Prolene[®] sutures that has been confirmed by a positive patch test. To

our knowledge, this is the first such case published that includes patch testing.

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Allergic contact dermatitis from dodecyl diaminoethylglycine and isopropyl alcohol in a commercial disinfectant swab

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Key words: antibacterials; antiseptics; biocides; dodecyl diaminoethylglycine; isopropyl alcohol; medicaments.

Case Report

A 36-year-old woman presented with pruritic erythematous papules and vesicles affecting her right forearm. These skin lesions occurred 1 day (D) after disinfection with a Pigosept[®] swab (Dongindang Pharmaceutical, Siheung City, Korea) for blood taking. She had a previous history of childhood asthma and atopic dermatitis. A provocation test with a Pigosept[®] swab on the normal skin of the opposite antecubital fossa resulted in the same eczematous lesions D1 after application. The swab contained 0.1% dodecyl diaminoethylglycine and 67% isopropyl alcohol. After 1 month, she was patch tested with serial dilutions (1%, 0.1%, 0.01% and 0.001% aq.) of each of the constituents. All concentrations of both ingredients elicited +++ reactions at D2.

Discussion

Pigosept[®] is widely used in Korea as an antiseptic swab for disinfection before blood taking and intravenous injection. Dodecyl diaminoethylglycine is the main component of Tego[®], an antiseptic detergent used widely in hospitals, the food industry, public baths and for cleaning machinery. Allergic contact dermatitis due to dodecyl diaminoethylglycine has previously been reported, including occupational cases (1–3).

Alcohol, when used as a disinfectant, can dehydrate and irritate the skin, making it possible to overlook contact sensitization. Allergic reactions

to primary alcohols, such as ethanol and methanol, may not be so rare and occur as a result of occupational exposure. Allergic contact dermatitis from isopropyl alcohol, a secondary alcohol, however, is rare, and it is uncommon for primary alcohols to cross-react with secondary alcohols (4). There are several reports of allergic contact dermatitis from isopropyl alcohol (5–9).

This case meaningfully highlights both dodecylaminoethylglycine and isopropyl alcohol as rare, but potentially important, causes of allergic contact dermatitis in some commercially available prepackaged disinfectants.

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Contact allergy to cystamine bis-lactamide

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Key words: contact allergy; cosmetics; cystamine bis-lactamide; lactic acid.

Case Report

A 37-year-old woman presented in June 2002 having developed facial eczema 4 days after applying 5 new face cosmetics (a facial wash, 3 creams and an eye gel). She had 3 repeated episodes within 12 h of reapplying the products. She was patch tested to an extended European standard and a facial and cosmetic series, which were negative. A repeated open application test to the 5 products showed a strong reaction to one of the creams, a moisturizer that she had bought in 2001 in the USA, although it was from a batch made in 1996. She was patch tested to the 27 components provided by the moisturizer manufacture and showed a positive reaction (++) on day 3 and 5 to cystamine bis-lactamide 0.2% aq. She had no further skin problems since avoiding this product.

Comment

Cystamine bis-lactamide is a chemical designed to retain lactic acid within the stratum corneum. Extensive testing on humans had failed to reveal its allergenic potential. Contact allergy to it was reported in 1997 (1), and once identified as an allergen, it was withdrawn the same year. This case is unusual in that the patient presented 5 years after cystamine bis-lactamide was withdrawn. It illustrates the importance of considering such allergens in patients with contact dermatitis whose patch testing to current allergens is negative.

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Taxi driver's occupational allergic contact dermatitis from nickel in euro coins

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Key words: euro coins; hand eczema; nickel allergy; occupational.

The present 1- and 2-euro coins release 240–320 times more nickel than the amount allowed by the EU Nickel Directive (1). The corrosion due to the bimetallic structure of these coins, which generates a galvanic potential of 30–40 mV in human sweat is a factor contributing to such release of nickel (2). Objects in temporary contact with the skin, such as coins, are not covered by the Nickel Directive, although some nickel-sensitive patients with occupational exposure to coins developed hand dermatitis (3). Nickel is undoubtedly of some relevance in a number of occupations (4, 5).

Case Report

We report a 58-year-old non-atopic man who had been a taxi driver for the last 2 years (2001–03), with a past

history of intolerance to jewellery neck-chains. In his job, he pulled the rim of 1- and 2- euro coins from a dispenser with the right thumb tip and grasped the coins with the palmar aspect of the fingers and the proximal area of the right palm.

The patient was referred with itchy, erythematous, scaly plaques located on the right thumb tip and distal onycholysis for the last 2 months. The lesions had not subsided with emollients and topical corticosteroids, but they cleared, if the patient protected the thumb with a cotton thimble.

Patch tests were performed with the Spanish standard series, 2% copper sulfate in pet., 2% zinc chloride in pet. and 1- and 2- euro coins. The patient showed a positive reaction to 5% nickel sulfate in pet. (++) and both coins (++) at D2 and D4.

Discussion

Most of cases of nickel allergy are now thought to be caused by ear piercing and the wearing of nickel-plated jewellery. Patients who have been sensitized to nickel by non-occupational means can be exposed to nickel in the course of their work, and some go on to develop an allergic contact dermatitis. It is not known why all nickel-allergic patients exposed to nickel-releasing coins do not develop hand dermatitis (6). There are reports on occupational nickel dermatitis amongst workers in various occupations (4, 5). However, the job of taxi driver has not previously been considered as an at-risk occupation for allergic contact dermatitis from nickel.

Although the relationship between nickel and hand eczema is controversial (4, 5, 7), in this case, it is clear that nickel in coins elicited the right thumb tip dermatitis in a patient who had previously shown dermatitis from contact with neck chains. Pressure and friction on the thumb tip may have impaired the skin barrier function and facilitated the development of dermatitis in our patient. The exposure of the unprotected skin to nickel at work, the positive patch test to nickel and the clearing of the lesions after avoiding direct contact with the coins, all support the causative role of nickel in our patient.

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Allergic contact dermatitis due to 1,3-dichloropropene soil fumigant

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Key words: 1, 3-dichloropropene; agriculture; airborne allergic contact dermatitis; farmers; nematocides; pesticides; soil fumigants.

Case Report

A 28-year-old farmer was accidentally exposed to the nematocide 1,3-dichloropropene, not having noticed

a broken pipe he was pouring the pesticide into a fumigating machine. He immediately developed dermatitis in all the body areas which had come into direct contact with the nematocide (hands, abdomen and flanks). The dermatitis subsided in few days with over-the-counter topical medications, which left persistent pigmented macular lesions.

3 weeks later, the farmer again prepared the machine. Although he used all the necessary precautions and did not come into direct contact with the substance, he complained of erythema, vesicles and itching on the areas of the previous dermatitis. An acute allergic contact dermatitis was suspected and successfully treated with oral antihistamines and topical and systemic corticosteroids.

Patch tests with the Italian standard series and with a pesticides series (F.I.R.M.A. S.p.A., Firenze, Italy) were all negative. An open test with 1,3-dichloropropene 1% pet. was negative. A closed patch test with 1% pet. was positive (++) at day 2 and 3. Patch tests performed with 1,3-dichloropropene 1% pet. in 5 healthy volunteers were negative.

Discussion

In a study performed in California in 1994, nearly half of pesticide poisonings were reported to cause exclusively skin, eye or respiratory effects without systemic symptoms (1). Fumigants are pesticides with high vapour pressures, which allows them to penetrate the soil and kill nematodes and other root-damaging organisms. A 5-year investigation conducted in Washington State, USA, showed that 3.3% of all suspected or confirmed pesticide poisonings were caused by fumigants (2). Of these, the most common were aluminium phosphide, methyl bromide, metam-sodium and zinc phosphide; no cases of toxicity were associated with the use of 1,3-dichloropropene.

The pesticide 1,3-dichloropropene is a liquid fumigant nematocide used for sterilization of the soil before planting carrots and other vegetables. It may be marketed as a single component soil fumigant or it may be a constituent of a mixture of halogenated propyl derivatives used for the same practical applications.

Irritant cutaneous effects due to contact with 1,3-dichloropropene are

well known and reported in its technical data sheet. In a review, Verplanke et al. (3) showed that occupational exposure to 1,3-dichloropropene was not associated with adverse effects on the kidney or liver. To our knowledge, no previous cases of sensitization to this nematocide have been reported. However, cases of sensitization to DD soil fumigant (a mixture of chlorinated hydrocarbons containing varying amounts of 1,3-dichloropropene) have been observed (4, 5). In 1 case, sensitization to DD mixture occurred in a male process operator in a chemical plant during DD manufacture (5). The sensitizing component of the mixture was thought to be 1,3-dichloropropene, but patch tests with this constituent were not carried out.

Our case provides evidence of the sensitizing potential of 1,3-dichloropropene and shows the possible airborne nature of the contact dermatitis. Furthermore, it underlines that adequate training in the proper techniques is to be used when applying fumigants, and the correct protective equipment is most important for the safety of users.

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Oral lichenoid reaction due to chromate/cobalt in dental prosthesis

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Key words: chromate; cobalt; contact
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oral lichen planus.

Case Report

A 52-year-old man presented with a 3-month history of soreness and itching of the tongue. This had started 1 month after the fitting of a lower partial chrome/cobalt oral prosthesis. On examination, he had symmetrical lichenoid changes on the buccal mucosa and ventral aspect of his tongue. These changes were present only in areas of contact with the fixation clasps and lingual bar of the denture. The patient had noted symptomatic improvement when he temporarily stopped wearing the prosthesis.

He was patch tested to an extended British standard series of allergens and a dental series, which included 9 metal allergens, using Finn Chambers[®] on Scanpor[®] tape (Epitest, Tuusula, Finland). The results are summarized in Table 1. A positive (+) reaction to potassium dichromate was observed on days 3 and 4, and a positive (+) reaction was observed with cobalt chloride and nickel sulfate on day 4.

He was treated with topical triamcinolone in Orabase[®] (Conva Tec

Ltd, Middlesex, UK) with withdrawal of the dental prosthesis, which resulted in rapid and complete resolution of the lichenoid changes within a month. He is now attempting to obtain prosthesis free from chromate/cobalt constituents.

Comment

The association between oral lichenoid reactions and the use of mercury and gold in dental amalgams is well established (1). Contact stomatitis from nickel in dental prostheses has also been reported, and there have been isolated reports of oral lichenoid reactions to other metals such as zinc (2). However, chromate has not been widely recognized as a cause of oral lichenoid reactions. Some difficulty in interpreting the literature arises due to variation in the classification of oral reactions; namely, whether described as stomatitis, lichenoid reactions or lichen planus. Systemic contact dermatitis from chromate in oral appliances has been reported in the absence of clinical stomatitis (3). However, we are unaware of any report of localized lichenoid reactions to chromate/cobalt confirmed by patch testing. A recent review of patch test results in patients with lichen planus and lichenoid reactions highlighted an increased rate of sensitization to dental metals compared with patients undergoing routine patch tests (1). Significant increases in the rate of allergy to gold and chromates were also identified.

The distribution and rapid resolution of oral changes observed in our patient is in keeping with a lichenoid reaction to his dental prosthesis rather than idiopathic lichen planus, which typically runs a chronic course. This case highlights the importance of patch testing with a range of metals in

Table 1. Patch test results

Allergen	% pet.	D3	D4
Potassium dichromate	0.5	?+	+
Cobalt chloride	1.0	–	+
Nickel sulfate	5.0	–	+
Copper sulfate	2.0	–	–
Palladium chloride	2.0	–	–
Aluminium chloride hexahydrate	2.0	–	–
Tin	50	–	–
Gold sodium thiosulfate	2.0	–	–
Mercury	0.5	–	–

patients with localized reactions to dental prostheses.

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Allergic contact dermatitis from cetearyl isononanoate

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Key words: CAS no. 84878-33-1; contact allergy; emollients; hexadecyl isononanoate; patch testing; ROAT.

Case Report

A 23-year-old woman reported a past history of allergic contact dermatitis from medical adhesive tapes, toilet waters and fantasy jewellery. She had recently developed acute dermatitis on her lower limbs within 2 days of application of a urea-based moisturizing cream. Patch testing was performed with the revised international series (1), additional allergens and the patient's own emollient (Kératosane[®] 15, Laboratoires dermatologi-

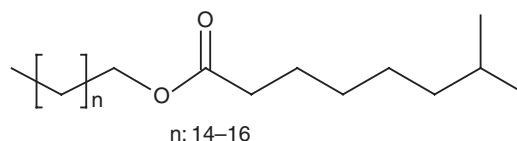


Fig. 1. Molecular structure of cetearyl isononanoate. It is used as a hair-conditioning agent, a skin-conditioning agent and as an emollient (2, 3) and is found in several moisturizing creams. It is not clear whether sensitivity to cetearyl isononanoate is due to the final product itself, to its cetearyl moiety, to its isononanoic moiety or to impurities as observed with cetyl and/or stearyl alcohols (4). In our patient, the lack of reactivity to cetyl alcohol (generally consisting of a blend of cetyl, stearyl and certain other fatty alcohols) argues against responsibility of the cetearyl moiety or of impurities contained in cetearyl alcohol.

ques d'Uriage, Courbevoie, France). Readings at D2/D4 showed positive reactions to colophonium (-/+), fragrance mix (-/++) and nickel sulfate (-/+) of past relevance and urea cream (+++++) of current relevance. A repeated open application test (ROAT) performed with the cream-elicited follicular itching dermatitis within 2 days.

Breakdown of the cream was then performed into 24 ingredients kindly provided by the firm and diluted at concentrations identical to that in the product. Readings at D2/D4 confirmed allergic reaction to the cream +++/+++ and to cetearyl isononanoate diluted at 4% in liquid mineral oil -/++. Other ingredients were negative and, in particular, cetyl alcohol at 2% in liquid mineral oil. A ROAT performed with the cetearyl isononanoate preparation, applied $\times 2$ a day on the forearm, gave a ++ reaction after 2 days.

Ten voluntary controls tested with 4% cetearyl isononanoate in liquid mineral oil were negative at D2/D3 and D4.

Discussion

This report seems to be the first of delayed-type hypersensitivity to cetearyl isononanoate, confirmed by patch testing and ROAT. Cetearyl isononanoate, also called hexadecyl isononanoate, has CAS no. 84878-33-1. It results from esterification of a saturated C₁₆–C₁₈ alcohol, namely cetearyl alcohol, with the branched chain isononanoic acid (Fig. 1).

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Occupational contact dermatitis from N-(2-(diethylamino)-ethyl)acrylamide

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Key words: allergic contact dermatitis; N-(2-(diethylamino)ethyl)acrylamide; occupational.

Case Reports

We report 3 cases of allergic contact dermatitis due to N-(2-(diethylamino)ethyl)acrylamide (DEAEA) in

Table 1. Clinical presentations and positive patch test results (readings at D3)

Case number	Age/sex	Clinical presentation	DEAEA (1% pet.)	MBA (1% pet.)	NiSO ₄ (5% pet.)
1	23/M	Eczema of both eyelids, 6 months after the start of exposure	+++		
2	23/M	Vesicular dermatitis of right wrist and forearm, 3 months after start of exposure. Complete healing after application of topical corticosteroids and systematic use of gloves with long sleeves	+++		++
3	34/F	Vesicular dermatitis of both wrists and forearms, 3 months after start of exposure. Complete healing after application of topical corticosteroids and systematic use of gloves with long sleeves. 1 episode of eczema on abdomen after accidental contamination with mixture before reticulation. Complete healing after application of topical corticosteroids.	+++	++	

DEAEA, *N*-(2-(diethylamino)ethyl)acrylamide; MBA, *N,N*-methylene-bis-(acrylamide).

technicians from the same laboratory, which employed 5 persons producing microspheres for embolization during human cardiovascular or neurosurgical procedures.

Microspheres were made of DEAEA, copolymerized with *N,N*-methylene-bis-(acrylamide) (MBA), in a mixture of porcine gelatine, paraffin oil, sodium persulfate, tetramethylethylenediamine, non-ionic surfactants and tromethamine. Reticulation was completed in a glutaraldehyde solution. Microspheres were finally rinsed in water and coloured with gold chloride.

All workers were protected by overalls, goggles and natural rubber latex gloves. They also used a respiratory mask during the initial weighing operation of acrylic monomer powders and during the reticulation procedure which exposed the workers to glutaraldehyde vapours.

3 of the 5 exposed workers developed allergic contact dermatitis during

the first 6 months after their arrival in this workplace, with a variable clinical presentation (Table 1). In all cases, the timing of clinical symptoms was strictly related to occupational exposure. Patch testing was performed with the European standard series, gold sodium thiosulfate (0.5% pet.) and individual allergens (Table 2). Positive results are summarized in Table 1.

Patch testing with DEAEA (1% pet.) was also performed in 6 control patients and was negative in every case.

Discussion

3 of the 5 workers exposed to DEAEA developed allergic contact dermatitis from DEAEA. 1 of the 3 was also sensitized to MBA, although the patch test reaction to this allergen was less pronounced.

Direct contact with DEAEA was highly probable in case nos. 2 and 3, and systematic use of gloves with long sleeves was sufficient to preclude relapses. In case no. 1, lesions of the eyelids probably resulted from contact with contaminated gloves.

Cutaneous allergic reactions to MBA have already been described (1). However, to our knowledge, these 3 cases are the first report of allergic contact dermatitis from DEAEA. This compound is structurally similar to both acrylamide and aliphatic amines. Allergic contact dermatitis from acrylamide has already been reported (1–4), as numerous cases have contact allergy to aliphatic amines (5). DEAEA

appears to be highly sensitizing, as 3 of the 5 exposed workers in this series developed allergic contact dermatitis during the first 6 months following the start of exposure to this compound.

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Table 2. Individual allergen series

DEAEA	1% pet.
MBA	1% pet.
Glutaraldehyde	1% aq.
Ammonium persulfate	1% aq.
TEMED	1% pet.
Tromethamine	1% pet.
Porcine gelatine	pure

DEAEA, *N*-(2-(diethylamino)ethyl)acrylamide; MBA, *N,N*-methylene-bis-(acrylamide); TEMED, tetramethylethylenediamine.

Allergic contact dermatitis from propylene glycol in Efudix[®] cream

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Key words: 5-fluorouracil; actinic keratoses; allergic contact dermatitis; Efudix[®]; irritant contact dermatitis; medicaments; propylene glycol.

Efudix[®] cream (5-fluorouracil, 5-FU; ICN Pharmaceuticals Ltd, Basingstoke, UK), is a topical antimitotic agent widely used to treat malignant and premalignant epithelial skin lesions (1). It usually elicits a moderate to severe irritant contact dermatitis with erythema and scaling at the site of the lesion, and symptoms of burning, pruritus and stinging. However, reports of allergic contact dermatitis are relatively rare, given its extensive usage (1, 2).

Case Report

An 80-year-old woman with extensive facial actinic keratoses was first treated with 40% propylene glycol (PG) in Unguentum M[®] (Crookes Healthcare Ltd, Nottingham, UK) for several weeks to debulk the lesions, with good results. She was then commenced on Efudix[®] cream (1st time usage) $\times 2$ daily for 3 weeks and warned about its potential irritancy. However, within 2 days of starting Efudix[®] cream, her face became severely red and swollen. The inflammation rapidly resolved when treatment was stopped, and she was subsequently patch tested to the British standard series, serial dilutions of 5-fluorouracil (1, 5 and 10%) in aq., Efudix[®] cream (0.1, 1 and 5%) in yellow soft paraffin, PG 40% in Unguentum M[®], polysorbate 60 and sorbic acid. Patch tests were read at days 2 and 4.

She reacted to PG 5% pet. (++) and to PG 40% in Unguentum M[®] (++).

Patch testing was subsequently repeated to serial dilutions of PG in both aq. and aqueous cream BP (40, 20, 10, 5, 2 and 1%), Efudix[®] cream

(as is) and aqueous solutions of 5-fluorouracil (2.5 and 1%). Positive reactions occurred to PG in aqueous cream BP 40 (++) , 20 (++) , 10 (++) , 2 (+) and 1% (+); PG in aq. 40 (++) , 20 (++) , 10 (?) and 5% (?+); and Efudix[®] cream (++) .

Our patient had thus become sensitized to PG in Efudix[®] cream by prior treatment with 40% PG in Unguentum M[®].

Discussion

Irritant contact reactions to Efudix[®] cream frequently occur around the lesions being treated, but allergic contact reactions are relatively rare. Allergic contact dermatitis from Efudix[®] cream can occur to the active ingredient 5-FU (1–3) or to one of its excipients (4). In our patient, an allergic contact reaction occurred to the excipient PG.

PG (1,2-propanediol), a colourless, nearly odourless liquid, is present at a concentration of 11.5% in Efudix[®] cream. It enhances the percutaneous absorption of many substances and is a commonly used excipient in both cosmetics and topical medicaments (5). It is capable of producing both irritant and allergic skin reactions, and there are numerous reports of allergic contact dermatitis from propylene glycol in a wide range of topical preparations (6). There has been 1 previous report of allergic contact dermatitis from PG in Aquaphor (containing PG 12%), which has previously been used as a base for 5-FU (7). However, as far as we are aware, this is the 1st reported case of allergic contact dermatitis from PG in Efudix[®] cream.

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Occupational hand dermatitis in a wood turner due to rosewood (*Dalbergia latifolia*)

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Key words: *Dalbergia latifolia*; occupational contact dermatitis; rosewood; wood turner.

Woods are well known to cause contact dermatitis but can easily be overlooked (1). The typical distribution of dermatitis caused by woods is on exposed areas such as the face, neck and arms. As well as dermatitis and mucosal lesions may be seen (2).

Case Report

A 56-year-old man, employed for several years as a wood turner making wooden handles for tools, presented with a 9-month history of eczema on the palms of both hands, which spread to his legs after 5 months. He had had rhinitis in the past. The woods that he had been exposed to, for at least 12 years,

Table 1. Patch test results

	D2	D4
Rosewood dust	+	+
Beech dust	-	-
Ash wood dust	-	-
Boxwood dust	-	-
Burbinger dust	-	-

included beech, ash wood, rosewood, boxwood and burbinger. The work environment was dusty despite the use of extractor fans. He noticed wood dust on his skin. Examination revealed a chronic dermatitis on both thenar eminences and discoid-like patches of dermatitis on the lower legs.

He was patch tested to the British Contact Dermatitis Society's standard series, to a plants series and to dust samples of the woods that he used at work (Table 1). He had positive reactions at day 2 and day 4 to rosewood dust but not to the other woods or to other allergens. He was advised to avoid this wood in future.

The wood sample was examined at the Jodrell Laboratory, Royal Botanic Gardens, Kew, Richmond, Surrey, UK. The sample matched the reference material of *Dalbergia* sp. (family Leguminosae, subfamily Papilionoideae), common name, rosewood (3). The wood came from Malaysia, which narrows down the possible species (c.100, pantropically distributed) to only a few, as there are similar species in South America and Africa. The best match anatomically and in colour was *Dalbergia latifolia*. This is native to Nepal, NE India and Java and is planted in mainland SE Asia, Java and Africa. The other well-known species plantation grown in SE Asia is *D. sissoo*, but this is lighter in colour.

Discussion

Rosewood (palisander) is an exotic hardwood used to make furniture, musical instruments and handles for tools. *Dalbergia latifolia*, also known as East Indian rosewood, is native to several countries of Asia, including India, Indonesia, Malaysia and Nepal. The allergens are believed to be quinonoid compounds. Allergic contact dermatitis has been reported previously to East Indian rosewood (4, 5), and there is a report of airborne allergic contact dermatitis to

rosewood (6). Contact allergy to woods should be suspected in subjects who work with hardwoods and who have dermatitis on exposed sites, however long they may have been previously working with the wood.

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Acrylic reactions: a review of 56 cases

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Key words: acrylates; allergic contact dermatitis; methacrylates.

The expanded use of acrylics in both occupational and non-occupational use is reflected in the increase in dermatological problems, particularly allergic contact dermatitis, related to their use (1). We report our patch test clinic experience with acrylic

reactions since 1988, with reference to specific allergens and sources of exposure (2).

Materials and Methods

From January 1988 to October 2002, 75 patients who were patch tested had at least 1 positive reaction to (meth)acrylates; 56 charts were available for review. Patients were patch tested according to methods described by the North American Contact Dermatitis Group (NACDG) using Finn Chambers[®] on Scanpor[®] tape (Epitest, OY, Hyrla, Finland). Readings were performed at D2 and again between D4 and D7. All 56 patients were tested with the standard screening tray of the NACDG; 32 patients were tested with the additional acrylic tray, 11 with the dental tray and 1 with all 3 trays (Chemotechnique Diagnostics, Malmö, Sweden). Patients were not always tested with the entire acrylic tray.

Results

43 of the 56 patients were women; average age was 47.3 years. The 10 most frequently positive (meth)acrylates are listed in Table 1 and sources of acrylic exposure in Table 2. Acrylic nails were the most common source. Of the 25 women in this group, 7 were occupationally exposed (nail technicians). Face, eyelids or both were involved in 13 women, and the other 12 had hand dermatitis, of whom 2 had nail dystrophy. The 3 most common sensitizers in this group were 2-hydroxypropyl methacrylate (2-HPMA) (17 patients), 2-hydroxyethyl methacrylate (2-HEMA) (16 patients) and ethylene glycol dimethacrylate (EGDMA) (14 patients).

Another occupational group was comprised of dental assistants (6 patients) and dentists (2 patients). All 8 had hand involvement, and 1 also had facial involvement. EGDMA (6 patients) and triethylene glycol dimethacrylate (4 patients) were the most frequent reactors. BIS-MA and BIS-GMA were positive in only 1 of these 8 patients.

Adhesives were the source in 7 patients, and 5 were exposed to anaerobic sealant (Loctites[®], Loctite Corporation, Newington, CT, USA). A cyanoacrylate adhesive and a medical pressure-sensitive adhesive

Table 1. Patch test results: 10 most frequently positive (meth)acrylates

(Meth)acrylate/concentration in petrolatum	Number of positive reactions (total number of patients = 56)
Ethylene glycol dimethacrylate 2%	30
2-Hydroxyethyl methacrylate 2%, 5%	28
2-Hydroxypropyl methacrylate 2%, 5%	21
Methyl methacrylate 2%	19
Polyethylene glycol dimethacrylate 5%	18
Ethyl acrylate 0.1%	12
Tetrahydrofurfuryl methacrylate 2%	9
Ethylcyanoacrylate 5%	7
Triethylene glycol dimethacrylate 2%	7
Pentaerythritol triacrylate 0.1%	5

Table 2. Acrylic exposure in 56 patients

Source of acrylic exposure	Number of patients
Acrylic nails	25
Occupational	7/25
Non-occupational	18/25
Dental material	14
Dentists/dental assistants	8/14
Dental work	6/14
Adhesives	7
Dental work	6
UV paint	1
Hearing aid	1
Undetermined	8

were the source in 1 patient each. 2-HEMA was the most frequent reactor in this group.

Discussion

We observed an increase in the number of patients positive to (meth)acrylates as compared with a previous study from our clinic, which reported 16 patients with reactions to acrylics over a 10-year period (2). The highest number of reactions were seen with EGDMA, 2-HEMA and 2-HPMA. These (meth)acrylates have been observed to be frequent sensitizers by other authors (3–5). Ethyl acrylate and ethylcyanoacrylate did not show the high reactivity in acrylic nail users previously reported by Koppula et al. (6). We observed that EGDMA was a good marker for all the acrylic exposure groups and should, therefore, be considered for inclusion in the standard series. Although 2-HEMA is reported to be a common allergen in dental workers (7), it is not included in the dental screening tray. It is an effective screening allergen for the other exposure groups and should

also be included in the dental tray. Aimed patch testing with additional acrylics is important in high-risk groups.

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Contact dermatitis from the antimicrobial coating of a desk mat

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Key words: 2, 3, 5, 6-tetrachloro-4(methylsulfonyl) pyridine; allergic contact dermatitis; antimicrobial; desk mat.

Antimicrobial agents are used in various goods in our daily life in Japan, but insufficient attention is paid to the allergenic potential of these agents.

Case Report

A 44-year-old woman presented with diffuse oedematous erythema on the extensor surfaces of both forearms. She reported severe itching for 4 months. Topical and oral corticosteroids showed only limited effectiveness. She noted that her skin lesions worsened when she worked at her desk which was covered by a desk mat coated with antimicrobial agents.

She was patch tested to the Japanese standard series and prescribed ointment and instructed to continue using her desk mat. On D4, the patch test with the desk mat showed a +++ reaction that lasted until D7. No positive reaction to other patch tests was found. Because the desk mat was coated with antimicrobials, further patch testing to them was performed. A +++ reaction to 2,3,5,6-tetrachloro-4(methylsulfonyl) pyridine (TCMSP 10% olive oil) (Fig. 1) was elicited on D4. 15 normal controls were negative to TCMSP 10% olive

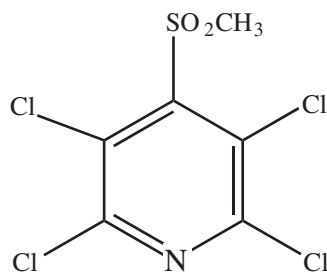


Fig. 1. Chemical structure of 2,3,5,6-tetrachloro-4-(methylsulfonyl) pyridine.

oil. Prior informed consent was obtained from all normal controls.

Comment

This patient developed allergic contact dermatitis from TCMSP which was used in the antimicrobial coating of her desk mat. A similar case was reported previously in Japan (1). Pyridine is a solvent used for many organic compounds and anhydrous metallic salts. It was originally discovered in coal tar and is now widely used in laboratories for polymer chemistry. In laboratory workers, occupational sensitization to pyridine compounds, including methyl-terpyridine, pyritinol, 4-vinylpyridine or pyridine in the Karl Fischer reagent, has been reported (2–6).

Many materials in our daily environment contain TCMSP, including antimicrobial agents, paints and adhesives. Consequently, we are exposed continually to this substance, and cases of allergic contact dermatitis due to TCMSP have been documented (7). TCMSP has also been shown to be mutagenic (unpublished data), and, since 2002, its use has been prohibited by the Japanese Biosafety Research Center. Our case demonstrates that dermatologists should be alert to the presence of TCMSP as well as other pyridine derivatives because of their allergenic and possible mutagenic potential.

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Maculopapular drug eruption due to the Japanese herbal medicine Kakkonto (kudzu or arrowroot decoction)

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Kakkonto is a Japanese herbal medicine of the Kampo tradition, used as a remedy for cold/influenza, allergic rhinitis and even the early stages of polio myelitis or encephalitis. It is

also known by the Chinese name Ge Gen Tang and the English name kudzu (or arrowroot) decoction (1) (Table 1).

Case Report

A 32-year-old woman in her 36th week of pregnancy consulted a local clinic, complaining of fatigue and cough persisting for 5 days, and she was prescribed Kakkonto. After taking the drug twice in a 7-h period, she developed a pruritic eruption on the thighs. As the eruption continued to develop and extended to her abdomen and both arms, she visited our clinic. She recalled that she had experienced this type of reaction on 2 previous occasions while taking Kakkonto.

On examination, erythema and papules were observed over her whole body, and especially on her thighs and lower abdomen, increased warmth was felt. However, neither fever nor enlarged lymph nodes were present. After consultation with an obstetrician-gynaecologist, oral prednisolone 30 mg/day was started and gradually tapered by symptoms. Oral antihistamine (D-chlorpheniramine maleate 4 mg/day) was also administered. The eruption disappeared in 10 days, and she subsequently gave birth to a healthy male baby.

A 2-day closed patch test was performed using the product Kakkonto, 20 days after the initial eruption (Table 2). Based on the results of patch testing and the history of past and present illness, we made a definite diagnosis of maculopapular drug eruption due to Kakkonto. 7 months after the initial eruption, we performed a 2nd 2-day patch test using not only the product but also the components of Kakkonto (Kakkon, Maou, Taio, Keishi, Syakuyaku, Kanzo and Syokyo). The method of preparation was that Kakkon (12 g) and Maou (9 g), each in approximately 10 cups of water, and the rest of the components (Taio (4 pieces), Keishi (6 g), Syakuyaku (6 g), Kanzo (6 g) and Syokyo (9 g)) each in approximately 8 cups of water were, respectively, decocted until 3 cups of extract of each component remained (1). However, no positive reaction could be elicited. Thereafter, no symptoms have occurred because she has avoided Kakkonto.

Table 1. The composition of Kakkonto (Chinese name: Ge Gen Tang; English name: kudzu (or arrowroot) decoction)

Latin medical name	Japanese name	English name	Chinese name	Quantity
Radix Puerariae	Kakkon	Japanese arrowroot, kudzu	Ge Gen	12 g
Herba Ephedrae	Maou	Ephedra	Ma Huang	9 g
Fructus Zizyphi Jujubae	Taiso	Jujube, Chinese date	Da Zao	4 pieces
Ramulus Cinnamomi Cassiae	Keishi	Chinese cinnamon twigs	Gui Zhi	6 g
Radix Paeoniae Lactiflorae	Syakuyaku	White paeony root	Bai Shao Yao	6 g
Radix Glycyrrhizae	Kanzo	Licorice root	Gan Cao	6 g
Rhizoma Zingiberis Officinalis	Syokyo	Ginger rhizome	Sheng Jiang	9 g

Preparation: Radix Puerariae and Herba Ephedrae in approximately 10 cups of water and decoct until approximately 8 cups remain, then add the other herbs and decoct until 3 cups remain.

Table 2. Patch test results

Conc./vehicle	2-day closed patch test	
	D2	D3
Kakkonto 30% pet.	+	+
30% pet. (scratch)	+	+
50% pet.	+	+
50% pet. (scratch)	+	+
white petrolatum	—	—

Discussion

Kakkonto, one of a group of herbal medicines, is used to treat early stage cold symptoms, diarrhea, stiff shoulders, headache and neuralgia associated with cold. It is also used in dermatology to treat chronic urticaria (2) and pustular psoriasis (3).

Only 2 cases of drug eruption due to Kakkonto have been reported (4, 5), but definite diagnosis by 2-day closed patch test was not made in either case. In our case, positive reactions could be elicited on the 1st patch

test, although not by the 2nd patch test. Therefore, to elicit positive reactions in cases of drug eruption, there may be a relationship with the time between the onset of the eruption and the patch test. Alternatively, the 2nd patch test may have been applied to an immunologically unresponsive area of skin.

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