

CONTACT POINTS

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Contact allergy to the mild surfactant decylglucoside

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Key words: allergic contact dermatitis; cosmetics; decylglucoside; glucosides; surfactants.

Decylglucoside results from the combination of glucose and decyl alcohol with formation of a cyclic glucose.

Other glucosides are formed with other fatty alcohols, extracted mainly from palm or coconut oil. They have been known for more than 30 years. In industry, methylglucoside (or methyl α -D-glucopyranoside) is used to reconstitute and upgrade drying oils, in the production of polyurethane foam and varnishes, and as a plasticizer (1).

In cosmetology, glucosides were used as mild non-ionic surfactants in rinse-off products in the 1960s, but they were rapidly superseded by other surfactants. They came back in the 1990s and are nowadays increasingly found in shampoos and soaps, as well as in leave-on products such as lotions and creams; even some sunblocks are now supplied by the manufacturers mixed with this surfactant (e.g. Tinosorb M[®], Ciba, Basel, Switzerland).

Case Reports

Case no.1

A 53-year-old woman presented in the summer of 2002 with aggravation of her atopic eczema on UV-exposed skin, associated with sunscreen use. She gave an earlier history of an exacerbation starting acutely on the scalp. In September 2002, we carried out patch tests with the European standard series, 50 pharmacocosmetic ingredients, 15 sunscreen chemicals, 20 fragrance chemicals,

12 shampoo additives and all her own cosmetics (shampoos tested semi-open). Many of her own sunscreens and most of her own shampoos gave positive reactions at D2 and D3, while all allergen series were negative. The numerous reactions to shampoos suggested irritant reactions, related to her atopic skin. The reactions to her own sunscreens remained unexplained. Inspection of their different ingredients showed one common chemical present in the shampoos and sunscreens, not yet tested, decylglucoside. Although listed on Avène[®] (Paris, France) and Bioderma[®] (Lyon, France) sunscreens, it was not listed on a RoC[®] (Paris, France) sunscreen that also reacted.

However, decylglucoside was in fact present in all 3 creams, as it is contained in Tinosorb M[®].

The cosmetic manufacturers kindly gave us 9 diluted samples of decylglucoside, which were tested in September 2002 on the patient's abdominal skin. She reacted slightly to all 9 samples: 3 provided by Avène[®] (decylglucoside 1.2 and 3% aq.), 5 by Bioderma[®] (decylglucoside 1% aq. and 1% pet. and Tinosorb M[®] 2% pet., 5% aq. and 5% pet.) and 1 supplied by RoC[®] (Tinosorb M[®] 6% in polyethylene glycol). She complained of a lot of itching, but the reactions were only red and slightly papular without vesicles (D2+ and D3+). Some weeks later, Bioderma[®] provided us with more concentrated decylglucoside 5% and 10% aq. to which the patient reacted more definitely (D2+ and D3++). The glucoside series (11 samples) was also applied on 10 control subjects (7 atopic and 3 not atopic) without any reactions.

Complete avoidance of all glucoside-containing cosmetics allowed the patient to return to her previous state of eczema.

Her difficulty now is to find a shampoo without decylglucoside or related derivatives. For example, she also reacts to Nizoral[®] shampoo (Janssen-Cilag, Berchem, Belgium), which contains methylglucose dioleate.

It seems that this may be a cross-reaction, because in methylglucose dioleate, there is a cyclic methylglucose (the patient refused more tests).

Case no.2

A 52-year-old catering assistant had been complaining for many years of hand dermatitis, probably related to her work. In December 2002, we patch tested her because, for a few months, she had also been suffering from lesions on the scalp and trunk. She reacted to chromate, cobalt and nickel, and also to decylglucoside 10% aq. (D2+ and D3++). She had used 2 shampoos that contained this substance. Avoidance of these shampoos dramatically improved her lesions.

Case no.3

For 5 years, a young woman has been suffering from hand eczema; she noticed exacerbation with some shampoos. Patch tests done in March 2003 showed allergy to diazolidinylurea and imidazolidinylurea (D2++ and D3++), preservatives in 2 shampoos used and also to laurylglucoside (5% pet.) (D2+ and D3+) present in 1 other of her shampoos. Semi-open tests with these 3 shampoos were positive (she also cross-reacted to cocoglucoside and decylglucoside, each at 5% pet.) (D2+ and D3+). The use of shampoos free from glucoside and the 2 preservatives allowed remission of her cutaneous lesions.

Case no.4

A 16-year-old girl had been working as a hairdresser apprentice for 6 months: she mainly did shampooing and she rinsed permanent wave lotions and hair dyes without wearing gloves. After 3 months, she noticed painful fissuring on the fingers; she then used protective gloves without improvement. She was not atopic and had never dyed or permed her own hair. Patch tests were performed in May 2003, with

numerous positive reactions: *p*-phenylenediamine, *p*-toluenediamine, ammonium persulfate and also decylglucoside 10% pet. (D2+ and D3+), laurylglucoside 5% pet. (D2+, D3+), cocoglucoside 5% pet. (D2+, D3++) and cetearylglucoside 5% pet. (D2++, D3++). All the shampoos (again semi-open tested) gave a pronounced erythema at D2 and D3. Only 1 hair conditioner (semi-open) did not react. All the shampoos, but not the conditioner, contained lauryl- or decylpolyglucose, synonyms for lauryl- or decylglucoside. She modified her work and for personal use avoided all products containing glucoside. After 1 month, her eczema cleared.

Discussion

Just recently, 2 other papers have reported contact allergy to glucosides in shampoos, soaps and sunscreens (2) and in an antiseptic gel (3). As seen in the first case report, cross-reaction seems possible with other related surfactants, such as methylglucose, mono-, di- or sesquioleate and -stearate. Allergy to methylglucose sesquisteate (5% pet.) was described in 1984 after the use of a cosmetic tanning lotion. Affected women also cross-reacted to methylglucose dioleate (5% pet.) but not to sorbitan sesquioleate (4). Allergy to methylglucose dioleate (5% pet.) present in an antibiotic cream (Dermodis®, Farmades, Rome, Italy) used for leg ulcers was described in 2 Italian patients in 1995 (5) and 1996 (6) and also in a cosmetic barrier cream (Oziderm®, Dermoresearch, Napoli, Italy) again in Italy in 2001 (7).

Considered as non-irritant, the alkyl glucosides are increasingly used not only in rinse-off cosmetics, but also in leave-on cosmetics and in topical medicaments, where increased absorption may enhance the risk of allergy. Since the discovery of my first case (in Autumn 2002), decylglucoside 10% pet. has been added to our pharmacocosmetics series: of 329 patients so far tested, 8 cases of allergy have been detected (not all described here). Some conditions such as atopy (case no.1) or occupational irritation (case nos. 2 and 4) may enhance the penetration of this mild surfactant, through the normal use of soaps and shampoos, which are typically rinse-off products, by non-atopic patients may also give rise to allergy (case no. 3).

Because of the increasing use of these surfactants (not only in soaps and shampoos but also in sunscreens, vanishing and anti-ageing creams, for example), it seems advisable to add these to cosmetopharmaceutical series. However, it also seems necessary to do more research to standardize the patch test concentration (10% pet.?) and to look for the existence of cross-reaction with related molecules such as α -methylglucose sesquioleate and -stearate. It is also important to determine the exact chemical composition of our samples, many being a mixture of different glucosides.

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Dithiocarbamate-induced allergic contact dermatitis

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Key words: allergic contact dermatitis; dithiocarbamates; floristry; horticulture; maneb; occupational; pesticides; zineb.

Allergic reactions to pesticides and fungicides are well documented in agriculture and horticulture but are not commonly associated with the dithiocarbamate group.

We describe 2 patients found to be allergic to both maneb (manganese ethylene-bisdithiocarbamate) and zineb (zinc ethylene-bisdithiocarbamate), reactions not commonly seen in our department.

Case no. 1

A 23-year-old greens keeper developed acute dermatitis of the hands, forearms and eyelids. A similar episode the previous year had settled spontaneously, and on both occasions, he had used fungicides several days before the onset of the rash. His general health was good, and he was not atopic. Patch test results are summarized in Table 1.

Case no. 2

A 56-year-old florist's assistant developed sudden onset facial swelling and redness thought to be related to handling flowers at work. Her symptoms resolved with oral antihistamine, but further exposure led within hours to a recurrence accompanied by intense facial itch. She was mildly atopic but otherwise well. Results of patch tests, including material from *Alstroemeria* (Peruvian lily), are summarized in Table 1.

Discussion

Pesticide-induced skin disease occurs as a result of extensive use of these chemicals, and clinical manifestations depend on the nature of the exposure (1).

Continuous prolonged exposure may manifest as chloracne or porphyria cutanea tarda in production workers, while those handling the finished products are prone to irritant or allergic contact dermatitis. Skin is vulnerable during mixing and spraying or while loading and cleaning equipment, but sensitization may also occur when sowing pesticide-treated seeds or when weeding and harvesting. Irritant contact dermatitis may be caused by thiophthalimides such as captafol. Allergic contact dermatitis

Table 1. Patch test results at D2 and D4

Substance	Concentration (% in pet.)	Patient number 1		Patient number 2	
		D2	D4	D2	D4
European standard series		–	–	–	–
Plants					
Arnica tincture (with sorbitan sesquioleate 5%)	0.5	–	–	IR	–
Atranorin	0.1	–	–	–	–
Dipentene	1.0	–	–	–	–
Usnic acid	0.1	–	–	–	–
Pyrethrum	1.0	–	–	–	–
Sesquiterpene lactone mix	0.1	–	–	–	–
Lichen acid mix	0.3	–	–	–	–
Pesticides and fungicides					
Captan	0.1	–	–	+	–
Zineb	1.0	++	++	+	+++
Captafol	0.1	–	–	++	+++
Maneb	1.0	+++	+++	+++	+++
Folpet	0.1	–	–	–	–
Pyrethrum	2.0	–	–	–	–
Benomyl	0.1	–	–	–	–
Ziram	1.0	–	–	–	–
Alstroemeria (bruised)					
Flower					+++
Leaf					+++
Stem					+++

is recognized, but dithiocarbamates remain an uncommon cause, despite their widespread use (2).

The dithiocarbamates are cheap and effective pesticides used both in agriculture and in horticulture. An aqueous solution is sprayed onto plants and, when the water evaporates, fungicidal powder remains before decomposing due to the effects of sunlight, moisture and heat. Dithiocarbamates are the reduced forms of thiuram disulfides (3) and, as such, are closely related chemically to thiuram rubber additives. Although cross-reactions with these are reported, they are inconsistent and their allergic cross-reactivity pattern is unclear. Cross-reactions within the dithiocarbamate group are more commonly observed.

Both our patients reacted to maneb and zineb but neither reacted to thiuram mix or to carba mix in the European standard series. The florist had positive results to bruised Alstroemeria samples but also had allergic reactions to maneb and zineb, a result that is not commonly observed in our clinical practice, despite the recognition that workers in the industry may be exposed to pesticide residues on treated flowers.

Skin disease accounts for 22% of occupational disease, second only to musculoskeletal disorders, and 80% of these cases of skin disease are due to contact dermatitis (4). Despite

extensive use of dithiocarbamate fungicides, resultant allergic contact dermatitis remains a rarely reported phenomenon (5).

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Contact dermatitis from lacquer in a 'Go' player

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Key words: allergic contact dermatitis; 'Go'; lacquer tree; urushiol.

Case Report

A 71-year-old man visited our clinic with acute pruritic eczema on both forearms. This was a well-demarcated oedematous erythema with a reticulate pattern (Fig. 1). These symptoms and signs appeared 1 day after he had played 'Go'. The distance between each line of the skin lesion was exactly the same size as the grid pattern of a 'Go' board. His symptoms had started a few weeks after he had begun to use a new 'Go' board. The grid of this 'Go' board was made glossy with the sap of lacquer trees, which contains urushiol.

To detect the cause of his allergic contact dermatitis, we performed a 2-day closed-patch testing using Finn Chambers® (Epitest, Tuusula, Finland)

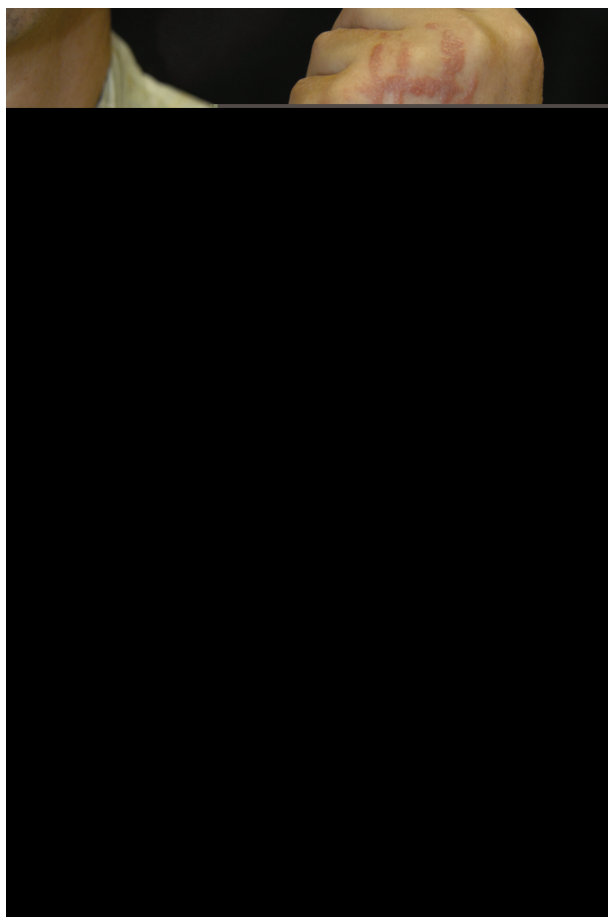


Fig. 1. The patient's eczema corresponding to the 'Go' board grid.

on Scanpor[®] tape (Alpharma AS, Vennesla, Norway) with urushiol 0.002% in pet. Reactions were read on days 2 and 3 after application, in accordance with ICDRG recommendations (1). On days 2 and 3, we saw a ++ reaction to urushiol 0.002% in pet. We recommended that he return to using his previous 'Go' board and since then his symptoms have never returned.

Discussion

The game of 'Go' has its origin in China 4000 years ago. 'Go' as it is played today is an indoor game and has roots deep in the life of people in Asian countries. The total number of people who play 'Go' is estimated to be about 7 million. The players place stones alternately on the surface of the 'Go' board. The grid pattern is like chess but consists of 19 vertical and horizontal lines. In order to make these lines glossy, they are painted with the sap from Japanese lacquer tree (*Rhus verniciflua*), a

member of the Anacardiaceae plant family. The lacquer is obtained by tapping the bark of lacquer trees via incisions in the bark.

Both fresh lacquer and lacquerware may evoke allergic contact reactions ascribable to an oleoresin known as urushiol contained therein (2, 3). In general, raw lacquer is composed of 60–65% urushiol and its oligomer, of which the active principle is pentadecylcatechol (PDC) (4, 5). In contact with air, urushiol becomes a black oleoresin by the action of an oxidative enzyme called laccase. This process effects urushiol polymerization, which leads to hardening of urushiol and diminishing of its allergenicity. Usually, the carbon side chain of PDC is saturated when the lacquerwork is distributed.

Our current case is probably due to the lack of sufficient polymerization of urushiol. The use of lacquer for the decoration or protection of furniture, floors, teapots, canes and ornaments is widespread in East Asia (Korea, Japan and China) and is part of its

cultural heritage (4). Clinicians need to understand their cultural background and to keep an eye on the possibility of contact dermatitis from lacquer-tree products.

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Compound allergy to Unguentum M[®]

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Key words: allergic contact dermatitis; compound allergy; medicaments; Unguentum M[®].

Case Reports

Case no. 1

A 70-year-old woman with widespread xerosis and chronic actinic damage was referred following a flare of eczema on her limbs. She had used Unguentum M[®] (Crookes Healthcare Ltd, Nottingham, UK) as her regular emollient for several years. She had a personal and family history of hay fever and was taking postmenopausal hormone replacement therapy. She was patch tested to an extended British standard series, medicaments series and her own undiluted Unguentum M[®]. Readings at D2 and D4 were +/+ to Unguentum M[®] only. The patient's eczema resolved when she stopped applying Unguentum M[®].

Case no. 2

A 74-year-old woman was referred with a 2-year history of varicose eczema, treated with several different emollients and topical corticosteroids. She described her skin as becoming itchy and inflamed following the application of Unguentum M[®] and as improving following its discontinuation. She had a previous history of atopic dermatitis and a family history of asthma. She was patch tested to an extended British standard series, a medicaments series, a lower leg series and her own medicaments and cosmetics, including undiluted Unguentum M[®]. Readings at D2 and D4 were +++/+++ to Unguentum M[®], +/+ to diazolidinyl urea 2% pet. and +/+ to 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one (3:1 in aq.) 0.01%.

Further patch tests were performed in both the patients to whole Unguentum M[®] (as is) and the constituents of Unguentum M[®], kindly supplied by the manufacturer (Hermal GmbH, Reinbek, Germany). These ingredients were supplied as 4 separate phases, ready-diluted for patch testing (Table 1), the lipid phase containing a mix of 5 different constituents. Readings at D2 and D4 were +/+ in case no. 1 and +++/+++ in case no. 2 to whole Unguentum M[®] (phase 0). Neither patient reacted to the individual ingredient phases of Unguentum M[®], as supplied by the manufacturer.

Table 1. Unguentum M[®] constituents as supplied by manufacturer

Active ingredient phase 0 (conforms with original product)
Emulsifier phase 1 Cetearyl alcohol 20% pet.
Emulsifier phase 2 Propylene glycol 5% pet.
Preservative phase Sorbic acid 2% pet.
Lipid phase Polysorbate 40 Mineral oil Glyceryl stearate Caprylic/capric triglyceride Silica in pet.

Comment

Unguentum M[®] (previously Unguentum Merck) is a popular emollient which may also be used as a diluent for topical corticosteroids and other dermatological preparations (1). Allergic contact dermatitis from Unguentum M[®] is unusual. 3 cases have previously been reported from the preservative, sorbic acid (1–3), and 1 case from the suspension agent, silicic acid (4). To our knowledge, compound allergy to Unguentum M[®] has not previously been reported.

Compound allergy is the term used to describe a patch test-confirmed allergic contact dermatitis from a whole preparation, where patch testing to its individual excipients is negative (5). A possible explanation for this phenomenon is a chemical interaction between ingredients within the whole preparation to form a new allergen. This has been demonstrated in some cases of compound allergy (6), though has been excluded in others (7). Alternative explanations include enhanced delivery of the allergen via the original preparation compared to the patch test vehicle (8).

Misdiagnosis of compound allergy may occur where an irritant reaction to a whole product is mistaken to be allergic, when the responsible allergen is not provided in the ingredient breakdown or when the whole preparation used for testing is contaminated with a separate allergen. Alternatively, misdiagnosis can occur when the concentration of individual ingredients used for patch testing is too low or when the base used to dilute a substance reduces its cutaneous penetration.

It is possible in our cases that the concentration of 1 of the individual excipients was too low or that the base used for dilution provided less penetration than the compound base. Propylene glycol is irritant in high concentrations, and the ideal patch testing concentration remains controversial. It is possible that testing at the low concentration of 5% propylene glycol may have produced a false-negative result. Ideally, individual undiluted ingredients should be received from the manufacturer, and test concentrations and bases for dilution decided within the patch testing unit.

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An unusual case of mercurial baboon syndrome from metallic mercury in a broken industrial barometer

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Key words: baboon syndrome; barometer; mercury; patch test.

Case Report

A 36-year-old man was referred to us with diffuse rashes, symmetrically distributed over the neck, buttocks, anogenital area and upper inner surface of the thighs, rapidly spreading to the trunk and extremities. He had worked in a construction factory as a mechanical engineer. 4 days prior to referral, he had been exposed to spilled liquid from a broken industrial barometer, which had been known to contain mostly metallic mercury. He reported that the liquid had not penetrated his protective overgarment and gloves. About 24 h after exposure, slightly itchy erythema began to appear on the major flexural areas of the body. By next day, it had spread to his entire body. Abdominal pain and diarrhoea were accompanying symptoms.

Routine laboratory examination revealed no abnormalities. Chest radiography was normal, with no evidence of metallic densities. Upper gastrointestinal endoscopic and colonoscopic findings were not specific. A biopsy of the erythema showed perivascular inflammatory infiltrates. The clinical characteristics of the erythema were highly suggestive of systemic contact dermatitis due to mercury. The 24-h urinary mercury level was 0.39 µg/dl (non-occupational normal range in Korea, 0–20 µg/dl) and blood mercury was 0.94 µg/dl (non-occupational normal range in

Korea, 0–35 µg/dl). The patient was treated with systemic corticosteroids that led to complete remission within a week.

Patch tests with the European standard series, performed 2 months after healing of the lesions, gave a strong (++++) allergic reaction at 2 and 4 days to mercury ammonium chloride (1% pet.) and thimerosal (0.05% pet.). He reported that he had developed erythematous papules and vesicles on the feet following the application of Mercurochrome in the past.

Comment

Allergic contact dermatitis arises from direct contact between the skin and the sensitizer in individuals with previous contact sensitivity, though it does rarely arise from exposure via the respiratory and gastrointestinal tracts (1).

Mercurial vapour and dust are readily inhaled and can penetrate skin to cause systemic toxicity. This rarely appears as a generalized exanthem with particular involvement of the buttocks, anogenital area, flexures and eyelids. The baboon syndrome is a classical manifestation of mercury exanthem, describing the characteristic distribution pattern. Breaking a medical thermometer is the major cause of mercurial baboon syndrome.

Mercury is unique in that it is the only metal existing in liquid form and capable of evaporating at room temperature (2). Although not all mercurial exposures result in cutaneous disease, the most common dermatological manifestation of mercury toxicity is acute contact dermatitis, presenting with mild oedema, vesiculation, scaling and irritation (3). Rarely, inhalation of mercury vapour and skin contact with inorganic mercury salts or metallic mercury may elicit a mercurial baboon syndrome in sensitized individuals (4).

The causes of previous sensitization are topical mercurial derivatives and dental amalgam (5, 6). In our patient, the primary sensitizer was probably merbromin, contained in Mercurochrome (2). Until recently, Mercurochrome has been most widely used as a topical disinfectant domestically in Korea and is considered to be a major cause of contact sensitization to mercury. The fact

that there are more reports of mercurial baboon syndrome in Korea and Japan is probably related to the higher frequency of sensitization to mercurials. In Korea and Japan, the rate of positive reactions to ammoniated mercury was reported as 8.7 and 12.9% (7, 8). Patients are typically patch test positive to mercury antigens including elemental mercury, mercuric chloride, mercuric oxide, ammoniated mercury, thimerosal and Mercurochrome (2, 6).

As to the route of exposure, transcutaneous absorption does not seem to have played a role in our patient, because the areas covered with protective clothing were not affected. Nakayama et al. (9) have pointed out that this type of dermatitis mostly develops after inhalation of mercury vapour. But other sources of exposure include vaccines, toxoids, γ-globulin preparations, contact lens solutions and antitoxins (10).

The exact frequency with which this type of systemic contact dermatitis occurs is unknown. We believe that it may frequently be overlooked, because other allergens such as antibiotics, including ampicillin and erythromycin, hair dyes and nickel can cause the same pattern of reaction, and there may be many chances of exposure to these allergens in the industrial workplace (11, 12).

We think that the incidence of airborne allergic contact dermatitis from various materials including mercury in the industrial environment appears to be higher than that has been reported. We could readily diagnose this case from the highly characteristic morphological pattern of baboon syndrome. Exogenous factors in the workplace must be considered in the evaluation of the possibility of systemic allergic contact dermatitis in a patient.

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Contact dermatitis in a bagpipes maker

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Key words: airborne; allergic contact dermatitis; bagpipes; Santos rosewood.

Case Report

A 52-year-old atopic man acquired some Santos rosewood (*Machaerium scleroxylon*) to diversify his bagpipes making. He had contact with this wood on 2 occasions 3 weeks apart before presenting to our urgent dermatology clinic. 2 days after sawing, sanding, boring and polishing this exotic wood the 2nd time, he developed an exposure-site dermatitis involving the hands, forearms, face and upper chest with secondary spread to the groins, umbilicus and glans penis. He had frequently used white pine, oak and mahogany for 30 years, African blackwood and lignum vitae for 2 years and occasionally used acrylate adhesives for 10 years with no skin problems.

He was patch tested to the British Contact Dermatitis Society standard series, an acrylates series and Santos rosewood sawdust well diluted in pet. (approximately 1%), and the sawdust elicited a positive reaction on D3 and D5 (++/+++).

He had recurrent wheeze on exercise and contact with sawdust for 5 years, this settling rapidly with inhaled bronchodilators. Despite being told he could be allergic to Santos rosewood at his first presentation, he had continued to use this though wearing full protective clothing. During the course of patch testing, he experienced severe wheezing episodes which later responded to a short course of oral corticosteroids. Radioallergosorbent tests to spruce, softwood mix (beech, white pine, red cedar and silver fir) and hardwood mix (oak, mahogany, abachi and ramin) were negative.

Since he stopped working with Santos rosewood, he has had no further attacks of dermatitis or severe wheezing.

Discussion

Allergy to sawdust is most commonly seen in carpenters and woodsmen. Although there have been reports of allergies to musical instruments, wooden jewellery and furniture, finished wood products are less likely to sensitize (1). Sawdust allergy often presents as an airborne pattern of contact dermatitis affecting the dorsa of the hands, forearms, face

and neck. Fine dust can also drift inside clothing to cause dermatitis of the axilla, waist and groins. Rapid spread to the genitals is not unusual through handling in urination (1). Woods can also cause erythema multiforme and Type I reactions such as rhinitis, conjunctivitis and contact urticaria. This is more commonly seen with exotic woods.

Santos rosewood contains R-3,4-dimethoxydalbergione, which is a well-known strong (Type IV) contact sensitizer (2). It can also cause Type I upper and lower respiratory symptoms, mostly seen in carpenters. Cheilitis and perioral dermatitis in individuals who play instruments, made of this South American rosewood have been reported (3). Our patient presumably was sensitized on the 1st exposure and developed symptoms on the 2nd exposure. To our knowledge, this is the 1st reported case of allergic contact dermatitis in a bagpipes maker. According to our patient, this particular wood gives excellent acoustic quality and is a delight to work with. A dust extractor has been installed to minimize the exposure to sawdust, and it is likely that our patient will try to finish his supply of the Santos rosewood next year.

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Xanthelasma palpebrarum following allergic contact dermatitis from *para*-phenylenediamine in a black eyelash-tinting product

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Key words: allergic contact dermatitis; cosmetics; *para*-phenylenediamine; xanthelasma palpebrarum.

Case Report

A 38-year-old Caucasian woman presented with a history of discrete yellow areas on her eyelids 6 weeks after an episode of a severe rash on her eyelids following the use of a black eyelash-tinting product. She had developed a severe facial reaction with redness, swelling and exudation, beginning on her eyelids 1 day after having her eyelashes tinted black. She had a history of having had a black temporary henna tattoo on her ankle 6 months before, while on holiday in Corfu, which resulted in a localized skin reaction with blistering 3–4 days after its application.

On examination, she presented with lesions typical of xanthelasma palpebrarum. Multiple photographs taken by the patient during her facial reaction did not demonstrate these lesions previously on her eyelids. We suspected that the black eyelash highlighter contained *para*-phenylenediamine (PPD) to which she had been sensitized previously. There was evidence of postinflammatory hyperpigmentation around her ankle. She was therefore patch tested to the European standard series and a cosmetics series and showed a strongly positive reaction with vesiculation to PPD 1% pet. and a positive reaction to isopropyl-PPD 0.1% pet. The other constituents of the standard series and cosmetics series were negative.

Fasting lipid profile was within normal limits.

She was given information about allergen avoidance and responded

well to the topical application of trichloroacetic acid.

Discussion

Xanthelasma has been reported in the past following erythroderma and inflammatory skin disorders in the presence of normal lipid profiles (1). This is, to our knowledge, the first case report of xanthelasma palpebrarum following allergic contact dermatitis. Our patient had severe facial allergic contact dermatitis from PPD in a black eyelash-tinting product and, thereafter, developed lesions of xanthelasma palpebrarum. It is important to note that she was normolipidaemic, which is the case in about 1/2 of the patients with these lesions (2).

The mechanism that initiates macrophage accumulation, cholesterol uptake and foam-cell formation in a normolipidaemic patient following an inflammatory skin disorder is not clearly understood (3). It has been suggested that increased plasma lipid peroxidation (derived from oxidized low-density lipoprotein) may lead to accumulation of cholesterol in macrophages and formation of foam cells (4).

It is also important to note that allergic skin reactions to black temporary henna tattoos is increasingly reported and is due to the adulteration of henna with PPD, often in high concentration (5). Natural henna (*Lawsonia inermis*), in its pure form, has very low allergen potential.

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Allergic contact dermatitis from rubber bands in 3 postal workers

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Key words: allergic contact dermatitis; mercaptobenzothiazole; occupational; postal worker; rubber bands; thiurams.

Case Reports

Patient no. 1 was a 41-year-old man who worked in the post room of a large department store and who presented with a 4-month history of eczema on the face and on the dorsum of both hands. It was worse on the right hand than the left, with a sharp cut-off at the wrists. Patchy facial involvement on the eyelids and cheeks was noted. Patient no. 2 was a female postal worker, also aged 41, who had a 2-year history of an itchy lichenified rash over the dorsum of her hands and wrists, with some involvement of the face and neck. Patient no. 3 was a 52-year-old postal worker from a sorting office, who had a 2-year history of an active dermatitis involving the dorsal thumb and fingertips of the right hand, left thumb and index finger, as well as the periorbital region. All 3 patients regularly handled letters/parcels with rubber bands in their workplace,

without skin protection, and noted that their dermatitis improved when off work.

Patch testing was performed to the European standard series, a face and light series and pieces of rubber bands. All had a positive reaction (+) at D2 and D4 to thiuram mix 1% pet., to rubber bands and at D4 to mercaptobenzothiazole 2% pet. Patch testing to *N*-isopropyl-*N*-phenyl-4-phenylenediamine 0.1% pet. was negative in all patients.

An occupationally induced allergic contact dermatitis from rubber bands was thought to be the diagnosis in all 3 patients. Their jobs in the post room consisted of sorting and collecting letters/parcels and involved frequent and prolonged contact with rubber bands. They described wearing rubber bands loosely either around the right wrist (patient nos. 1 and 2) or stretched over the fingertips of the right hand (patient no. 3). They did this to save time, as they then used the left hand to put the bands around bundles of envelopes as they came out of a franking machine. They did not wear rubber gloves, either at work or for domestic purposes, and could recall no other regular contact with rubber products. Patient no. 1 and 2's dermatitis has cleared since wearing vinyl gloves and avoiding putting the rubber bands around their wrist, but patient no. 3 had to change his job because of ongoing problems.

Comment

Occupational allergic contact dermatitis from the accelerators, vulcanizers and antioxidants in rubber is well recognized in the plastics and rubber industry, in health care workers and in construction and metal workers (1). Rubber bands worn at work are the most frequent source of sensitization. In general, postal workers have a low incidence of occupational contact dermatitis (2), though contact allergy to rubber fingerstalls has been reported (2). Rubber band dermatitis among postsorters in 1972 was traced to Vulcator FN, a mixture of benzthiazyl disulfide, hexamethylenetetramine and diphenylguanidine (3). There is also a report of rubber band dermatitis in a nurse who stored them around her left wrist (4). Our case series demonstrates that rubber band dermatitis may affect postal workers and that the pattern of con-

tact dermatitis is quite characteristic. The habit of wearing the rubber bands against bare skin for prolonged periods of time should be discouraged, and skin protection helped to relieve symptoms in 2 of our 3 patients.

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Contact dermatitis from peppermint and menthol in a local action transcutaneous patch

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Key words: allergic contact dermatitis; local action transcutaneous patch, medicaments; menthol; peppermint oil.

Case Report

A 60-year-old non-atopic man, with a history of hand eczema and sensitization to tixocortol pivalate, was

referred to our Unit due to the onset of severe eczematous contact dermatitis in the lumbar region, following repeated applications of a local action transcutaneous (LAT) patch with flurbiprofen for lumbar pain. The clinical signs were limited to the application site, and symptoms regressed after suspension of the drug and 1 week's treatment with topical corticosteroid (betamethasone benzoate) and oral antihistamine.

Patch testing with the SIDAPA (Italian Society of Allergological, Occupational and Environmental Dermatology) standard series, the LAT patch as is and the constituents of LAT patch, including flurbiprofen 2% pet., isopropyl myristate 5% pet., polysorbate 80.5% pet., sorbitan sesquileate 20% pet., peppermint oil 2% pet. and menthol 1% pet., gave strong positive reactions to the LAT patch, peppermint oil and menthol and a weak reaction to fragrance mix. Further patch tests with spearmint oil, D-limonene and L-limonene were negative. Photopatch tests were negative.

Discussion

Allergic contact dermatitis from peppermint oil and its principal constituent (menthol) is rare. Isolated cases of patients with oral symptoms after the use of mentholated cigarettes, toothpaste flavours and fragrances have been reported (1).

Although menthol may not be a high-risk sensitizer according to quantitative structure–activity relationships (2), sensitization may still occur in individual cases due to its metabolic transformation into menthone, which has the potential for protein reactivity (1).

Allergic contact dermatitis from transcutaneous patch is well known from nitroglycerin, scopolamine, oestradiol, nicotine and clonidine (3,4), though reactions may also be associated to other substances used in such devices. Peppermint oil and menthol are used in LAT patch with anti-inflammatory activity for their anaesthetic properties and their vasodilatation effects that aid topical drug penetration. Reapplication of the device to the same site, the irritant action of the vehicle or adhesive and the length of occlusion, in association with warm and humid climates, may together promote

sensitization to menthol, otherwise rarely a cause of contact dermatitis when used in products designed for brief contact with the oral mucosa. In contact allergies induced by LAT patch, epicutaneous tests are needed to make a precise identification of the causative agent.

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Contact dermatitis due to cyclohexanone: a further case

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Key words: allergic contact dermatitis; cyclohexanone; fluid therapy bags; occupational; organic solvent; plastics; polyvinyl chloride.

Cyclohexanone (synonyms: anone, hexanone, ketohexamethylene, nadone, pimelic ketone and setone) is a synthetic organic liquid used primarily as an intermediate in the production of nylon. Other minor applications are as an intermediate, additive and solvent in a variety of products. Occupational exposure is possible in some industries. A typical use of this substance is as a polyvinyl chloride (PVC) solvent to facilitate the gluing of materials to plastic. A case of contact allergy to cyclohexanone was described in 1992 (1). We now report a further case.

Case Report

A 43-year-old nonatopic woman presented with a 15-year history of dermatitis on the first and second digits of both hands. Although at first the dermatitis had cleared on holiday but recurred on return to work, and treatment with over-the-counter topical corticosteroids and moisturizers had improved her symptoms, the dermatitis had since begun progressively to worsen.

The patient worked in a factory making PVC fluid therapy bags. At work, she was constantly exposed to cyclohexanone, her dermatitis coinciding with the site of contact with this solvent. Her job consisted of gluing a flux tube onto the PVC fluid therapy bags. Before carrying out this operation, she had to dip the tube into 100% cyclohexanone. The solvent was used to facilitate the gluing of the tube to the bag. Her hands were not protected, as she did not use gloves when handling the cyclohexanone.

Patch testing was carried out to the Italian standard series, a plastics/glues series (Trolab[®], Hermal, Reinbek, Germany), an acrylates series (Chemotechnique Diagnostics, Tygelsjö, Sweden) and cyclohexanone 1 and 10% pet. Reactions were seen to cyclohexanone 1% (D2+/D3++) and cyclohexanone 10% pet. (D2+/D3++). Patch tests with cyclohexanone 1 and 10% pet. in 20 healthy volunteers were negative. Previously informing the patient of the potential hazard and necessary

preventive measures when using cyclohexanone could have avoided her occupational sensitization.

Discussion

Only 1 previous case has been reported in the literature as showing positive patch test reactions to cyclohexanone (1), though since then cyclohexanone has been identified as a potentially sensitizing substance in deodorants (2), and the chemically related cyclohexenone has been described as sensitizing a chemistry student (3).

Our patient's sensitization was considered occupational, because she had been using cyclohexanone for 15 years at her workplace to facilitate the gluing of the tube to the fluid therapy bag; the onset of her hand eczema and her use of cyclohexanone closely coincided. The cause of the contact allergy was her inadequate hand protection. Our patient has now been advised to avoid handling cyclohexanone without protective gloves.

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