

CONTACT POINTS

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Palmar dermatitis due to a rubber escalator railing

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Key words: black rubber; hand dermatitis; *N*-cyclohexyl-*N*-phenyl-4-phenylenediamine; *N*-isopropyl-*N*-phenyl-4-phenylenediamine; *N*, *N*-diphenyl-4-phenylenediamine.

Case Report

A 49-year-old non-atopic female patient presented with dermatitis affecting the palmar surface of the fingers of the right hand (Fig. 1). The current dermatitis had been present for several weeks and was quite pruritic. The patient reported that a similar dermatitis had occurred during childhood but had not been present for over 30 years.

During the initial episodes of dermatitis during childhood, the patient had suspected that the rash was

related to touching escalator hand railings (EHRs). She had avoided EHRs since that time and had not had another episode of dermatitis. She did not recall having touched other items made of black rubber, such as tires. The current episode had started 2 days after going to a shopping mall. Retrospectively, the patient did recall resting her hand on an EHR while at the shopping mall, and she suspected that this was the cause of the outbreak.

Patch testing with a modified NACDG standard series, rubber series, plastic series and botanical series revealed a 3+ reaction to black rubber mix; 2+ reactions to balsam of peru, neomycin, bacitracin, *N*-isopropyl-*N*-phenyl-4-phenylenediamine (IPPD), *N*-cyclohexyl-*N*-phenyl-4-phenylenediamine (CPPD) and *N*,*N*-diphenyl-4-phenylenediamine (DPPD) and a 1+ reaction to *p*-phenylenediamine (PPD), all read at 72 hr.

The major North American manufacturer of EHRs was contacted. They confirmed that IPPD constitutes 0.5% of the final rubber compound used in their EHRs and that DPPD constitutes 1.0% of the final rubber compound. They further confirmed that there is no coating over the raw rubber in the final product that consumers contact.

The patient was instructed to avoid touching black rubber items and to avoid fragrance-containing products. Her dermatitis resolved over the next several weeks and did not recur.

Discussion

Our patient suspected that contact with an EHR caused her unilateral palmar dermatitis. Patch testing revealed sensitivity to PPD-related antioxidants used in black rubber, and a manufacturer of EHRs confirmed that these antioxidants are present in the finished product. Overall, this provides strong evidence that contact with an EHR caused the unilateral palmar hand dermatitis in our patient. This is a novel route of relevant exposure to PPD-related antioxidants that has been reported in one other patient (1).

IPPD has been identified as a contact allergen in many different products made of black rubber, with tires probably representing the major reported relevant exposure (2, 3). Other reported exposures include orthopaedic braces and bandages, scuba equipment, boots and shoes, and eyelash curlers (4–8).

It is somewhat surprising that the brief contact which occurred between the patient's hand and the EHR allowed sufficient transfer of allergen to the skin to elicit contact dermatitis. However, these antioxidants are easily released from the surface of black rubber objects, especially when heat and/or friction is present, and therefore there may have been significant transfer of allergen (9).

In conclusion, we present a unique route of exposure to antioxidants used in black rubber. Patients with palmar hand dermatitis who are sensitive to these chemicals should be warned of this potential route of exposure.

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Fig. 1. Dermatitis of the palmar aspects of the fingers of the right hand.

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Allergic contact dermatitis to ruscogenins

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Key words: allergic contact dermatitis; butcher's broom; cutaneous adverse drug reaction; ruscogenins.

Butcher's broom (*Ruscus aculeatus*) is an evergreen shrub, native to Mediterranean countries, which has been used for nearly 2000 years as a laxative and diuretic agent; this plant contains a mixture of saponins, such as ruscogenin and neurusruscogenin, which are the primary active principles, as well as fatty acids, such as flavonoids, sterols and benzofuranes (1).

We report a patient who developed contact dermatitis after application of 2 different creams containing ruscogenins, an uncommon adverse effect associated with this product.

Case Report

A 34-year-old Caucasian woman presented pruritic erythematous lesions following the local application of an antihaemorrhoidal cream (Proctolog[®]). She developed a cutaneous rash consisting of eczematous plaques located on the perianal region which cleared within several days following Proctolog[®] withdrawal. Several months later, the patient had a generalized eczematous cutaneous eruption, 1 day after topical application of an anticellulite retinol modelling RoC[®]). Patch testing with these 2 creams was performed, showing positive results for both of them. Patch tests with individual ingredients of the creams revealed a positive reaction to ruscogenins (+ + +), which was present in both and were negative for the remaining of the components. All of these patch tests were negative in 20 voluntary controls.

Discussion

Butcher's broom has a vasoconstrictive effect due to its saponins ruscogenin and neurusruscogenin, which may improve capillary flow and vascular tone (2–4).

Vasoconstriction following oral or topical use of Butcher's broom extracts has improved symptoms associated with venous insufficiency and haemorrhoids (2, 4, 5).

Butcher's broom has been considered as a safe therapy but rarely may cause mild-to-moderate gastrointestinal disturbances after oral intake as commercial capsules (2). Contact

dermatitis to ruscogenins is a very rare adverse effect which has occasionally been reported in patients treated with ruscogenins which can be contained in different topical medications (6).

Although contact dermatitis to ruscogenins is a rare event, we consider it is probably underreported and emphasize the importance of taking into account this possibility due to the widespread use of numerous topical preparations containing this product. Thus, further studies would be required to test *Ruscus* allergenicity.

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Occupational allergy in office workers caused by the antifouling desk mat

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Key words: 2, 3, 5, 6-tetrachloro-4(methylsulphonyl)pyridine (TCMSP); antifouling; antimicrobial agent; contact dermatitis; desk mat.

We report the 2 cases of patients with contact dermatitis caused by an antifouling desk mat.

Case Report

Case 1

A 44-year-old man, without any personal or familiar history of atopic dermatitis, was admitted to our department for his severe erythema and papules on his right arm. He was an office worker, and since he developed his symptoms after exchanging the desk mat for a smaller and 'cleaner' one, he was patch tested to the Japanese standard series, papers and the desk mat. The patch testing (PT) and reading were carried out according to the International Contact Dermatitis Research Group recommendations using Finn Chambers® (Epitest, Helsinki, Finland) and Scanpor® (Norgesplaster A/S, Oslo, Norway) tape.

The PT with the desk mat was strongly positive (++++) at D2 and D3. According to the manufacturer, the desk mat was made of polyvinyl chloride (base material), plasticizer, stabilizer and 2,3,5,6-tetrachloro-4(methylsulphonyl)pyridine (TCMSP) as an antimicrobial agent. The PT with each constituent revealed a +++ reaction to TCMSP (1% olive oil). 5 normal controls were negative to TCMSP (1%, 5%, 10% and 20% olive oil).

Case 2

A 26-year-old woman with present history of atopic dermatitis was admitted to our department for her persistent erythema and papules on her arms. There were also many papules, erythema and scratch marks on all extremities. Moisturizer and topical steroid improved her papules and erythema of asteatotic skin without erythema of her both lateral side of forearms. She was an office worker and used to handle a computer. Because of her limited erythematous lesion, she was patch tested with her desk mat. The PT showed strongly positive (+ >+ >+) at D2 and D3; furthermore, the stabilizer (epoxidized soy bean oil) and TCMSP (1% olive

oil) also showed positive reactions. Her erythema improved after changing her desk mat.

Discussion

TCMSP is one of the pyridine compounds. Pyridine is used for many medical supplies and surfactants for its solvency to organic compound. There are some reports of the contact dermatitis of pyridine compound including TCMSP (1–4). TCMSP was used for as a pesticide and for antifouling. Desk mat manufacturer did not notice that TCMSP was used as the antimicrobial agent nor it may cause the contact dermatitis. In 2004, advisory committee on pesticides in UK indicated that TCMSP was both a skin irritant and severe eye irritant (5). After our reports to the manufacturer, they stopped using TCMSP for the antifouling desk mat. Suffering from various infectious diseases, there are many antifouling materials in Japan. Our 2 cases can be regarded as harmful effect of the climate.

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Glove allergy due to 1,3-diphenylguanidine

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Key words: diphenylguanidine; gloves; hand dermatitis; occupational contact dermatitis; rubber; thiuram.

Chemicals used in rubber gloves can play an important role in the development of occupational and non-occupational hand dermatitis (1). In this study, we have evaluated 7 operation-room employees who developed work-related complaints in the same recent period.

Subjects and Methods

Between April and June 2005, there was a marked increase in the number of operation-room employees ($n = 5$) who were referred to our department with possible work-related allergic hand dermatitis. Diagnostic patch tests were performed according to the characteristics of the complaints. For patch testing, the European Standard patch test allergens, rubber allergens (Trolab® Hermal patch test allergens, Reinbek, Germany) and patients' own products (i.e. gloves and cosmetics) were used.

Results

The characteristics of patients are summarized in Table 1. 4 of these patients showed positive patch test reaction to 1,3-diphenylguanidine (Fig. 1). All patients with positive patch test results for 1,3-diphenylguanidine had been using gloves containing this rubber additive.

Discussion

In our patient group, the most frequent cause of allergic contact dermatitis related to rubber chemicals was 1,3-diphenylguanidine. This is in contrast to most studies, showing that thiuram mix and carba mix are the leading contact sensitizers in the case of rubber-related complaints (2, 3). 1,3-diphenylguanidine is used more

Table 1. Characteristics of hospital employees tested with gloves between April and June 2005

Patient (age, sex)	Occupation	Symptoms	Atopy	Patch +	Patch ir.	Prick +
Patient 1 (53, male)	Surgeon	Hand dermatitis	+	Thiuram	Balsam of Peru	Not performed
Patient 2 (31, male)	Surgeon	Hand dermatitis	–	Thiuram, CPPD, DPG	Cobalt, balsam of peru, Euxyl K400, BIT	Not performed
Patient 3 (43, male)	Medical assistant	Hand dermatitis	+	DPG	No irritation	Not performed
Patient 4 (56, male)	Surgeon	Hand dermatitis	+	DPG	Cobalt, wood tar	Not performed
Patient 5 (35, female)	Surgeon	Hand dermatitis	–	DPG	Thiuram	Not performed

BIT = 1,2-benzisothiazolin-3-one; Cobalt = cobalt chloride; CPPD = N-cyclohexyl-N-phenyl-4-phenylenediamine; DPG = 1,3-diphenylguanidine; euxyl K400 = methylidibromoglutaronitrile/phenoxyetanol; patch + = positive patch test; patch ir. = irritation reaction on the patch test site; prick + = positive prick test; thiuram = thiuram mix.

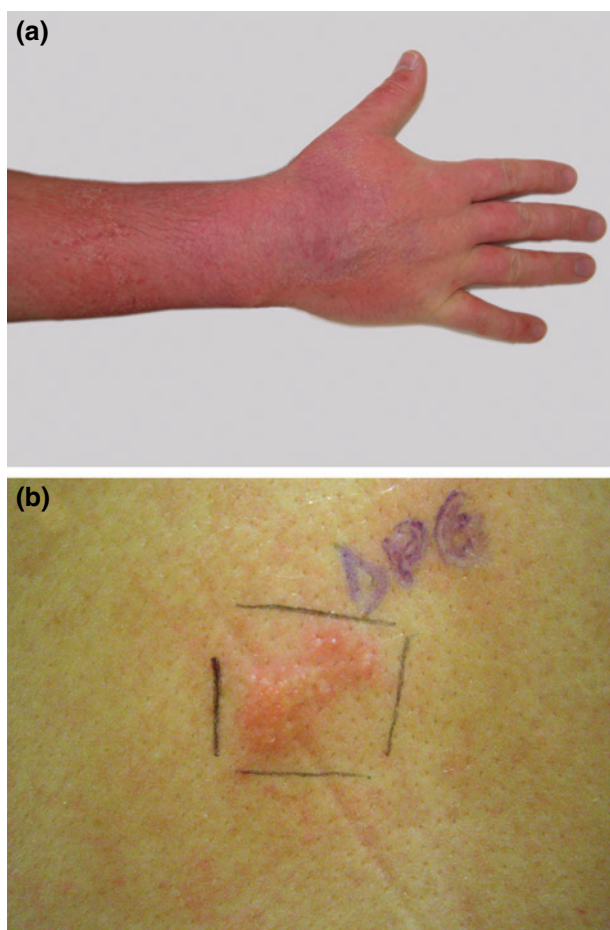


Fig. 1. (a) Hand dermatitis in a surgeon; (b) positive patch test reaction to 1,3-diphenylguanidine.

in industrial than in consumer rubber products which might explain low sensitivity found in the earlier studies (1). Since 2001, there is a gradual decrease in the use of latex gloves in our hospital as part of the hospital policy is to avoid latex exposure. Synthetic gloves which replaced the latex gloves contain 1,3-diphenylguanidine. This could explain the increased incidence of 1,3-diphenylguanidine hypersensitivity in our patient group. However, as the number of patients that were

tested was quite low, it is premature to reach any definite conclusion.

Our study results show that using so-called hypoallergenic gloves might result in the development of allergic contact dermatitis due to other less known allergenic rubber additives, e.g. 1,3-diphenylguanidine.

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Isolated late asthmatic reaction after exposure to ammonium persulfate in a hairdresser

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Key words: ammonium persulfate; bronchial challenge; hairdresser; occupational asthma.

Persulfate salts are widely used as hair bleaches and are known as potent allergens to cause occupational asthma (1) and both contact urticaria and chronic eczema (2). In a Swedish study, those hairdressers who performed hair-bleaching treatments frequently had a slightly higher incidence of asthma (3). Diagnosis can be assessed by skin prick tests, which can be assured by occupational-type exposure tests. Besides immediate-type reactions, few publications describe also late reactions (4, 5) where patch testing produced a delayed cutaneous reaction. Although by now no specific antibodies against persulfates are reported, an immunological mechanism is assumed.

A 26-year-old female hairdresser, referred to our institute for a medical expert opinion, reported work-related sneezing and shortness of breath about 3 h after starting work, while symptoms disappeared on weekends and during holidays. She worked 8 years without any complaints but developed symptoms 6 months before diagnosis, so that she had to stop working in the hairdresser's shop 7 months prior to examination.

Skin prick tests were performed with a battery of 20 environmental allergens and ammonium persulfate (1 mg/ml, Sigma, Deisenhofen, Germany) diluted in sodium chloride 0.9% and phenol 0.4%. A positive reaction was defined as a wheal diameter of ≥ 3 mm of the negative control. Standard contactants and a battery of hairdressing agents (including ammonium persulfate 2.5%, HAL Allergie, Düsseldorf, Germany) were patch tested. Spirometry was performed with Masterlab (Viasys, Würzburg, Germany) according to the American Thoracic Society recommendations (6). We performed a bronchial challenge with ammonium persulfate using a dosimeter (APSpro, Viasys) with a DeVilbiss 646 nebulizer containing phosphate buffer-diluted ammonium persulfate at increasing doses of 0.0004 mg, 0.0045 mg, 0.045 mg and 0.45 mg (7).

The patient showed airway hyperresponsiveness ($PD_{20}FEV_1$ 214 μ g methacholine). Skin prick tests revealed sensitizations to house dust mites, tree and grass mixtures but not to ammonium persulfate. Patch tests yielded positive responses after 24 h, 48 h and 72 h to ammonium persulfate (erythema and vesicle formation), *p*-phenylenediamine (erythema

and vesicle formation), cobalt chloride (erythema and vesicle formation), nickel sulfate (erythema and vesicle formation) and after 48 h and 72 h to glycerol monothioglycolate (erythema and papule formation). Total IgE was 133 kU/l, differential leucocyte count showed 10% eosinophils. There was no immediate reaction after bronchial challenge with ammonium persulfate (cumulative dose: 0.5 mg ammonium persulfate); however, 210 min later, she reported shortness of breath, nasal obstruction and cough. FEV_1 fell to 65% baseline, specific airway resistance increased from 1.26 to 2.76 kPa*s (kPa*s = kPa times s = kPa $\times$ s). Furthermore, a significant reduction of $PD_{20}FEV_1$ from 214 μ g (baseline) to 85 μ g 24 h after challenge with ammonium persulfate was measured.

Persulfate salts may act as allergic sensitizers while the mechanism is unknown. In the literature, various cases of persulfate-induced obstructive airway disease are reported, but to our knowledge up to now, an isolated late asthmatic reaction in a hairdresser was poorly documented (e.g. significant reduction of $PD_{20}FEV_1$ by serial methacholine testing). We present a case where the positive patch testing, the isolated late reaction in bronchial challenge as well as the increase of bronchial hyperresponsiveness after the specific challenge indicate that ammonium persulfate may induce immunological non-immediate reactions. The presented case points to the relevance of cutaneous contact sensitizations for airway diseases in some cases.

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Occupational airborne contact dermatitis from pristinamycin

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Key words: contact dermatitis, occupational, pristinamycin.

Pristinamycin is an antibiotic of the streptogramin group. This drug has 2 components, a macrocyclic lactone called factor IIA that acts mainly against *Staphylococci* and the second component named factor IA which increases its effect, for this reason is called synergists (1).

Antibacterial activity includes *Staphylococcus aureus* and other antibiotic resistant strains as well as *Streptococcus pyogenes* and *Streptococcus pneumoniae*.

Barbaud et al. (2) described various cutaneous side reactions due to pristinamycin in 29 patients. Those with cutaneous reactions were due to ingestion of the medicament, presenting as maculopapular eruption,

erythroderma, angioedema and Stevens–Johnson syndrome. To confirm the relation cause-effect, patch testing with pristinamycin 10% in aq. was done, showing positive reaction in 69% of the cases.

Previously, Michel et al. (3) reported eczematous eruptions from pristinamycin; however, allergic contact dermatitis from this antibiotic was first described by Pillette et al. (4); after this publication we have not found any other reported cases.

The present communication deals with a case of occupational allergic contact dermatitis from pristinamycin.

Case Report

A 23-year-old man, working for a pharmaceutical company for the past year, within the department of granulation and compression of the medication, was exposed to powder of various substances used in the manufacture of different medicaments, among them active ingredients: pristinamycin, metronidazole, levothyroxine, ketoprofen, promethazine, levomepromazine, trimethoprim, hydrochlorothiazide and chlorpromazine. Excipients included maize and wheat starch, avicel, magnesium stearate and polyvinylpyrrolidone.

He used rubber mask and gloves as protective equipment.

The patient presented with pruritic dermatitis for the past 8 months, involving the neck, eyelids and cheeks, characterized by erythema, oedema and scales. Skin lesions improved during holidays and with topical corticosteroids, relapsing when reassuming work.

Patch testing with the standard series (Grupo Español Investigación Dermatitis por Contacto), medicaments and fragrance series (Chemotechnique Diagnostics) were all negative.

When dermatitis cleared, the patient returned to work for 3 months. In that period of time the patient still presented outbreaks, involving eyelids, nasal folds, neck and forearms, apparently related to pristinamycin powder exposure.

After that, new tests were carried out, open tests with pristinamycin 1%, 5% y 10% in aq./alc. equal volume, showing negative results after 20 min.

Patch testing using the same concentrations showed positive reactions at days 2 and 4 (Table 1 and Fig. 1).

Table 1. Patch testing results showing positive reactions to pristinamycin in several concentrations of the drug

Series	Day 2	Day 4
Standard (GEIDC ^a)	–	–
Medicaments ^a	–	–
Fragrances ^a	–	–
Pristinamycin		
1% aq./alc.	+	+
5% aq./alc.	++	++
10% aq./alc.	++	++

^aChemotechnique Diagnostics AB.

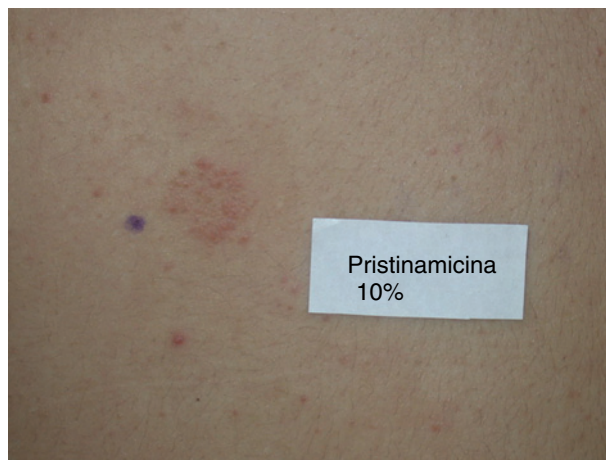


Fig. 1. Positive reaction to pristinamycin 10%, day 4.

Control tests in 10 patients were negative.

We did not make patch testing with separate ingredients of pristinamycin (factor IA and factor IIA), because they were not available.

Discussion

The family of macrocyclic antibiotics comprises pristinamycin and virginiamycin, having both synergistic properties. Both antibiotics contain two factors, factors M and S for virginiamycin and factors IIA and IA for pristinamycin.

Factors M and IIA are closely related and seem to be the main sensitizers. This relationship seems to be responsible for cross reactivity between both drugs (3).

Michel et al. reported 3 patients with previous topical sensitization to virginiamycin after oral ingestion of pristinamycin, some of them developed widespread and others generalized eczematous-like eruption. The common allergenic group between these two medicaments was demonstrated through positive patch test reactions to pristinamycin and virginiamycin.

The only case of allergic contact dermatitis to pristinamycin, which we have knowledge was the one reported by Pillette et al. in 1990 (4) in a patient who was previously sensitized to virginiamycin.

The present case did not have previous history of virginiamycin sensitization and was exposed to pristinamycin in the working environment, so we considered the possibility of primary sensitization.

The patient has been clear from skin lesions since he changed job post.

Patch testing with 5% and 10% concentrations, as suggested by other studies (2,5), was positive; however, using lower concentrations, (1%) produced also positive reaction, alcohol and water 50% were used as vehicle.

Before patch testing, open tests were done in the forearm. After 20 min there was a negative reaction, which excluded the possibility of immediate reaction.

In workers exposed to substances with sensitizing potential as in this case, it is necessary to comply with adequate protective measures. Industrial hygiene improvement is also advisable to avoid occurrence of new cases.

Patients already sensitized to topical virginiamycin must prevent ingestion of pristinamycin to avoid systemic contact dermatitis.

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Occupational allergic contact dermatitis from hydrangea

Contact Dermatitis 2006; 54: 65–66

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Key words: allergic contact dermatitis, hydrangea, hydrangenol, occupational, plant grower

Hydrangeas are widely popular as pot and garden plants and, since very recently, are frequently used as cut flower in floral arrangements. Allergic contact dermatitis from hydrangea

(hortensia) has been found in people who are exposed to the plant occupationally and in an amateur flower arranger. Several cases in which contact dermatitis was acquired occupationally have been reported previously although infrequently (1–7). Here, we report on a case of a grower, presenting with hand and facial dermatitis, who is cultivating hydrangeas as cut flowers.

Case Report

A 56-year-old woman was referred with an itchy, persistent hand and facial dermatitis, predating presentation by more than 1 years. She and her husband had been plant growers for 32 years. For 2 years they cultivated hydrangeas as cut flowers. Therefore, they bring the plants in bloom and cut the flowers. She had to remove the leaves and bundle the flowers. Direct contact with sap of the plant was not systematically avoided, but occasionally she was wearing latex-free gloves. The condition improved after she discontinued her work but recurred on return to work. Her husband, who worked in the nursery as well and a neighbour hydrangea grower, showed the same symptoms of hand eczema.

Examination of our patient showed hand dermatitis with erythema, vesicles and scaling of the fingers and palms and in lesser degree dermatitis around the eyes and the mouth.

Patch tests were performed with the European standard series, a pesticide used in the nursery and a leaf of *Hydrangea macrophylla*, and left occlusive for 48 h. The tests were read on day 2 (D2) and D3. Positive reactions were obtained with a leaf of the hydrangea (D2: ++ and D3: ++) and with nickel sulfate (D2: ++ and D3: ++), confirming her history that contact with hydrangea and cheap metal earrings caused eczema, the latter being only relevant for the past and not for the present symptoms.

We advised the patient to use protective vinyl gloves with cotton lining or undergloves every time during her work when handling the plants. Furthermore, the importance to keep the workbench as clean as possible and to avoid accidental hand–face contact with hands that are contaminated with the sap of the plant were emphasized. The eczematous lesions strongly improved after the patient followed

the advice, but the symptoms returned when, in high season, she failed to wear vinyl gloves systematically.

Comment

Hydrangea is a popular garden and indoor plant and originates from North, Central and South America, China and Japan. In 1790, the plant was imported to Europe from Japan. The family Hydrangeaceae comprises about 25 species. Among these, the 2 most popular species in the Netherlands are *H. macrophylla* (Thunb.) *Seringe* subspecies *macrophylla* (8). In 1982, the responsible allergen in hortensia was isolated (1) and identified as hydrangenol (3,4-dihydro-8-hydroxy-3-[4-hydroxyphenyl]-isocoumarin (9) (Fig. 1). Interestingly, hydrangenol is not present in all hydrangea varieties (10).

For years, hydrangenol was thought to be a weak allergen, requiring prolonged contact before contact dermatitis is eventually evoked. However, in 1991, the strong sensitizing properties of hydrangenol were proven experimentally in guinea pigs (11). Still, contact dermatitis from hydrangea requires intensive contact with hydrangea before it will appear, possibly because hydrangenol might be found in different concentrations in different specimens, in different countries and in different seasons (11). Furthermore, there is frequently contact with the plant itself, but there is hardly any contact with the sap of the plant, which causes contact dermatitis more easily. There are no known cross-reactions to other plants (8).

A patch test concentration of 0.1% of the neat hydrangenol or patch testing with the leaf as we did in this patient, is recommended (11).

Most patients can continue their occupational activities, using appropriate protection of the hands (4).

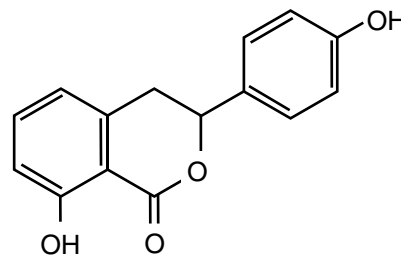


Fig. 1. Chemical structure of hydrangenol.

Since the change of use from hydrangea as only a garden plant to hydrangea as a cut flower, contact dermatitis of the hands is not only found in growers who cultivate hydrangeas as garden or indoor plant. Especially at risk of developing contact dermatitis are growers who cultivate hydrangeas as cut flowers, flower arrangers and florists. By cultivating and using hydrangea as a cut flower, there will be prolonged and more frequently contact with the sap of the plant, and therefore it is expected that more cases of hydrangea-caused hand eczema will be seen in growers and florists in the future.

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Contact allergy to disperse dyes in plastic spectacle frames

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Key words: abietic acid; colophony; disperse dyes; *p*-phenylenediamine; plastic; spectacle frames.

Case Report

A 51-year-old man was referred to our department for patch testing by his general practitioner. He had developed a dermatitic reaction around his ears after having replacement plastic tips applied to his glasses, applying sticking plaster over the tips seemed to make the reaction less severe. He recalled having a previous problem with plastic spectacle frames in the past. He was patch tested to the standard, plastic, formaldehyde, epoxy, acrylate adhesive and isocyanate series. On D2, he

had a positive reaction to *p*-phenylenediamine; he had never coloured his hair or had a henna tattoo, and this raised the possibility that he may be allergic to other dye substances, so he was patch tested to a textile series. His positive reactions are summarized in Table 1. We wrote to the optician who supplied the spectacles, to obtain more information on the constituents of the spectacle frames. The optician was able to supply us with a list of chemicals likely to be found in the spectacle frame components, including colophony, abietic acid, *p*-phenylenediamine and several disperse dyes but could not give a definitive list as 'Many frames these days are from a Chinese or far Eastern source and are imported via an agent... it is likely that the original source would have component parts such as pads and tips supplied by yet another manufacturer.' We counselled the patient that as it appeared impossible to identify constituents of any earpiece, he should avoid spectacle frames with any plastic component where possible.

Discussion

Although there have been several reports of allergic contact dermatitis to materials in spectacle frames, it is often difficult to determine whether the culprit allergen is a component of the frame, as the source of the frame is unclear, and manufacturers are unwilling to disclose the chemicals involved (1). Components of spectacle frames, which have been identified as causing allergic contact

Table 1. Positive patch tests results

		Day 2	Day 4
Colophonium	20% pet.	++	++
Turpentine oil	10% pet.	+	–
Abietic acid	10% pet.	+	–
<i>p</i> -Phenylenediamine	1% pet.	++	++
Aminoazobenzene	0.25% pet.	+++	NR
Disperse Orange 3	1% pet.	++	NR
Disperse Yellow 3	1% pet.	++	NR
Disperse Red 1	1% pet.	++	NR
Disperse Red 17	1% pet.	++	NR
Disperse Blue 3	1% pet.	++	NR
Disperse Blue 35	1% pet.	+	NR
Disperse Blue 124	1% pet.	+	NR
Disperse Blue 153	1% pet.	+	NR
Disperse Brown 1	1% pet.	+	NR
Disperse Blue 106	1% pet.	+	NR
Direct Orange 34	5% pet.	++	NR
4-aminophenol	1% pet.	+	NR

NR = not read.

dermatitis include metals, plastics, solvents, antioxidants, dyes, plasticizers, UV stabilisers and waxes. *p*-Phenylenediamine (2), Solvent Red 179 (3), Solvent Orange 60 (4) and anthraquinone dyes (5) in spectacle frames have all been reported to cause contact dermatitis when used to colour plastic spectacle frames (2), but the other dyes, our patient reacted to, have not. The earliest review of contact dermatitis due to spectacle frames (6) stated that dyes were found throughout the plastic, but it seems that they are now more commonly used in surface dyeing of frames (7). It is impossible to tell from available information and without destructive analysis, whether the dyes are still present in the spectacle frames after manufacture, and, therefore, whether they are able to cause an allergic contact dermatitis. It is possible that the positive reactions to the dyes actually indicate a cross-reaction to another unidentified dye, and it seems sensible to test patients with a suspected allergy to a range of dyes.

Our patient did not report any previous problems with colophony, although he had used sticking plaster to cover the tips of his spectacles. Colophony is used in polishes for spectacle frames and has been reported as causing allergic contact dermatitis in this setting (8), although it appears that its use has declined (7), and so it is difficult to establish the relevance in our patient.

Due to the very limited information available on the constituents of spectacle frames from the industry, it is often difficult to counsel patients satisfactorily if they do develop allergic contact dermatitis. We have reported the case of a patient who developed an allergic contact dermatitis to several potential components of his spectacle frames including several disperse dyes not previously reported to cause contact allergy in this context.

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Allergic contact dermatitis due to manganese in an aluminium alloy

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Key words: Aluminium; Manganese; metal; Occupational Contact Dermatitis

Case Report

We present a case of a male patient, 39 years old. He has been working for over 20 years making blind rails, handling aluminium.

The patient showed erythematous and scaly itching lesions involving dorsum of fingers and palm of his right hand, with fissure, since 6 years ago,

with periodic outbreaks of worsening. He began to use gloves after lesions appeared. He noticed that these symptoms improved when he was on holidays. Lesions also used to clear after topical application of tacrolimus at 0.1% in ointment. He denied using any kind of suspicious contactants (glue, paints and clothes) but aluminium.

The initial clinical diagnosis was allergic contact dermatitis. We performed patch test, skin biopsy and fungal cultures.

We used the European standard patch test series (TRUEtest[®], ALK-Abelló, Madrid) and metals series (Trolab[®]). Patient was negative for nickel sulfate, cobalt chloride, aluminium chloride, aluminium, potassium dichromate, zirconium oxide, ammonium heptamolibdate, titanium oxide, copper sulfate and methylnmethacrylate. We only recorded a positive result for manganese (+ +/+ + + +, following International Contact Dermatitis Research Group (ICDRG) guidelines); we checked the results after 48 and 96 hr, and it was strongly positive since the first visit. The product we used for patch testing was manganese chloride, at a concentration of 5% in Vaseline, being part of Trolab[®] metal series; manganese is a very reactive element, so it is difficult to find it as its naïve form and it is usual to work with its salts. On the other hand, our patient had negative results against several products containing chlorine, so the positiveness must be due to manganese.

Skin biopsy was compatible with the clinical diagnosis, and cultures were negative.

In a further visit, the patient confirmed us that manganese was a component of aluminium alloy he used to work with, in a concentration of 2%.

Discussion

Manganese is a transitional metal (group 7 of the periodic table of the elements). It is usually found as oxide in nature, due to its great affinity with oxygen; so it is rarely found as its naïve form. It is used in non-tempered alloys of aluminium. The more frequent cutaneous pathology associated with aluminium are granulomatous processes after vaccination (1) or using deodorants (2).

Manganese has a limited potential to cause allergic contact dermatitis (3), and there are only a few clinical cases reported in literature, most of them related to dental prosthesis (4). Some

authors consider that manganese is not the main responsible factor of these cases reported and suggest some alternative theories, like nickel impurity in patch test preparations or concomitant reactions among transition metals of the same period or the same group of the periodic table of the elements (5). It seems that sensitivity to metals of the same group is negligible, while sensitivity to metals of the same period is frequent, but only for nickel and chrome (6, 7).

In the case of our patient we recorded a negative result for nickel, so the theory of concomitant reaction is not possible. Furthermore, positive reaction to manganese had clinical relevance, because our patient worked with an aluminium alloy which contained manganese.

Conclusion

Considering the clear implication of manganese in our patient, we think that this metal should be a part of every metal series used in patch testing.

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An audit of knowledge and application of skin protective measures in hairdressers in Dundee

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Key words: contact dermatitis; hairdressers; latex.

Occupational contact hand dermatitis, both irritant and allergic, is a significant problem among hairdressers, atopics being at particular risk (1, 2). There is recognized to be a shortfall in preemployment education with regard to skin care and protective measures (3).

We decided to look at current knowledge of and application of skin care measures in Dundee hairdressers, taking the premise that all hairdressers should have received education during training.

Materials and Methods

With Ethical Committee approval, hairdressers in Dundee, UK, were recruited to the study by introductory letter. Those who agreed to participate were asked to complete a short questionnaire based on a modified version of the Nordic Occupational Skin Questionnaire (NOSQ) (4). In particular, the questionnaire focused on education received about skin care, protective measures employed and past or present history of hand dermatitis.

Results

72 completed questionnaires were received from 65 of 79 salons approached. 63 participants were female, 9 male, average age 32 years (range 16–60 years). 61% had features of atopy. 58% were found to be suffering from symptoms of

contact hand and/or forearm eczema, one-third of whom had a previous history of such a complaint.

12 of 49 individuals were not informed about skin care at college, and only 60% of those surveyed had received such advice from their employer. 15% had received no advice whatever.

While 94% were aware that they should use moisturizers liberally, only 67% applied these in the work place and only 3 individuals used a soap substitute for hand washing.

47% knew that they should wear gloves for shampooing, but only 26% actually wore them.

Of those suffering from symptoms, gloves were worn for colouring by 98%, bleaching 93% and perming 81% but only by 26% for shampooing, 40% for dishes and 17% for gardening. None of the gloves worn for perming were suitable to prevent penetration of chemical through the skin.

66% of those wearing gloves for perming wore powdered latex gloves. 10% of participants were aware that they were allergic to latex.

Discussion

Our study revealed suboptimal education both preemployment and 'in-service', with 15% having received no advice about hand care whatever.

As others have found (3), there was poor application of knowledge into practice, e.g. while 47% knew that they should wear gloves for shampooing, only 26% actually used them.

Gloves used for perming were inappropriate, allowing for penetration of chemical into the glove, with the possible risk of both contact irritant dermatitis and sensitization leading to contact allergic dermatitis.

Latex allergy is a significant health issue, as symptoms can include angioedema, bronchospasm and anaphylaxis (5). Of particular concern in our study was that two-thirds of individuals wearing gloves for perming wore powdered latex gloves – a significant potential risk not only for the employee but also for a latex-allergic client.

In an attempt to improve education of trainee hairdressers in our locality, we are devising an educational module on hand dermatitis and skin care to be used by the college.

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Occupational contact dermatitis to Mikrobac Extra™ in 8 hospital cleaners

Contact Dermatitis 2006; 54: 69–70

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Key words: disinfectants; healthcare workers; Mikrobac; occupational contact dermatitis.

Between March and December 2004, we observed 8 hospital cleaners with an allergic contact dermatitis to a surface-cleaning product used in their work: Mikrobac Extra™ (Bode Chemie GmbH, Hamburg, Germany). The employees presented

with eczematous areas on their hands and forearms and in 1 case there was also involvement of the face and eyelids. Mikrobac Extra™ was introduced at the Geneva University Hospital in Autumn 2003 for the cleaning and disinfection of surfaces and bathrooms at a dilution of 0.5–2.5% in water. It is recommended by the producer for its bactericide, fungicide, tuberculocide and viral inactivation properties.

Case Reports

Patch testing with the European standard series, a preservative series (Hermal) and Mikrobac Extra™ 1% in water was undertaken followed by patch testing with the 12 individual ingredients of Mikrobac Extra™ (Table 1).

All 8 individuals reacted to Mikrobac Extra™ (1% aq.) at 4D. 7 reacted to PEG-5 cocamine (0.5% aq.) and 6 to benzalkonium chloride (BC) (0.1% aq.) provided by the company. The only individual who did not react to PEG-5 cocamine reacted ++ to propylene glycol 2%. 10 controls were negative to Mikrobac Extra 1% aq. and PEG-5 cocamine 0.5% aq. 1 individual reacted + to BC (0.1% aq.) in the preservative series and 3 to cetalkonium chloride (0.1% pet). In all subjects that were allergic to Mikrobac Extra™ and its ingredients PEG-5 cocamine and/or BC, avoiding the product resulted in complete clearance of their dermatitis. 2 patients were re-exposed to the product and presented a new flare of acute eczematous lesions affecting the face and neck.

Discussion

The PEG cocamines are polyethylene glycol ethers of the primary aliphatic amine derived from coconut oil (1). These ingredients are used in cosmetic and cleansing products as surfactants that act as emulsifying and solubilizing agents. Very little data are available on its toxicity, and we found no previous reports of allergic or irritant contact dermatitis to PEG-5-cocamine. Irritant contact dermatitis to 0.5% PEG 5 cocamine appears unlikely since 10 controls were negative when tested, and this concentration is lower than the 1% proposed by De Groot (2).

Benzalkonium chloride is widely used as an antiseptic and preservative, it is a rare skin sensitizer and causes mostly irritant dermatitis (3), although health employees and patients are commonly exposed to it (4). It is striking that 6 patients reacted to patch testing to BC provided by the company whereas only 1 reacted to the BC preparation in our preservative series despite the fact that both were diluted to 0.1% aq. This observation may be due to the misleading nomenclature of BC and its homologues or due to labelling or quality errors. BC is a mixture of alkyl dimethylbenzyl ammonium chlorides; the hydrophobic alkyl residues are paraffinic chains with 8–18 carbon atoms (Fig. 1). Because of nomenclature misunderstandings, benzalkonium homologues, despite differing from the alkyl group, are called inappropriately 'BC'. We do not know the chemical structure of the 'BC' present in Mikrobac Extra™, but we suspect it is a sensitizing benzalkonium homologue. Further investigations are ongoing.

The three positive reactions to cetalkonium chloride 0.1% pet. in this context are not unremarkable. In fact, the chemical structure of cetalkonium chloride and BC differ only by the presence of a cetyl instead of an aryl group (Fig. 2) and it is possible that the reactions observed are cross reactivity.

Because of the concern of infection control in hospitals, and the need to control contamination, hospital cleaners may be increasingly exposed to new cleansing products (5, 6). This small 'epidemic' of occupational contact dermatitis to Mikrobac Extra™ highlights that we should be particularly attentive to the outbreak of contact allergies in this important group of health care workers.

Acknowledgements

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Table 1. Patch test results from the Standard series, Preservative series and Mikrobac Extra™ 1% in water followed by patch testing with the 12 individual ingredients of Mikrobac Extra™.

Patient	Sex	Age	Atopy	Standard series	Preservative series	Mikrobac Extra™ 1% aq.	Ingredients of Mikrobac Extra™
1	Female	28	No	PPD 1% pet. + +		+	PEG-5 cocamine 0.5% aq. + + + benzalkonium chloride 0.1% aq. + + +
2	Female	55	No	Nickel 5% pet. + + +		+	PEG-5 cocamine 0.5% aq. + + +
3	Female	46	No		Cetalkonium chloride 0.1% pet. +	+	PEG-5 cocamine 0.5% aq. + + + benzalkonium chloride 0.1% aq. + + + (IR)
4	Female	41	No	Hydrox isoheyl-3-cyclohexencarboxyaldehyde 5% pet. +		+	PEG-5 cocamine 0.5% aq. + + + benzalkonium chloride 0.1% aq. +
5	Male	51	No	Thiuram mix 1% pet. + + + PPD 1% pet. + + +		+	Propylene glycol 2% aq. + + +
6	Female	46	No	Fragrance mix + + +		+	PEG-5 cocamine 0.5% aq. + + + benzalkonium chloride 0.1% aq. +
7	Female	43	Yes	Neomycin sulfate 20% pet. +	Benzalkonium chloride 0.1% aq. +	+	PEG-5 cocamine 0.5% aq. + + + benzalkonium chloride 0.1% aq. + + +
8	Female	42	Yes	PPD 1% pet. + +	Cetalkonium chloride 0.1% pet. + + methylidibromo glutaronitrile 0.3% pet. +	+	PEG-5 cocamine 0.5% aq. + + + benzalkonium chloride 0.1% aq. + + +

IR = irritant; PEG = polyethylene glycol-5 cocamine 0, 5% aq.; PPD = *p*-phenylenediamine; IPPD = *N*-isopropyl-*N'*-*p*-phenylenediamine.

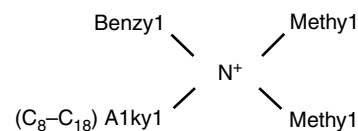


Fig. 1. Benzalkonium chloride.

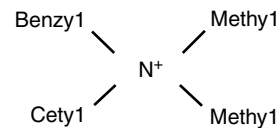


Fig. 2. Cetalkonium chloride.

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