

CONTACT POINTS

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Occupational airborne allergic contact dermatitis from garlic with concurrent Type I allergy

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Key words: airborne allergic contact dermatitis; garlic; occupational; systemic reactions.

The most frequently described pattern of allergic contact dermatitis from garlic is on the fingertips (1, 2). Irritant contact dermatitis is also commonly encountered (3), and Type I allergic reactions have also been reported (4, 5).

We describe a patient who developed a sub-erythrodermic eczematous reaction secondary to allergic contact dermatitis from garlic, associated with clinical features of Type I allergic symptoms.

Case Report

A 54-year-old Asian man, who worked as a food industry chemist, was referred with a widespread dermatitis. This dermatitis had begun in an airborne allergen distribution and had spread to involve covered sites, though sparing the abdomen. For the preceding 7 months, he had been in periodic contact with pure garlic powder that was being used in the manufacture of a new margarine–garlic mixture. (The margarine was composed of palm oil and free fatty acids.) The eczema had run a chronic relapsing course and was consistently associated with being in the work environment, improving with absences away from work while using only topical corticosteroids and emollients. Few other workers

were exposed to the garlic powder to the same degree, and none were similarly affected. In the 3 days prior to his presentation, he had been exposed to high levels of the visible powder on a daily basis.

As well as cutaneous problems, he also suffered from intermittent general malaise associated with pyrexia, conjunctivitis, rhinitis, mild dyspnoea, cough and changes in phonation suggestive of slight laryngeal oedema. He had not had any gastrointestinal disturbances.

He had been using personal protective equipment at work consisting of ordinary rubber gloves, protective clothing and a simple paper mask, but no further respiratory protection.

He rarely touched or handled garlic for cooking and had not knowingly experienced any reactions after touching or ingesting garlic containing foods.

There was no personal or family history of atopy, though he had had chronic mild varicose eczema of the right leg. From the history alone, there did not appear to be any other relevant occupational or domestic exposure to other allergens.

Materials and Methods

The dermatitis was treated with topical corticosteroids and emollients, and after 1 month while the patient was still absent from work, patch tests were performed with a modified European standard series along with arachis oil dilutions (50, 25, 10 and 5%) of garlic powder supplied from work plus diallyl disulfide 1% pet. (Table 1). Patch testing was performed according to the recommendations of the International Contact Dermatitis Research Group (6).

The patient reacted to the first 3 dilutions of the garlic powder, with an allergic looking reaction only to the 10% dilution. In view of these findings, patch tests with the garlic powder dilutions were performed in 13 control patients.

The patient declined prick tests because of his general symptoms and fear of a severe anaphylactic reaction. However, blood samples for total immunoglobulin E (IgE) and specific IgE [radioallergosorbent test (RAST)] for garlic and onion were taken.

Results

The patient's patch tests to the garlic powder dilutions were observed after 20 min, but there was no evidence of contact urticaria. However, within 6–7 h of the patch tests being applied, the patient reported feeling generally unwell, with generalized pruritus along with fever, dyspnoea, cough, conjunctivitis and rhinitis. These symptoms had all gradually resolved by his 1st patch test reading at day (D) 2.

The results of the patient's patch tests are shown in Table 1. None of the controls reacted to the 10% dilution, but 7 of 13 reacted to the 50% dilution and 2 of 13 to the 25% dilution, suggesting that the reactions might be irritant at these concentrations. Our patient, along with the 13 controls, did not react to diallyl disulfide 1% pet.

His blood tests showed a very high total IgE level of 10 000 IU/ml (normal <180 IU/ml), and the RAST response to both onion and garlic was 2 units (0–1 doubtful, >1–6 positive).

Discussion

Since the first report of contact dermatitis caused by garlic in 1950 (7), many cases of irritant and allergic garlic dermatitis have been reported (2, 3, 8).

In our case, the contact allergic reaction to garlic powder was confirmed with a 10% dilution in arachis oil (3, 9), a concentration that was negative in all the controls. Higher concentrations of 25 and 50% were irritant in 2 of 13 and 7 of 13 of the controls, respectively. It has been presumed that the allergens may also be irritant (10), and while the irritants of garlic are not definitely

Table 1. Test substances and results in the patient

Serial number	Test substances	D2	D4
1	Nickel sulfate (5%)	—	—
2	Colophonium (20%)	—	—
3	<i>para</i> -Phenylenediamine (1%)	—	—
4	Mercaptobenzothiazole (2%)	—	—
5	Formaldehyde (1%)	—	—
6	Potassium dichromate (0.5%)	—	—
7	Lanolin alcohol (30%)	—	—
8	Epoxy resin (1%)	—	—
9	Primin (0.01%)	—	—
10	Neomycin sulfate (20%)	—	—
11	Cobalt chloride (1%)	—	—
12	Quaternium-15 (1%)	—	—
13	Parabens (16%)	—	—
14	Thiuram mix (1%)	—	—
15	Mercapto mix (1%)	—	—
16	Fragrance mix (8%)	—	—
17	<i>N</i> -isopropyl- <i>N</i> -phenyl- <i>para</i> -phenylenediamine (0.1%)	—	—
18	Sesquiterpene lactone mix (0.1%)	—	—
19	Clioquinol (5%)	—	—
20	Ethylenediamine dihydrochloride (1%)	—	—
21	<i>para</i> -Tertiary-butylphenol-formaldehyde resin (1%)	—	—
22	Kathon CG (200 p.p.m.)	—	—
23	Caine mix III (10.0%)	—	—
24	Balsam of Peru (25%)	—	—
25	Tixocortol-21-pivalate (1.0%)	—	—
26	Cetearyl alcohol (20%)	—	—
27	Euxyl K400 (0.5%)	—	—
28	Chlorocresol (1%)	—	—
29	Phenol-formaldehyde resin (5%)	—	—
30	Imidazolidinyl urea (2%)	—	—
31	Betnovate cream (—)	—	—
32	Locoid cream (—)	—	—
33	Benzalkonium chloride (0.1%)	—	—
34	Control (—)	—	—
35	Garlic powder in arachis oil (50%)	IR	IR
36	Garlic powder in arachis oil (25%)	IR	IR
37	Garlic powder in arachis oil (10%)	++	++
38	Garlic powder in arachis oil (5%)	—	—
39	Diallyl disulfide (1%)	—	—

known (11), we think that the pure garlic powder that we tested contained both allergenic and irritant compounds, which caused an allergic reaction superimposed by an irritant component.

The question remains as to why diallyl disulfide 1% pet. was negative in the patient. The tube we used had not expired, because we had relevant positive reactions in other patients during the same period of time. We might assume that although a 1% dilution is widely recommended, it may not be strong enough in some cases and perhaps a higher concentration may be needed (8), though less than 5% (9). Another possibility is that diallyl disulfide was not the allergen in our patient but other known or not yet known chemical compound(s) of garlic present in the

powder that the patient used. Thus, rather than the commercial garlic allergen, it can be better to use serial dilutions of the suspected garlic product itself.

As well as delayed (Type IV) allergic reactions, garlic has been reported as a cause of immediate (Type I) manifestations (4, 5). Our patient experienced symptoms of mild dyspnoea, cough, changes in phonation, conjunctivitis, rhinitis, pruritus, with general malaise and pyrexia. These findings were mild at the very beginning of the dermatitis, following a parallel course after exposure to garlic powder, more aggressive during the last severe episode of dermatitis and about the same severity during patch testing. All these would be clinically typical of a Type I allergic reaction to garlic.

The best way to confirm this would have been prick or scratch testing, provocative respiratory testing and *in vitro* tests. Respecting the patient's decision, we performed only the last of these and found a very high total IgE (10 000 IU/ml) and marginally positive specific IgE to garlic and onion (2 units). The patient was not clinically atopic nor his family, and he had never had urticaria. Thus, we propose this as evidence that Type I allergic reactions to garlic powder were behind this phenomenon. The only borderline positivity of specific garlic IgE partly undermines this hypothesis but does not altogether disprove it.

Finally, such combinations of symptoms from garlic may become more common in the future, as garlic becomes increasingly used around

the world, and hence, we should be alert to such adverse reactions occurring in the working environment (12).

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Allergic contact stomatitis due to manganese in a dental prosthesis

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Key words: allergic contact stomatitis; dental prosthesis; manganese; oral ulceration.

While many metals are able to induce allergic contact stomatitis of the oral mucosa in patients wearing dental prostheses, the literature holds very few cases of sensitivity to manganese, and the relevance of such cases is only rarely established.

Case Report

A 74-year-old woman presented with an itching and burning sensation in the oral cavity for the previous 8 months. She had been wearing removable partial dentures (upper left hemiarch) for the past 9 months, and the oral discomfort was largely concentrated in this region. The physical examination showed diffuse oedema and erythema, as well as an aphthous lesion measuring 3 × 3 mm, in the region of the prosthesis.

The prosthesis was made of chromium–cobalt alloy and contained no nickel or beryllium. The percentage composition was as follows: cobalt 64.8%, chromium 28.5%, molybdenum 5.3%, silica 0.5%, manganese 0.5%, and carbon 0.4%.

Patch testing was performed with the Spanish standard series and the metals and acrylates series (Chemotechnique Diagnostics, Malmö, Sweden). Positivity was recorded only to manganese chloride 5% pet. (++) . 15 controls were negative for manganese. The patient was fitted with manganese-free dentures. She remains without further lesions to date.

Discussion

Manganese is a transitional metal increasingly used in the manufacture of dental prostheses (1), as nickel has been replaced. The potential of manganese to cause allergic contact dermatitis seems limited (2). In relation

to dental prostheses, only isolated cases of positivity to manganese have been observed in patients fitted with prosthetic materials, with either past or unknown relevance in all cases (3, 4). These positive patch tests have previously been explained by various phenomena: contamination by small amounts of nickel in the patch test materials, concomitant sensitization due to the presence of more than 1 metal in the alloy, or cross-reactivity between metals in close proximity in the periodic table of the elements (5). However, these hypotheses are not applicable to our case in which manganese was the only allergen identified. This observation, and the fact that healing was complete after removing the dentures, proved manganese positivity to be relevant. Further, such cases must be documented in order to define the importance of this metal in contact dermatitis, though we already believe that manganese should be regarded as a potential allergen. This would imply the inclusion of this element in metals series and in the evaluation of stomatitis in patients wearing dental prostheses.

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Contact dermatitis from propylene glycol in ECG electrodes, complicated by medicament allergy

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Key words: allergic contact dermatitis; ECG; electrode; medicaments; neomycin; patch testing; propylene glycol; tixocortol-21-pivalate.

Case Report

A 43-year-old Japanese man presented with numerous, round, crusted, eczematous lesions on the anterior (Fig. 1) and posterior trunk, corresponding to sites where Niko[®] ECG electrodes had remained in place for the previous 3 days. He had a history of atopic dermatitis in childhood.

Treatment with clobetasol propionate 0.05%/neomycin sulfate 0.5%/nystatin 100 000 U/g (Dermovate NN[®], GlaxoSmithKline, Uxbridge, UK) ointment failed to result in much improvement, but substitution by difluocortolone valerate 0.3% (Nerisone

Table 1. Results of patch testing

	D2	D4
Neomycin sulfate 20% pet.	—	+++
Thiuram mix 1% pet.	—	+++
<i>p</i> -phenylenediamine 1% pet.	—	+++
Tixocortol-21-pivalate 1% pet.	++	+++
Paraben mix 16% pet.	—	—
Niko [®] electrode (as is)	++	+++
Propylene glycol 20% pet.	—	+++
Cellosize PQ 4400H 1% aq.	—	—
Methyl paraben 3% pet.	—	—
Propyl paraben 3% pet.	—	—

Forte[®], Schering Health, Burgess Hill, UK) oily cream successfully cleared the eruption.

Patch testing to the European standard series, the Niko[®] electrode (as is) and its individual constituents showed positive reactions to the electrode and to propylene glycol 20% pet. Positive reactions were also seen to tixocortol-21-pivalate 1% pet, neomycin 20% pet, thiuram mix 1% pet. and para-phenylenediamine 1% pet. (Table 1).

Discussion

Propylene glycol (1,2-propanediol) is a common humectant found in pharmaceutical and cosmetic bases, which

occasionally causes contact allergy (1). The potential for sensitization and irritant reactions to propylene glycol has been recognized since 1952, when Warshaw and Herrmann (2) reported reactions in patients in whom it was used as a solvent for patch test allergens. It has been proposed that reactions to propylene glycol may be classified as irritant or allergic contact dermatitis, non-immunological contact urticaria and sensory irritation (3).

Several constituents found in ECG electrodes or gels have caused allergic contact dermatitis, including acrylate and gum tragacanth as well as propylene glycol.(4). This case was complicated by the fact that our patient was additionally allergic to neomycin and topical corticosteroid, resulting in iatrogenic prolongation of his allergic reaction.

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Fig. 1. Round eczematous lesions on the anterior chest, where ECG electrodes were placed.

Patch testing with natural rubber latex

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Key words: allergic contact dermatitis; children; natural rubber latex; occupational; patch test.

Clinical reactions to natural rubber latex can be non-immunological or immunological. Non-immunological reactions consist of irritant contact dermatitis, characterized by dry, itchy and erythematous areas. Immunological reactions comprise both immunoglobulin E (IgE)-mediated reactions (type I) and cell-mediated reactions (type IV). In IgE-mediated reactions, localized itching, erythema or contact urticaria, within a few minutes of natural rubber latex exposure, are the initial symptoms. Progressive sensitization can also lead to widespread urticaria, angioedema, rhinitis, conjunctivitis, asthma and anaphylactic shock, minutes after contact with latex proteins.

Delayed cell-mediated hypersensitivity is generally related to chemical additives added during the rubber-manufacturing process, such as vulcanizers (e.g. thiurams, mainly tetramethylthiuramdisulfide, mercaptochemicals, benzothiazoles, diphenylguanidine or thioureas), stabilizers and antioxidants (zinc oxide, dithiocarbamates, para-phenylenediamine or phenol derivatives). In recent years, latex itself has also been demonstrated as responsible for such reactions. Delayed reactions can result from contact with rubber products, most commonly on hands, as well as from glove wearing (1). Moreover, cell-mediated reactions can also occur after exposure to airborne allergens (2).

The aim of this study was to investigate the frequency of positive reactions to natural rubber latex among the total patch-tested population of our Allergology and Clinical Immunology Department between April and October 2003.

Materials and Methods

Between April and October 2003 in the Allergology and Clinical Immun-

ology Department of the Policlinico Hospital in Bari, a total of 497 consecutive patients were patch tested. They were seen in the department for suspected contact dermatitis and were patch tested to natural rubber latex, the SIDAPA (Società Italiana di Dermatologia e Allergologia Professionale e Ambientale) standard series and other allergens as clinically indicated.

Patch testing

Patch testing was conducted largely with Finn Chambers[®] (Epitest, Tuusula, Finland), which were applied on the back using Scanpor[®] tape (Norgesplaster, Vennessla, Norway) and removed after 2 days. Readings were taken at day (D) 2 and D4. Reactions were evaluated according to International Contact Dermatitis Research Group recommendations (3). Doubtful or irritant reactions were considered negative. On completion of readings on D4, each positive result was assessed in relation to the patient's occupation and clinical history. To carry out the latex patch test, a commercial non-ammoniated latex (Chemotechnique Diagnostics AB, Malmö, Sweden) was applied using IQ chambers.

Prick testing and serum analysis

IgE tests to latex were performed for each patient with a positive patch test to latex.

Prick tests were performed with a commercial extract of non-ammoniated latex (Stallergènes, Paris, France). Histamine dihydrochloride (10 mg/ml) was used as positive control and physiological saline as negative control. A prick test was considered positive if the wheal size was mean diameter 3 mm larger than that of the negative control.

Specific IgE to latex was measured in the patients' serum with an FEIA assay (Pharmacia CAP System, Uppsala, Sweden). A positive reaction was defined as a value >0.35 KU/l.

Clinical records

Patient's clinical data and information concerning medical examination, history of atopy, patch test reactions and diagnoses were collected in a database (EPI INFO 6 software).

Results

497 patients [86 male (17%) and 411 female (83%)] were patch tested.

Their mean age was 37 years (range 13–72). The MOAHL (male, occupational, atopy, hand dermatitis and leg dermatitis) index was 17%, 19%, 7%, 23% and 1%.

154 (31%) showed at least 1 positive reaction to a tested allergen that was considered relevant. There were no immediate adverse reactions to the latex patches. Only 2 (0.4%) patients had a positive latex patch test.

Patient no. 1

A 37-year-old therapist without any history of atopy had presented with a 3-month history of itchy dry hands, initially localized to the fingertips and interdigital areas. Her job frequently required her to wear latex gloves, though her symptoms appeared and persisted independently of such glove use. She showed positive reactions to nickel (+), carba mix (+), diphenylguanidine (++) and latex (++).

Patient no. 2

A 14-year-old girl, with a history of allergic asthma and rhinoconjunctivitis, had presented with hand eczema 1 year ago, but it had worsened over the last 3 months for no apparent reason. Lesions were mainly localized to her hands. Patch-test reactions were detected to latex (++) and nickel (++).

In both patients, IgE tests to latex were negative.

Discussion

The first report of delayed hypersensitivity to natural rubber latex was published 50 years ago by Sidi et al. (4). However, only since the 1990s has there been a spate of reports of type IV latex allergy, confirmed by positive patch tests. In these reports, only a few patients were tested, on the basis of their clinical history and the material used for testing varied (e.g. pieces of latex gloves supplied by patients, natural Asian latex, ammoniated latex sheet as is and pieces of rubber dam); thus, the results were insufficient for a reliable diagnosis of delayed latex hypersensitivity because, as is well known, in finished products there are always additives that may cause type IV reactions.

To date, there have been few studies in which a series of individuals were patch tested with natural rubber latex. In some such studies, a selected population was tested, such as a

population of latex glove users or individuals who reported symptoms associated with latex glove use. For example, there are studies on hairdressers, where frequencies of patch-test positivity around 3% were found (5, 6), and on laboratory workers regularly using latex gloves, where a frequency of patch-test positivity of 4.9% was found (7).

So far, there have been few studies of unselected patients patch tested with natural rubber latex. Wakelin et al. (8) tested 608 consecutive patients with suspected contact dermatitis with 4 different natural rubber latex patch-test preparations. Cutaneous reactions to 1 or more latex patches were noted in 3.9% of patients, though many of these were considered to be irritant and non-specific. More recently, Sommer et al. (9) reported, in a multicentre study, a total of 2738 consecutive patients patch tested with natural rubber latex (ammonia preserved), of whom 1% had positive patch tests.

This historical excursus, and the results of the present study, notwithstanding the different materials used to perform patch tests, have shown that type IV latex hypersensitivity is not so common among unselected populations. We therefore recommend that a latex patch test be performed only when clinically indicated in patients with suspected rubber allergy, and we do not recommend its use routinely as part of a standard series.

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Vascular-occlusive contact dermatitis from fepradinol

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Key words: allergic contact dermatitis; fepradinol; medicaments; non-steroidal anti-inflammatory drugs.

Case Report

A 75-year-old man, with no prior skin or atopic disease, presented with a 1-week history of purpuric papulonecrotic lesions in the lumbar region (Fig. 1). 2 days before the onset, he had begun to apply Dalgen[®] spray (Recordati-España, Madrid, Spain) intermittently for muscle pain. He did not use any other medications. After withdrawal of the spray, the lesions disappeared 1 month later.

Patch tests were performed with J. Martí Tor (Barcelona, Spain) tests and read at day 2 following GEIDC criteria. We found strong positive reactions to Dalgen[®] spray and to fepradinol 0.1, 1 and 2% eth. 30 controls were negative to fepradinol at 0.1, 1 and 2% eth.

Biopsies of the initial lesion and the patch test reaction to Dalgen[®] showed

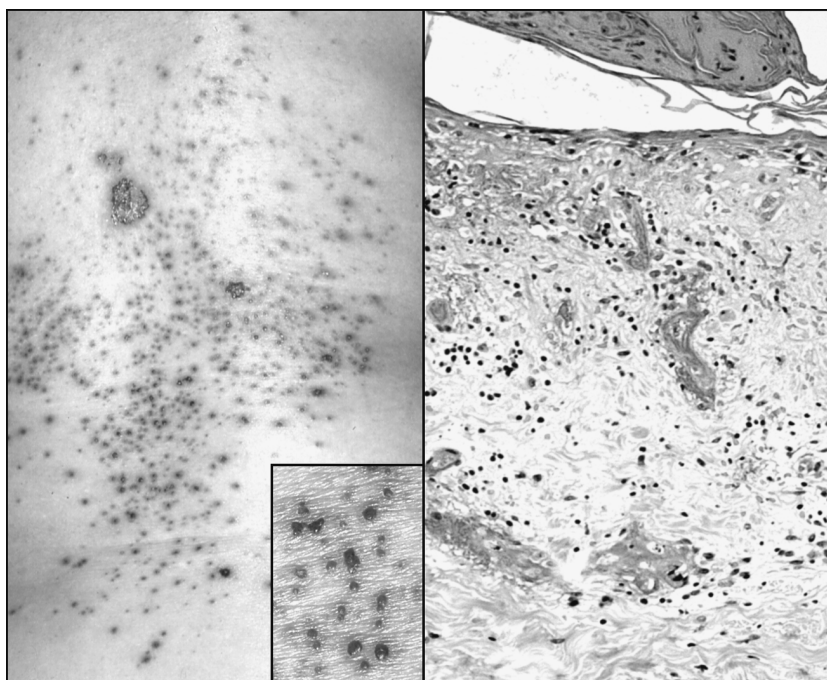


Fig. 1. Purpuric papulonecrotic lesions in lumbar region (left). Histologic examination showed a thrombotic vasculopathy without related leucocytoclastic vasculitis (right) (Hematoxylin and eosin) (×100).

Table 1. Reported cases of contact dermatitis from fepradinol

Ref.	First author	Year	Age	Sex	Product	Clinical presentation	Time after spray	Histologic findings	Treatment
6	Izu	1992	55	F	Flexidol [®]	Severe eczema	3 weeks	Not reported	Not reported
7	Goday	1993	66	F	Flexidol [®]	Severe eczema	15 days	Not reported	Not reported
8	Ortiz-Frutos	1994	66	M	Flexidol [®]	Itchy papulovesicular dermatitis	3 days	Eczematous features	Not reported
		1994	48	M	Flexidol [®]	Erythematous papulovesicular exudative eczema	12 days	Not reported	Topical and systemic corticosteroids
			59	M	Dalgen [®]	Itchy papulovesicular exudative eruption	3 weeks	Not reported	Topical corticosteroids
			63	M	Flexidol [®]	Itchy erythematous oedematous lesions	6 days	Not reported	Topical corticosteroids
9	Aranzabal	1994	70	F	Flexidol [®]	Eczema	3 months	Not reported	Topical corticosteroids
			43	F	Dalgen [®]	Itchy papules and vesicles	3-4 days	Not reported	Systemic corticosteroids and antihistamines
10	Gomez	1994	12	M	Flexidol [®]	Eczema	24 h	Not reported	Not reported
11	Goday	1997	50	M	Dalgen [®]	Eczema, pruritus	3 days	Not reported	Local and oral corticosteroids
			71	F	Dalgen [®]	Pruriginous maculo-erythematous lesions	8 days	Not reported	Topical corticosteroids
12	Rodríguez Granados	1998	71	F	Dalgen [®]	Itchy rash	7 days	Not reported	Not reported

a thrombotic vasculopathy with epidermal necrosis, without related leucocytoclastic vasculitis (Fig. 1). In developed lesions, a lymphocytic perivascular infiltrate with eosinophils could be seen in the adjacent dermis.

Discussion

Skin contact reactions usually present as an eczematous eruption, but there are various types of non-eczematous contact dermatitis. Among them, purpuric eruption is an uncommon manifestation of contact allergy. The eruption is usually asymptomatic, macular and purpuric, with or without preceding itch or erythema. Causes of contact purpuric eruption include rubber chemicals, dyes, untreated wool (1), medicaments (2) and Myroxylon Pereirae resin (3).

Vascular-occlusive disease is uncommon but may be seen in a variety of diseases, including warfarin necrosis, atrophie blanche, disseminate intravascular coagulation, purpura fulminans, thrombotic thrombocytopenic purpura, thrombocytopenia, cryoglobulinemia, cholesterol embolism, antiphospholipid syndrome and Sneddon's syndrome (4). To date, its association with contact dermatitis has not been reported. We present the first case of vascular-occlusive contact dermatitis, which broadens the spectrum of processes responsible of thrombotic vasculopathy without related leucocytoclastic vasculitis.

Fepradinol hydrochloride is a non-steroidal anti-inflammatory drug (NSAID) derived from phenylethanolamine. In Spain, it is frequently used topically for muscle and joint pains in Flexidol[®] and Dalgen[®] sprays, containing 6% fepradinol. It is a relatively safe drug, with a few adverse effects described (5).

Since 1992, when Izu et al. (6) described the first 2 cases of allergic contact dermatitis from fepradinol, a total of 11 cases have been reported, summarized in Table 1 (7–12). Most cases presented with an eczematous eruption, one with a photoallergic contact dermatitis (12) and none with purpuric or papulonecrotic lesions. The eruptions commonly appeared soon after spray application and improved after withdrawal of the spray and/or application of topical corticosteroids.

Izu et al. (6) found water to be a suitable diluent for patch testing, 1%

aq. being recommended. In their opinion, fepradinol should not be tested above 1% aq., because 5% aq. produced too strong a positive reaction. Ortiz-Frutos et al. (8) considered the most suitable patch test preparation to be 1% pet. or eth. Goday et al. (11) achieved better results at 2% eth. In children, Gomez (10) recommended patch testing initially with 0.1% pet. and then with 1% pet., if there was no reaction.

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Are there allergens in products made from *Hevea brasiliensis* wood?

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Key words: allergens; *Hevea brasiliensis*; immunological assays; wood products.

Allergy to natural rubber latex (NRL) allergens has been extensively studied during the last 20 years. The allergens are well characterized, and the main ones are considered to be Hevb1, Hevb3, Hevb5 and Hevb6.01 and Hevb6.02 (1). Quantitative determination of these major allergens based on immunological methods, using monoclonal antibodies and purified or recombinant allergens (FITkit[™] FIT Biotech, Tampere, Finland), is now commercially available (2).

As part of a study of emissions from tropical woods used indoors (3), the allergenic potentials of the wood species were also evaluated based on information in the literature. One of the wood species so evaluated was *Hevea brasiliensis* (*Hb*) wood. Allergic reactions have been described after contact with raw NRL as well as to a wide range of products made from NRL. Workers in glove factories as well as tappers may also be sensitized (4), but no publications could be found describing reactions in NRL-sensitized individuals due to contact with products made from *Hb* wood, i.e. floors, furniture and household items such as fruit bowls, etc.

It was therefore decided to determine the content of NRL allergens in

wood specimens from a dining table made from *Hb3* specimens, weighing approximately 20 g each, were taken from an untreated part of the table using a metal drill and ground with a metal grinder.

The wood specimens were analysed by FIT Biotech, in their laboratory, using the FITkit™ system, determining Hevb1, Hevb3, Hevb5 and Hevb6.02. Detection limits for Hevb1, Hevb3, Hevb5 and Hevb6.02 were 1.2, 2.3, 0.5 and 0.1 µg/l, respectively (2).

No allergens were demonstrated by this test.

Discussion

The NRL allergens are present in the sap from the *Hb* tree. This sap is tapped from the formative layer. However, it could not be excluded that smaller amounts of this sap could be present in products made from the wood. *Hb* timber is soft and not very durable and degrades quickly during storage. Before being used, timber from *Hb* is therefore usually stored under controlled conditions for more than a year and often treated with fungicides (5). Pre-treatment of the *Hb* timber used for the product investigated in this study was unknown.

It is possible that NRL allergens, which may be present in newly cut timber, would degrade during prolonged storage, and it cannot be concluded from this study that *Hb* wood products can never cause allergic reactions in NRL-sensitized individuals. Besides, this study concerns only a single product. With these reservations, it can be concluded, however, that the risk of allergic reactions due to contact with products made from *Hb* wood seems low. More studies of *Hb* wood products and timbers of different ages and after different treatments should be performed before making a definitive statement.

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Contact dermatitis from 2-n-octyl-4-isothiazolin-3-one in a PhD student

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Key words: 2-n-octyl-4-isothiazolin-3-one; allergic contact dermatitis; biocides; laboratory worker; lack of cross-sensitivity; occupational; plastics.

Case Report

A 25-year-old PhD student was referred with a recurrent itchy rash affecting the hands, arms and face, 1 month after starting PhD. Her studies involved determining whether silica-encapsulated biocide incorporated in polyvinyl chloride is leached at a slower rate than free biocide. Her first episode occurred following exposure to the biocide 2-n-octyl-4-isothiazolin-3-one, which was kept in a fume cupboard in virtually neat concentration. She wore gloves, goggles and a laboratory coat when handling it. After further exposure to the substance, again in the fume cupboard, and wearing the same protection in addition to a face mask, she developed an identical rash. On a third occasion, she was standing on the other side of the room but developed a facial rash after exposure to its ambient vapour. She had never had a rash other than when the biocide was being used.

Initially, she was treated with a course of oral prednisolone but on

the second and third occasions managed with topical corticosteroid steroid cream and oral antihistamine. She had no history of skin problems.

She was patch tested to our standard series, 2-n-octyl-4-isothiazolin-3-one 0.1% pet. and 1,2-benzisothiazolin-3-one 0.05% pet. She had a ++ patch test at 2 and 4 days to 2-n-octyl-4-isothiazolin-3-one. She did not react to any other isothiazolinones.

Discussion

2-n-octyl-4-isothiazolin-3-one is a biocide, marketed under the trade names of Kathon 893, Skane M-8 and Kw 1000. It is used in latex paints (1, 2), adhesives, wood preservatives, cutting oils, for the preservation of leather (3) and in plastics manufacture (4, 5). Allergic contact dermatitis from 2-n-octyl-4-isothiazolin-3-one is rare, but has previously been reported through exposure to paints (1, 2) and also, in one case, to leather shoes (3). We believe that this is the first reported case of occupational allergic contact dermatitis from 2-n-octyl-4-isothiazolin-3-one in a laboratory worker.

Routine patch testing with a series of 6 industrial biocides including 2-n-octyl-4-isothiazolin-3-one in 1652 consecutive, unselected patients with dermatitis showed limited usefulness of such a series (6). No positive reactions were detected to 2-n-octyl-4-isothiazolin-3-one (6). These findings suggest minimal exposure of the general population to these compounds.

However, increasingly antimicrobials are becoming incorporated into plastics for household and hospital use. e.g. antimicrobial plastic chopping boards, hospital antimicrobial-plastic refuse sacs and swimming pool plastic liners (4, 5). Over time and given an aqueous environment, these biocides may leach out of the plastic. Considerable research is therefore ongoing at present to determine whether various biocide-encapsulating systems prevent this phenomenon (4, 5). Our patient was involved in this work. Clearly, other laboratory personnel handling 2-n-octyl-4-isothiazolin-3-one are at risk of contact sensitization. In addition, more cases of contact allergy to 2-n-octyl-4-isothiazolin-3-one may potentially be seen in the future as antimicrobial plastics, containing this biocide, become more widely available.

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Post-coital contact dermatitis from methyldibromo glutaronitrile

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Key words: allergic contact dermatitis; cosmetics; methyldibromo glutaronitrile; wash-off products.

Case Report

A 46-year-old man presented with an intermittent rash involving in the perianal skin, groins and genital area. His symptoms consistently developed in a few hours after sexual intercourse. On examination, he had an erythematous scaly rash involving in the groins, perianal and genital skin.

He was patch tested to our standard series, perianal series, Daktacort[®] cream (Janssen-Cilag, High Wycombe, UK) and a condom. A ++ patch test reaction to Euxyl[®] K400 (Schülke and Mayr, Hamburg, Germany), 1.5% in pet. was noted. He subsequently had a +

reaction to methyldibromo glutaronitrile (MDGN) (0.3% pet.).

The patient had been using Cussons Carex[®] Hand Wash (Cussons PLC, Stockport, UK) to wash the genital area, groins and perianal area after intercourse. This product was labelled as containing methyldibromo glutaronitrile.

Discussion

MDGN (1,2-dibromo-2,4-dicyanobutane), also called Tektamer 38, is a component of Euxyl[®] K400, a broad-spectrum preservative for cosmetics and toiletries (1). It is also used in coating systems, such as latex emulsions, cutting fluids, wood preservatives, adhesives, colour photographic processing solutions, seed disinfectants, paper and paperboard (2).

After its introduction to the European market in the mid-1980s, cosmetic manufacturers started to use Euxyl K400 in preference to other preservatives, especially isothiazolinones, because of its weaker sensitizing capacity in animal experiments (1, 3). The risk of induction and/or elicitation of contact dermatitis from the use of rinse-off products, such as soaps, foaming soaps and cleansing face lotions is reported to be low (4), though contact dermatitis from shampoos has been reported in cases of occupational dermatitis in hairdressers (5). Shampoos containing 0.02% MDGN may safely be used by most individuals who are presensitized to MDGN (6). Perianal allergic contact dermatitis has been reported from MDGN-containing wipes (7), and occupational hand dermatitis has been associated with MDGN in industrial hand cleansers and barrier creams (8, 9). There is a rising trend in contact allergy from MDGN in Europe (10) and presently its use in leave-on products has been proscribed in the EU.

In this instance, our patient described vigorous use of a wash-off product to cleanse his skin after intercourse. An element of irritant contact dermatitis may well have occurred, as a result making him more liable to sensitization. It is also possible that the product was inadequately rinsed off. It is difficult to know whether the site of application might also have had a low threshold for induction and elicitation of contact dermatitis.

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Cutaneous reaction to oral celecoxib with positive patch test

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Key words: celecoxib; cutaneous adverse drug reaction; nimesulide; NSAIDs; oral challenge; positive patch test; rofecoxib.

Non-steroidal anti-inflammatory drugs (NSAIDs) are among those therapeutics most frequently causing pseudoallergic and allergic cutaneous adverse reactions. Coxibs preferentially inhibiting cyclooxygenase-2 are increasingly propagated as alternatives in NSAID-sensitive patients. Celecoxib is a representative of this novel group of preferential COX-2 inhibitors (1).

Case Report

A 70-year-old woman began oral treatment for an inflammatory disorder with celecoxib 20 mg $\times$ 2 daily. 2 weeks later, she developed a pruritic maculopapular rash on the back and lower extremities, which was treated with hydrocortisone cream and oral diphenhydramine. Symptoms cleared within 15 days of stopping the drug. She had an atopic background and intolerance to NSAIDs.

Patch testing was performed with commercial celecoxib (CelebrexTM, Pharmacia, Madrid, Spain), 2 other selective COX-2 inhibitors rofecoxib (VioxxTM, MSD, Barcelona, Spain) and nimesulide (GuaxanTM, Alcala Farma, Madrid, Spain), all tested at 10% pet. (2), and the European standard series (TRUE TestTM, ALK-Abelló, Madrid, Spain). A ++ reaction was obtained to celecoxib at days 2 and 4, persisting for as long as 1 week, while the other tests were negative. Celecoxib 10% pet. was negative in 5 control patients.

The patch test with celecoxib was repeated 3 months later, and an increase in the reaction to +++ was observed. Initially, we carried out a double-blind oral challenge test with celecoxib 20 mg, which reproduced the rash that the patient had previously experienced. Subsequently, we performed a double-blind oral challenge test with rofecoxib and nimesulide, and the patient tolerated both of these drugs.

Comment

To our knowledge, the only previous case of a positive patch test reaction to celecoxib was described in a patient who developed an exanthema following the use of this drug (3). Celecoxib has also been associated with allergic vasculitis (4, 5), fixed drug eruption (6), toxic epidermal necrolysis (7–9),

erythema multiforme (10), Sweet's syndrome (11) and anaphylaxis (12–14).

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Contact dermatitis due to lanoconazole, cetyl alcohol and diethyl sebacate in lanoconazole cream

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Key words: allergic contact dermatitis; cetyl alcohol; diethyl sebacate; emulsifiers; lanoconazole; medicaments.

Case Report

A 60-year-old man, with a long history of tinea pedis, had been treated with 1% lanoconazole cream (Astat[®], Tsumura Inc., Tokyo, Japan) for a few years. He developed a pruritic eczematoid eruption on the treated lesion after he had used the cream for 1 year. Patch testing showed positive reactions to lanoconazole cream and several other antimycotic creams (Table 1).

Patch testing with the ingredients of the lanoconazole cream showed positive (+) reactions to lanoconazole (1% pet.), cetyl alcohol (5% pet.) and diethyl sebacate (5% pet.) on D2 and D3. The skin eruption improved after applying topical corticosteroid for a few days. The tinea was treated with another antimycotic, which was negative on patch testing, and improved.

Discussion

Emulsifiers such as diethyl sebacate and cetyl alcohol are widely used in cosmetics and topical medicaments. Generally, they are rare sensitizers (1), and there are few reports of contact dermatitis due to diethyl sebacate (2–4) or cetyl alcohol.

There are 5 cases of contact dermatitis reported from lanoconazole cream, and all except 1 were caused by lanoconazole itself (5–7). Contact dermatitis due to 3 ingredients of lanoconazole cream has not been reported previously. In our case, patch testing showed positive reaction to several other antimycotic creams, including terbinafine and liranafate other than imidazoles derivatives:

Table 1. Patch test results

Substance	%Vehicle	D2	D3
Lanconazole cream	as is	+	+
Lanconazole	1% pet.	+	+
Diethyl sebacate	5% pet.	+	+
Cetyl alcohol	5% pet.	+	+
Neticonazole cream	as is	+	+
Ketoconazole cream	as is	+	+
Sulconazole solution	as is	—	—
Terbinafine cream	as is	+	+
Liranaftate cream	as is	+	+

these medicaments contain diethyl sebacate or cetyl alcohol.

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Contact dermatitis from topical bimatoprost

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Key words: allergic contact dermatitis; bimatoprost; medicaments; ophthalmics; periocular hyperpigmentation; prostamides.

Case Report

A 52-year-old woman with open-angle glaucoma was placed on treatment with topical 0.005% latanoprost (Xalatan; Pharmacia, Peapack, New Jersey, USA) at bedtime in both eyes. The use of this drug controlled the intraocular pressure, and kept the status of fundi and visual fields fairly constant. When her visual fields showed a blind spot enlargement, to achieve better IOP control (1), she was switched to treatment with topical 0.03% bimatoprost (Lumigan; Allergan, Irvine, California, USA) at bedtime in both eyes. While on bimatoprost, she developed ocular side effects such as conjunctival hyperemia, foreign body sensation, blepharitis and ocular pruritis, as well as increased pigmentation of the periocular skin.

We performed a patch test with bimatoprost at a concentration of 0.003% (obtained by diluting 1 part of 0.03% commercially available bimatoprost in 8 parts of distilled water). As we used bimatoprost in the commercially available form, the vehicle also contained benzalkonium chloride, sodium chloride, sodium phosphate, citric acid and purified water. Patch testing on the patient's back with bimatoprost was positive at 2 days, causing local hyperpigmentation and itching. Patch testing with other constituents of the formula-

tion, i.e. benzalkonium chloride (0.005%), sodium chloride, sodium phosphate, citric acid and purified water, on the patient's back was negative. A patch test with bimatoprost at the same concentration and in the same vehicle in 7 control subjects was negative.

The patient discontinued treatment with topical bimatoprost and was switched to treatment with topical brimonidine 0.2%, 2 times a day in both eyes. The previous ocular adverse effects disappeared, and the periocular pigmentation decreased slightly over the next 3 months.

Discussion

Bimatoprost is one of the newer topical antiglaucoma medications, being widely used for treating patients of open-angle glaucoma. Chemically, it is a prostamide. The drug causes ocular side effects such as allergic conjunctivitis, eyelash darkening, ocular burning, ocular dryness, foreign body sensation and pigmentation of periocular skin and iris (2). To the best of our knowledge, only 1 previous case of periocular pigmentation due to bimatoprost has been described (3). However, these authors did not perform patch testing to components of the topical formulation, as they did not suspect the reaction to be an allergic contact dermatitis.

References

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