

British Contact Dermatitis Society: Summaries of Papers

Invited abstract

Atopy patch test

U. DARSOW AND J. RING

Department of Dermatology and Allergy Biederstein, Technical University Munich, Division of Environmental Dermatology and Allergy GSF/TUM, Munich, Germany

The most relevant allergological trigger factors of atopic eczema (AE) are food allergens and aeroallergens. Although IgE-mediated sensitizations demonstrated by skin-prick tests (SPT) or *in vitro* measurement of specific IgE-antibodies (sIgE) are very frequent, these routine tests show a low specificity for clinically relevant allergy in patients with AE. For aeroallergens, more specific results can be obtained with the atopy patch test (APT), but further standardization is required, in particular with regard to food allergens.

In a recent European multicentre study on APT in 324 patients and controls using the ETFAD methods, positive APT reactions were seen in 9–39% (mostly to *Dermatophagoides pteronyssinus*) of patients, none in controls. Reactions to foods occurred in 9–11%. Positive SPT (16–57%) and elevated sIgE (19–59%) were more frequent. In total, 1–34% of patients had a predictive history; 7% of patients had a clear-cut positive APT without any positive SPT or elevated sIgE, of whom patients with a corresponding history of AE triggered by allergen contact were further investigated by IgE/IgG immunoblotting and dendritic cell phenotyping, showing sIgG4 against Der p 3 in the two cases with a positive APT to *D. pteronyssinus*. With regard to an allergen-specific history, specificity in three different single- and multi-centre studies was 33–85% (SPT), 33–85% (sIgE) and 64–91% (APT). *Coprinus comatus* and *Malassezia furfur* have been described as new allergens eliciting positive APT. Currently, the APT is also used as inflammation model in trials on pathophysiology and topical and systemic therapy of AE.

Aeroallergens and food allergens can elicit eczematous skin lesions in patients with AE, also in the absence of corresponding sIgE ('non-IgE-mediated AE'). APT can be used to evaluate the clinical relevance with high specificity, the combination with SPT and sIgE is recommended.

CD-1

Photopatch testing: a 4-year retrospective review of cases using the 24- and 48-hour irradiation protocols

R. J. BATCHELOR AND S. M. WILKINSON

Department of Dermatology, Leeds General Infirmary, Leeds, UK

Photopatch testing is indicated in the investigation of patients with eczematous eruptions affecting mainly light-exposed sites and in those who give a history of worsening of their condition with sun exposure. Ultraviolet A (5 J cm^{-2}) is administered to one set of allergens on the back, while a control set of allergens is not irradiated. Photoallergy is indicated by a positive reaction on the irradiated side only. Three different protocols are recognized by the British Photodermatology Group, two of which include irradiation of allergens 48 h after application and one using irradiation of allergens 24 h after application (British Photodermatology Group. Photopatch testing: methods and indications. *Br J Dermatol* 1997; **136**: 371–6). There is no evidence that any one protocol is superior to the others.

We reviewed the records of all patients who underwent photopatch testing at our centre over a 4-year period, and who had had the aller-

gens applied in triplicate with one set irradiated at 24 h and another at 48 h. The control was occluded for 48 h. Readings were performed at 48 and 96 h.

Of 74 patients, 17 photopatch tested during this period had 56 positive results, 49 of which were felt by the dermatologist to be relevant to their clinical problem. Thirteen of the relevant positive results were indicative of contact allergic dermatitis (a positive reaction at both the irradiated and unirradiated sites); octyl methoxycinnamate (two positives), benzophenone-3 (one positive), octyl dimethyl PABA (one positive), butyl methoxydibenzoylmethane (three positives), Vichy SPF60 (four positives), Soltan SPF50 (one positive), E45 (one positive) and Nivea SPF20 (one positive). In total, 31 of the relevant positive results were indicative of photoallergy; butyl methoxydibenzoylmethane and isoamyl *p*-methoxycinnamate being the commonest culprit allergens, causing five positive photoallergic reactions each. More photoallergic reactions were detected following 48-h occlusion and irradiation compared with 24-h occlusion (19 vs. 4).

In conclusion, our case series suggests that 48-h occlusion before irradiation of allergens is more sensitive at detecting photoallergy. It would be important to confirm this with a comparative study of both methods at several centres.

CD-2

A multicentre review of the hairdressing allergens tested in the UK

R. P. KATUGAMPOLA, B. N. STATHAM, J. S. C. ENGLISH,* S. M. WILKINSON,† I. S. FOULDS,‡ C. M. GREEN,§ A. D. ORMEROD,¶ N. M. STONE,** H. L. HORNE†† AND M. M. U. CHOWDHURY‡‡

Department of Dermatology, Singleton Hospital, Swansea, *Department of Dermatology, Queen's Medical Centre, Nottingham, †Department of Dermatology, Leeds General Hospital, Leeds, ‡Birmingham Skin Centre, City Hospital Birmingham, §Department of Dermatology, Ninewells Hospital and Medical School, Dundee, ¶Department of Dermatology, Aberdeen Royal Infirmary, Aberdeen, **Department of Dermatology, Royal Gwent Hospital, Newport, ††Department of Dermatology, James Cook University Hospital, Middlesborough and ‡‡Welsh Institute of Dermatology, University Hospital of Wales, Cardiff, UK

The British Contact Dermatitis Society (BCDS) does not currently have a standard hairdressing series that could be used throughout dermatology departments in the UK. Existing test batteries have emerged on the basis of small numbers of case reports and the experience gained in large centres. Some allergens, e.g. *para*-phenylenediamine (PPD), are supported by extensive literature (Søsted H, Basketter DA, Estrada E *et al.* Ranking of hair dye substances according to predicted sensitization potency: quantitative structure-activity relationship. *Contact Dermatitis* 2004; **51**: 241–54). The aim of our study was to review the patch test data for hairdressing allergens in several dermatology centres in the UK to ascertain the allergens tested and their results, and to formulate a standard hairdressing series for wider use and further evaluation.

Patch-test data to hairdressing allergens over the last 2–6 years were collected from databases in nine dermatology centres in the UK. All the participating clinicians were members of the BCDS. The study data did not differentiate between hairdressers and clients. The following details were collected from each centre: name of allergens tested, number of

tests performed for each allergen and number of positive reactions that were of current/past relevance for each allergen. The number of centres testing each allergen (n) and the number of positive (current/past relevance) tests (%) of the total number tested for each allergen were: diaminitoluene (n = 8, 110/563, 19.5%); ammonium persulphate (n = 9, 68/567, 12%); nitro-4-phenylenediamine (n = 6, 37/428, 8.6%); glycerine monothioglycolate (n = 9, 46/550, 8.4%); 4-aminophenol (n = 8, 31/483, 6.4%); 3-aminophenol (n = 8, 25/483, 5.2%); hydroquinone (n = 7, 7/518, 1.4%); captan (n = 6, 4/483, 0.8%); ammonium thioglycate (n = 8, 4/504, 0.8%); resorcinol (n = 7, 2/501, 0.4%); pyrogallol (n = 4, 20/315, 6.4%); cocamidopropyl betaine (n = 7, 9/502, 1.8%); chloracetamide (n = 7, 2/517, 0.4%); and isothiazolinone (n = 3, 1/97, 1%). Allergens that were test-negative to current/past relevance, the number of centres testing these allergens and the number of tests for each allergen were as follows: hydrogen peroxide (n = 8, 525); zinc pyrithione (n = 6, 409); and chloroxylenol (n = 2, 109).

The proposed new hairdressing series includes the first 10 test-positive allergens listed in the results. Although test-positive, some allergens were excluded from the new hairdressing series: pyrogallol is a prohibited substance, cocamidopropyl betaine and chloracetamide are already tested in the facial battery, and isothiazolinone is tested in the BCDS standard battery. We hope the proposed hairdressing series will be used widely and further evaluated in the future.

CD-3

Review of allergic contact dermatitis and its impact in a cohort of hairdressers

M.E. LAING, F.C. POWELL, D.O. SULLIVAN AND F.M. KEANE
Regional Centre of Dermatology, Mater Hospital, Dublin, Ireland

Occupational skin disease among hairdressers is common. Our aim was to determine the prevalence of allergic contact dermatitis in a cohort of hairdressers attending the dermatology service in a teaching hospital and to determine the proportion of hairdressers who consequently changed their occupation.

Patch-test results of hairdressers with hand dermatitis attending between 1987 and 2004 were analysed retrospectively. Patients were tested to allergens of British Standard and hairdressing series. In total, 51 hairdressers were identified (47 women, 4 men; age range 16–60 years, mean 19.7 years). Of these, 35 had positive reactions to the standard series, 29 to the hairdressing series, and 11 patients had negative patch test results. The results showed an occupationally relevant sensitization of 56.86%.

Among hair dyes, *para*-phenylenediamine (PPD) caused reactions in 26 patients (50.9%), *p*-toluenediamine caused 12 reactions (23%), and *a*-nitro-*para*-phenylenediamine 9 reactions (17.6%). Among permanent-wave allergens, positive reactions to glycerolmonothioglycolate (GMTG) were found in 23.5%. There were no reactions to aminothioglycolate. Allergic contact dermatitis to ammonium persulphate (APS) occurred frequently (27.4%). A low incidence of sensitization was detected in our hairdressers to resorcinol (1.9%) and pyrogallol (1.9%). Twelve patients reacted to nickel (23.5%), 50% of whom had positive patch-test results to the hairdressing series. Eight patients were atopic, five of whom had positive patch-test results to the hairdressing series.

A telephone questionnaire was carried out. Duration of follow-up ranged from 6 months to 17 years (mean 8.75 years). Contact was made with 21/29 (72%) of hairdressers with positive reactions to the hairdressing series, of whom 14 had ceased hairdressing due to hand dermatitis; 3 had persistent hand dermatitis despite a change of career. Of seven patients still hairdressing, three had persistent dermatitis and four had altered their work practices and denied further problems with hand dermatitis. Ten of 11 hairdressers with negative patch test results were contacted. Three had stopped hairdressing due to irritant hand dermatitis.

The most common agents responsible for allergic hand dermatitis in hairdressers in this study include PPD, GMTG, and APS. APS, an acceler-

ant in bleaching agents, was responsible for a high incidence of reactions compared with other studies.

Allergic contact dermatitis causes significant morbidity and resulted in a career change in 66% of patients in this study. Preventive measures should be employed to protect hands and to reduce occupational morbidity in hairdressing.

CD-4

Trolab™ *compositae* mix vs. Chemotechnique™ *compositae* mix

A. STANWAY, J. ENGLISH, * A. OMEROD, † B. STATHAM, ‡

M. WILKINSON, § D. GAWKRODGER ¶ AND C. GREEN **

Queen's Medical Centre, Nottingham, *Dermatology Department, Sheffield, †Dermatology Department, Aberdeen Royal Infirmary, Aberdeen, ‡Department of Dermatology, Singleton Hospital, Swansea, §Department of Dermatology, Leeds General Infirmary, Leeds,

¶Department of Dermatology, Royal Hallamshire Hospital, Sheffield and **Department of Dermatology, Dundee, Dundee, UK

Compositae mix contains several plant extracts and is a useful marker of *Compositae* allergy. It has been suggested that *Compositae* mix should be included in the British Standard Series but there have been concerns about sensitisation with routine testing of large numbers of patients to plant extracts. All other allergens used in routine patch testing are pure chemicals. The sesquiterpene lactone mix detects some contact allergies to plants but will miss at least 30% of *Compositae* allergic patients (von der Werth J, Ratcliffe J, English J. *Compositae* mix is a more sensitive test for *Compositae* dermatitis than the sesquiterpene lactone mix. *Contact Dermatitis* 1999 May; **40**: 273–6). Trolab™ *Compositae* mix at 6% in petrolatum (commercially available concentration) is associated with a high rate of sensitisation. A concentration of 2% in petrolatum detects most patients with *Compositae* allergy and reduces the risk of active sensitisation (Bong J, English J. *Compositae* mix: what is the optimum concentration for patch testing? *Contact Dermatitis*. 2001 Apr; **44**: 251–2).

The objective of this multicentre study was to compare Trolab™ *Compositae* mix at 2% in petrolatum with Chemotechnique™ *Compositae* mix at 2.5% in petrolatum to determine if one would produce more positive reactions than the other. One thousand nine hundred and one patients in six different UK centres were tested to Trolab™ *Compositae* mix 2% in petrolatum and Chemotechnique™ *Compositae* mix 2.5% in petrolatum. Twenty-five patients (1.3%) reacted to Trolab™ *Compositae* mix and 18 (0.95%) to Chemotechnique™ *Compositae* mix. Three patients had active sensitisation reactions (occurring after 14 days).

We conclude that Trolab™ *Compositae* mix is the best available test for detecting patients with *Compositae* allergy.

CD-5

Unintended cutaneous reactions to CS spray

K.M.T. WATSON AND R.J.G. RYCROFT

St. John's Institute of Dermatology, St. Thomas' Hospital, London, UK

CS (2-chlorobenzylidene malononitrile) spray has been used by the police force in the UK as an incapacitant for nearly a decade. CS itself is a white powder, which is poorly soluble in water. The initials are rumoured to represent Carson and Stoughton, the chemists who developed CS in 1928. The spray consists of a 5% w/v solution in methyl isobutyl ketone (MIBK) within a pressurized canister. It is used to incapacitate by causing intense lacrimation, blepharospasm, photophobia, burning of the eyes, nose and throat, cough and dyspnoea [Committees on Toxicity, Mutagenicity and Carcinogenicity of Chemicals in Food, Consumer Products and the Environment. *Statement on 2-Chlorobenzylidene Malononitrile (CS) and CS Spray*. London: Department of Health, 1999]. CS spray causes a number of well-recognized cutaneous reactions, which are generally regarded as short-lived (Parneix-Spake A, Theisen A, Roujeau JC, Revuz J. Severe cutaneous reactions to self-defence sprays. *Arch Dermatol* 1995; **129**: 913). These include skin burning, erythema and blistering. Such symptoms arise within 20–60 s of exposure and usually

cease within 30 min in an open, outdoor environment. However, a range of unpredictable cutaneous reactions to CS spray may also occur.

We describe a series of seven patients (six police officers and one doorman) who developed unintended cutaneous reactions following exposure to CS spray and were referred to our department for patch testing. All patients were patch tested to the European standard series of allergens and to serial dilutions of CS in acetone (acet.). Three patients developed an allergic contact dermatitis, two patients with rosacea appeared to show greater susceptibility to the cutaneous effects of CS spray, and in one patient, exposure to CS spray seems to have triggered seborrhoeic dermatitis, which was then exacerbated further by direct or indirect exposure. One patient had developed a disfiguring leukoderma and dysaesthesia secondary to CS spray exposure, both of which are likely to be irreversible.

These skin reactions have required long-term changes in working practice for the affected individuals. Police officers may have repeated exposure to CS spray during their training and in their work, and designated police officers carry CS spray canisters daily in the line of duty. They may therefore be at greater risk of exposure to CS spray and its unintended effects than many assailants.

CD-6

Occupational photoallergic contact dermatitis in a pharmaceutical worker manufacturing carprofen, a canine nonsteroidal anti-inflammatory drug

S.L.WALKER, R.D.EAD AND M.H.BECK

Contact Dermatitis Investigation Unit, Dermatology Centre, University of Manchester, Hope Hospital, Manchester, UK

A 27-year-old woman developed a pruritic, erythematous eczematous eruption. This started on her hands and spread to her arms, face and neck. There was no past history of skin disease.

She had been working for 3 weeks in a factory manufacturing the canine nonsteroidal anti-inflammatory drug (NSAID) carprofen. She was involved in handling the carprofen powder but wore full protective clothing, including an air hood and gloves while doing this. No other workers at the factory were affected. She was treated with oral prednisolone and topical Fucibet[®] cream. Her employers moved her to a different part of the factory away from the production of the carprofen tablets. These measures produced a rapid improvement in her symptoms.

She was referred to the Contact Dermatitis Investigation Unit and was patch tested to our standard series, face series, her protective clothing and the carprofen 1% wsp, a carprofen intermediate (containing 12–14% carprofen) 1% wsp and the finished carprofen tablet 1% wsp. She had a ++ reaction to nickel, which was not felt to be relevant.

Her problems had started during a period of sunny weather in June. It was therefore decided to photopatch test her to our photopatch test series and the carprofen materials she had handled while involved in the manufacture of the tablets. She had strong (++) photoallergic reactions to the two carprofen agents tested following irradiation with 5 J cm⁻² ultraviolet A. Ten controls were also photopatch tested with the carprofen agents and none had a positive reaction. We therefore feel the reaction was due to photoallergy rather than phototoxicity.

Carprofen is a propionic acid derivative and was developed for human use but was withdrawn for commercial reasons. It was subsequently marketed for the management of canine arthritis. One case of canine photosensitization was reported to the US Food and Drugs Administration in 1997. This family of NSAIDs are well recognized as causes of photosensitive adverse reactions from topical and systemic use. There have been numerous reports of phototoxicity caused following ingestion of carprofen by humans but we could find only one report of a photoallergic reaction. It has not been reported as an occupational contact photoallergen previously.

CD-7

Occupational allergic contact dermatitis from 1,2-benzisothiazolin-3-one (Nipacide BIT 10) in operatives manufacturing adhesive and floor-levelling compounds

A.G.AFFLECK, J.S.C.ENGLISH AND D.HUGHES*

Department of Dermatology, Queen's Medical Centre, Nottingham and *Leek Moorlands Health Centre, Staffordshire, UK

An outbreak of dermatitis was investigated in five employees of a large company that manufactures adhesive compounds for flooring and other products such as specialized cements. In the factory, the operatives were exposed to many potential sensitizers, including epoxy resins, colophony, cement and isothiazolone preservatives. Patch testing to the BCDS series, glues and plastics series, and 32 product samples from the workplace including benzisothiazolone (BIT) 0.1% pet was performed. Four patients had ++ reactions to BIT and one had a + reaction. There were two + reactions to 5-chloro-2-methyl-4-isothiazolin-3-one /2-methyl-4-isothiazolin-3-one (MCI/MI) and one ++ reaction. One patient had a ++ reaction to epoxy resin and one patient had a ++ reaction to fragrance mix. Improvement in occupational hygiene was recommended.

Nipacide BIT 10 is a glycolic, alkaline solution of BIT 10% similar to Proxel XL2. It is a widely used broad-spectrum biocide used in industrial water-based products including adhesives and sealants, agrochemical flowables, inks, leather, metal working fluids, paint and coatings, polymer emulsions, and slurries. BIT is a known irritant at 1%. Allergic contact dermatitis to BIT has been reported in workers in the carpet-making industry, paint manufacturers, woodwork teachers, printers, metalworkers, air-freshener manufacturers, workers in the pottery industry and laboratory technicians. It classically produces a vesicular palmar eczema in sensitized individuals. BIT is reported to have a sensitization rate of 1.2% (Schnuch A, Geir J, Uter W et al. Patch testing with preservatives, antimicrobials and industrial biocides. Results from a multicentre study. *Br J Dermatol* 1998; **138**: 467–76), but other structurally similar isothiazolinones appear to rarely cross-react (Muhn C, Sasseville D. Occupational allergic contact dermatitis from 1.2-benzisothiazolin-3-one without cross-sensitization to other isothiazolinones. *Contact Dermatitis* 2003; **48**: 230–1). Of our five patients, three reacted to MCI/MI (Kathon CG) and this is thought to be because of separate sensitizations.

Dermatologists should be aware of the potential to develop allergic contact dermatitis from BIT in manufacturers of adhesive and floor-levelling compounds, an association to the best of our knowledge not previously reported.

CD-8

Allergic contact dermatitis from dicyclohexylmethane-4,4'-diisocyanate: two cases

J.M.L.WHITE AND I.R.WHITE

St. John's Institute, St.Thomas's Hospital, London, UK

Organic diisocyanates are well known causes of occupational asthma. Despite being potent respiratory sensitizers, they are uncommonly recognized as causing contact dermatitis, perhaps because of adequate work-place protection or under-reporting. The present two cases worked for a company that made polyurethane prototypes. The women had been assigned temporarily to the vacuum casting room where a mixture of dicyclohexylmethane-4,4'-diisocyanate and a polyol were mixed and placed in mouldings to produce the polyurethane prototype after curing. Neither woman wore gloves, and no formal safety training had been given.

Patient 1: A 35-year-old non-atopic female secretary developed facial erythema and swelling 7 days after starting work in the vacuum-casting room. The eruption resolved with cessation of work in the casting room. After returning to her normal office work at the same company, she was briefly re-exposed to fumes from the vacuum casting room, and the rash recurred.

Patient 2: A 44-year-old atopic woman regularly cleaned the vacuum-casting room. She was asked to work on the prototypes there, and within 3 days, she developed facial erythema. After being signed off work, her symptoms resolved but recurred with dyspnoea within an hour of recommencing work in the vacuum-casting room.

Both women had allergic patch test reactions to dicyclohexylmethane-4,4'-diisocyanate (+ to 0.1% and ++ to 1%, at 5 days) provided by them. Patient 1 was also positive to isophorone diisocyanate and 1,6 hexamethylene diisocyanate (both + at 5 days) and case 2 had a ?+ reaction to isophorone diisocyanate. These compounds have structural similarities to dicyclohexylmethane-4,4'-diisocyanate, and were interpreted as cross-reactions. Patient 2 had no specific IgE antibodies to a number of aromatic diisocyanates.

Organic diisocyanates have been used as a model for contact dermatitis in murine studies. There are very few reported cases of contact allergy to dicyclohexylmethane-4,4'-diisocyanate in the literature. Our patients show that sensitization may be rapid, although patient 2 may have been sensitized at an earlier date by cleaning the vacuum-casting room. They also emphasize the need for patch testing with a patient's own material. Commercially available organic diisocyanates for patch testing would have only detected cross-sensitivity, as the true culprit would not have been tested. Additionally, petrolatum based, patch-test preparations of organic diisocyanates have recently been shown to have much lower concentrations from those stated, leading to possible false-negative results and further complicating the investigation of this rare cause of allergic contact dermatitis.

CD-9

Persistent post-occupational dermatitis: report of seven cases

S.J.KEOGH AND D.J.GAWKRODGER

Royal Hallamshire Hospital, Sheffield, UK

Persistent post-occupational dermatitis (PPOD) was defined by Wall & Gebauer (Wall LM, Gebauer KA. A follow-up study of occupational skin disease in Western Australia. *Contact Dermatitis* 1991; **24**: 241–3) and later by Sajjachareonpong et al. (Sajjachareonpong P, Cahill J, Keegel T et al. Persistent post-occupational dermatitis. *Contact Dermatitis* 2004; **51**: 278–83). This condition initially develops as an occupational dermatitis due either to irritant or allergen contact, and persists despite withdrawal of the offending agent.

We used the following criteria to screen 1100 patients seen between January 2002 and November 2004: (i) no immediately preceding dermatitis, (ii) dermatitis located virtually always on the hand, (iii) evidence of an occupational component, (iv) induced by either an irritant or allergen contact, and (v) dermatitis that persists despite withdrawal of the offending agent. We identified seven patients (six women) who fulfilled these standards. Their details are shown in the table. All cases had hand dermatitis (which was micro-vesicular in four). Of the seven, five were allergic to nickel, and two were allergic to thiuram on patch testing. One had had eczema as a child and one had had asthma but the other five had no atopic history.

The condition of PPOD is rare (<0.6% of a selected patch test population) but it does seem to be a definable condition linked to long-term

morbidity for the affected individual. Clinically it appears that endogenous factors have been engaged, but clearly more study is needed to understand the aetiological factors better.

CD-10

Frictional dermatitis: an under-recognized irritant contact eruption that particularly affects fingers

D.J.GAWKRODGER AND E.MCMULLEN*

Royal Hallamshire Hospital, Sheffield and *Cumberland Infirmary, Carlisle, UK

Repetitive frictional trauma to the skin can elicit dermatitis, especially on the palms and fingertips. Lesions commonly seen are erythema, scaling, vesicles and hyperkeratosis. These changes have been seen in workers handling paper, repetitive use of paper tissues, friction from clothing and repeated lifting of heavy plastic bags. The main differential diagnosis is psoriasis with koebnerization from the friction.

After gaining approval from the audit department, an audit was performed of patients attending contact dermatitis and general clinics over a 30-month period (January 2002 to July 2004, 2700 new patients seen) in which frictional factors were identified as a possible cause of their dermatitis. Of the 31 patients identified, case notes were reviewed in 27 (18 men, 9 women; 67% and 33%). The following characteristics were examined; ethnicity, age of onset, history of atopy, occupational history, hobbies, area affected, patch testing, concurrent skin diagnoses, treatments and outcome. All patients were of white British ethnic background. Average age of onset was 42 years (range 22–64, not stated for two patients). In four patients, a diagnosis of frictional psoriasis was suspected (none of them had a definite diagnosis of psoriasis and one had a history of atopic eczema). A personal history of atopy was reported for eight patients (30%), not stated for three (11%). Occupational history was recorded for all patients. Friction-inducing activities were often occupational and included: handling small metal parts (9 of 27; 33%), handling paper (5; 19%), handling cardboard (3; 11%), handling fabric (2; 7%), driving (3; 11%), handling cables (1; 4%), working at meat counter (1; 4%), foot operation (1; 4%), and being a gardener (1; 4%), and community nurse (1; 4%). Hobbies were stated in 17 of the case notes and included: gardening (3), horse-riding (2), fishing (2), golf, embroidery, walking, dog walking, and mountaineering – 1 mention each and 4 had no hobbies relevant to their skin disease.

The skin sites affected were: hands in 12 cases, fingers in 9, hands and fingers both in 2, hands and feet in 2, foot in 1, and under waistband in 1. Ten patients had previously been diagnosed with some form of eczema, 12 patients had no prior history of skin disease. Other concurrent diagnoses included: seborrhoeic warts, psoriasis, lichen sclerosis of the vulva, and urticaria. Regarding treatments, potent topical steroids alone were used by 10, emollients by 5, both topical steroids and emollients by 6, avoidance of friction by 5, topical tacrolimus by 5. Some patients had >1 treatment. Concerning outcome, 18 either improved or cleared, 2 developed a persistent dermatitis, 3 await follow-up and 3 did not attend follow-up. Of 27 patients 25 were patch tested; 12 were negative, 4 were positive to nickel, 3 to cobalt and 2 to fragrance mix. In conclusion, frictional irritancy is not an uncommon cause/exacerbating factor in contact dermatitis. It is not rare and deserves wider recognition.

Age/gender	Duration (months)	Patch test result	Occupation	Exposure
56/F	48	Thiuram Mix +, Ni +, Co +	Carer	Rubber gloves
27/M	36	Negative	Fitter	Irritants, epoxy resin, oils, friction
60/F	360	Ni +	Security	Metal keys
29/F	120	?Thiuram mix +, Ni +++, Co +	Archaeologist	Rubber gloves
39/F	9	Negative	Shop manager	Hair dye
60/F	60	Ni ++	Cook	Rubber gloves, foods
53/F	9	Ni + Colophonium +	Knife manufacturer	Friction, oil

CD-11**A multicentre review of the footwear allergens tested in the UK**

R.P.KATUGAMPOLA, B.N.STATHAM, J.S.C.ENGLISH,* S.M.WILKINSON,† I.S.FOULDS,‡ C.M.GREEN,§ A.D.ORMEROD,¶ N.M.STONE,** H.L.HORNE†† AND M.M.U.CHOWDHURY‡‡

Department of Dermatology, Singleton Hospital, Swansea, *Department of Dermatology, Queen's Medical Centre, Nottingham, †Department of Dermatology, Leeds General Hospital, Leeds, ‡Birmingham Skin Centre, City Hospital Birmingham, §Department of Dermatology, Ninewells Hospital and Medical School, Dundee, ¶Department of Dermatology, Aberdeen Royal Infirmary, Aberdeen, **Department of Dermatology, Royal Gwent Hospital, Newport, ††Department of Dermatology, James Cook University Hospital, Middlesbrough and ‡‡Welsh Institute of Dermatology, University Hospital of Wales, Cardiff, UK

Currently, there is no standard footwear series for use throughout dermatology centres in the UK. Each centre tests for allergens based on local experience. The aim of our study was to review the patch-test data for footwear allergens in several dermatology centres in the UK to ascertain the allergens tested and their results, and to formulate a standard footwear series for wider use and further evaluation.

Patch-test data to footwear allergens over the last 2–6 years were collected from databases in nine dermatology centres in the UK. All the participating clinicians were members of the British Contact Dermatitis Society. The following details were collected from each centre: name of allergens tested, number of tests performed for each allergen, and number of positive reactions that were of current or past relevance for each allergen.

The number of centres testing each allergen (n) and the number of positive (current/past relevance) tests (%) of the total number tested for each allergen were: aminobenzene (n = 8, 31/1117, 2.78%); diphenylguanidine (n = 7, 11/610, 1.8%); urea formaldehyde resin (n = 2, 6/499, 1.2%); gum rosin (n = 1, 4/340, 1.18%); disperse orange 3 (n = 9, 14/1117, 1.25%); disperse red 1 (n = 1, 2/496, 0.4%); toluene sulphonamide formaldehyde resin (n = 2, 2/501, 0.4%); disperse yellow 3 (n = 3, 2/520, 0.38%); glutaraldehyde (n = 9, 4/1297, 0.31%); octylisothiazolinone (n = 9, 4/1121, 0.36%); diaminophenylmethane (n = 4, 2/767, 0.26%); acid yellow 36 (n = 8, 3/1210, 0.25%); benzotriazole (n = 3, 1/731, 0.14%); diphenylthiourea (n = 6, 1/919, 0.11%); hydroquinone monobenzylether (n = 9, 2/1122, 0.18%); and diethylthiourea (n = 8, 2/1236, 0.16%). Allergens that were test negative to current/past relevance, the number of centres testing these allergens and the number of tests for each allergen are as follows: dodecyl captan (n = 9, 1281); dibutylthiourea (n = 7, 1149); di octyl phthalate (n = 2, 500); disperse red 17 (n = 1, 486); and disperse blue 3 (n = 1, 484).

In addition to the 16 allergens that were test positive in our study, we also recommend testing the following three allergens for footwear contact allergy as supported by previous studies: di-thiomorpholinone, direct orange 34 and basic red 46 (Opie J, Lee A, Frowen K et al. Foot dermatitis caused by the textile dye Basic Red 46 in acrylic blend socks. *Contact Dermatitis* 2003; **49**: 297–303). We propose the 19 allergens mentioned in this paper for wider evaluation in patients being tested for footwear contact allergy.

CD-12**Photoallergic contact chelitis due to oxybenzone in a lip cosmetic**

E.C.VEYSEY AND D.ORTON
Amersham Hospital, Amersham, UK

A 79-year-old woman was referred for investigation of her chelitis and perioral eczema. She had no other significant medical problems and was not atopic. Patch testing was negative to our standard battery, hands and face series, mint series, two of her own lipsticks, and Blistex®. Patch and

photopatch tests were also performed to two sunscreens found in the lip cosmetics, which revealed photoallergy to oxybenzone with no reaction at the non-irradiated site. Advice on allergen avoidance was given and the problem had resolved at follow-up 4 months later. Interestingly, she had been patch tested 15 years earlier and found to have a photoallergy to one of the halogenated salicylanilides.

Although there is increasing exposure to sunscreen chemicals with their incorporation into everyday cosmetics and the rising usage of photoprotection, photoallergic contact dermatitis to UV filters remains uncommon (Darvay A, White IR, Rycroft RJG et al. Photoallergic contact dermatitis is uncommon. *Br J Dermatol* 2001; **145**: 597–601). Allergic contact dermatitis to oxybenzone is well recognized and a review article (Ophaswongse S and Maibach H. Allergic contact chelitis. *Contact Dermatitis* 1995; **33**: 365–70) highlights the importance of suspecting sunscreens as a cause for chelitis. However, we are not aware of any previous reports of a purely photoallergic contact chelitis to oxybenzone in a lip cosmetic. This case illustrates the importance of considering photopatch testing in these circumstances.

CD-13**Photocontact allergy to oxybenzone and contact allergy to lignocaine and prilocaine**

S.M.LANGAN AND P.COLLINS

Department of Dermatology, St. Vincent's University Hospital, Dublin, Ireland

A 46-year-old woman presented with a 6-year history of red, itchy, swollen skin on her face, neck and upper chest during holidays abroad. This initially took a few days' sunlight exposure to develop, but it was now occurring within a day or two. She applied hydrocortisone cream 1% and it resolved. She also gave a history of 'cellulitis' following removal of a cyst from her lower eyelid 1 year previously. This resolved on oral antibiotics and anti-inflammatories.

Examination was unremarkable. Investigations included patch testing to European standard series, cosmetics and preservatives, medicaments, steroids, fragrances, plants and sunscreens. Subsequent testing was performed to lignocaine, prilocaine, mepivacaine, bupivacaine (amides) and procaine (ester) hydrochlorides. Photopatch testing was carried out to sunscreens and the Scandinavian photopatch series. Standard bloods, lupus serology and plasma porphyrin scans were negative. Patch testing showed strongly positive reactions to balsam of Peru and Caine mix IV10% (amylocaine, lignocaine and prilocaine) at 48 and 120 h. Patch testing to sunscreens was normal (48 and 96 h) but photopatching testing (Waldmann UVA 7.7 J cm⁻², read at 48 h) showed a positive reaction to 2-hydroxy-4-methoxybenzophenone. Patch testing at 48 h to lignocaine and at 120 h to all amides tested was strongly positive. Testing to procaine was negative.

Sunscreen use is associated with contact and photocontact allergy. The benzophenones are frequently used in high-protection sun-barrier preparations. Photopatch testing with a monochromator source has shown abnormal UVA responses with evidence of immediate urticaria and delayed onset dermatitis (Collins P, Ferguson J. Photoallergic contact dermatitis to oxybenzone. *Br J Dermatol* 1994; **131**: 124–9). Our patient's post-operative periorbital cellulitis probably represents contact allergy to lignocaine. Contact allergy to amide is likely to increase because of the widespread use of EMLA cream for topical anaesthesia. Cross-reactivity to other amides was present in this patient, ruling out use of alternative amide anaesthetics (Mackley CL, Marks JG, Anderson BE. Delayed-type hypersensitivity to Lidocaine. *Arch Dermatol* 2003; **139**: 343–6). We have advised the patient to use tetracaine (Ametop®) for topical anaesthesia and procaine for injectable anaesthesia.

CD-14**Patch testing with tea-tree oil: are we testing with the correct allergen?**

R. CLAYTON AND D. ORTON

Amersham Hospital, Buckinghamshire, UK

Tea-tree oil (TTO) is a naturally derived extract from the leaves of *Melaleuca alternifolia*. It is naturally derived from myrtle trees that are native to Australia but can now be found in New Zealand, Spain, Portugal and California. It is possible that the constituents may vary according to its country of origin as well as the subsequent photo-oxidized products. It is incorporated into a wide range of cosmetic and cosmeceutical products including massage oils, mouthwashes, moisturizing creams, and treatments for acne vulgaris, insect bites and mouth ulcers.

Despite there having been numerous cases of allergic contact dermatitis to TTO reported in the literature, there is no clear consensus on the optimal concentration or vehicle for patch testing. In 2002, we reported the findings after prospectively patch testing 550 patients to 100% pure TTO (Australian Bodycare®) that had undergone natural photo-oxidation [Coutts I, Shaw S, Orton D. Patch testing with pure tea tree oil – 12 months experience. *Br J Dermatol* 2002; **147** (Suppl. 62): xiii]. We found an incidence rate of allergy of 2.4% (n = 13) in the patch-test population. However, testing with this product produced a high number of irritant reactions (n = 209). Since 2002, TTO has been included in the BCDS facial series. In 2000, TTO was made commercially available as a patch-test allergen from Chemotechnique (5% pet). Further information is being sought on this product; to date, we know that the TTO is oxidized and checked for peroxide content. We therefore decided to patch test patients with previous allergic reactions to the 100% pure TTO to the commercially available TTO (5% pet). Of the nine patients who agreed to take part, four patients developed a positive allergic reaction, but five had no reaction.

We have highlighted the possibility that reactions may be missed by using the commercial allergen. In particular, when testing with natural products, the commercial equivalents should not always be considered to be 100% sensitive and thus testing patients to their own products and performing usage tests is of the utmost importance.

CD-15**Metal sensitivity: a poor indicator of nickel allergy in atopic individuals**

A. TAKWALE AND J. E. SANSOM

Bristol Dermatology Centre, Bristol, UK

In the recent literature, atopic individuals who report metal sensitivity are sometimes assumed to have nickel allergy. Although published data in the 1980s suggested that a history of metal sensitivity does not correlate well with nickel allergy in atopics, this essential information has, at times, been disregarded. To establish whether these earlier findings are sustained, we undertook a prospective study of patients attending our contact dermatitis clinic.

All patients attending for patch testing from Dec 2004 onwards were asked about personal and family history of atopy, age of ear piercing and history of metal sensitivity. The British extended standard series and other relevant allergens were applied in the standard way. Patch test readings were performed on day 2 and day 4.

Preliminary results are available. To date, information has been collected on 74 subjects, 48 (64%) female and 42 (56%) with a personal history of atopy. Of 74 subjects, 21 (28%) had a positive patch-test reaction to nickel. Of 42 atopics, 22 (52%) gave a history of metal sensitivity but only 11 (50%) of these had a positive patch-test reaction to nickel and/or cobalt. Of the 32 of non-atopic subjects, 9 (28%) gave a history of metal intolerance; 7/9 (78%) of these subjects had a positive reaction to nickel or cobalt. In total, 2/20 (10%) atopics and 0/23 (0%) non-atopics without a history of metal sensitivity demonstrated a positive test to nickel. There were 27/42 (64%) of atopics and 18/32 (56%) non-atopics with pierced ears. Of these, 18/27 (67%) atopics and 8/32

(25%) non-atopics reported metal sensitivity, of whom 10/18 (56%) atopics and 6/8 (75%) non-atopics demonstrated nickel and/or cobalt allergy on patch testing.

The results show that a history of metal sensitivity correlates with positive patch tests to nickel or cobalt in 50% of atopics and 78% of non-atopics. In the non-atopic group, there was a better correlation in patch-test results with both a positive and negative history of metal intolerance. As is previously reported, ear piercing predisposes towards the development of nickel and/or cobalt allergy. This may alter in the future with the introduction of the European Nickel Directive. Our impression that atopics who have a history of metal intolerance are not always demonstrably nickel-allergic appears to be upheld.

CD-16**A review of allergens in current hairdressing products**

R. P. KATUGAMPOLA AND B. N. STATHAM

Department of Dermatology, Singleton Hospital, Swansea, UK

Hairdressing products change with changing hair fashion trends. New hairdressing products may contain important allergens that are not tested by existing hairdressing series. The aim of our study was to review the ingredients of several hairdressing products in current use to identify allergens to be tested in addition to existing series.

The ingredients of 36 products from 14 different brands were reviewed in four local hairdressing salons. The results were analysed by subdividing the products into the following three main categories: colours/bleaches, shampoos/conditioners and styling gels/mousses/perms. Ingredients in 12 colours/bleaches, 4 shampoos/conditioners and 20 gels/mousses/perms were analysed. Each product category contained allergens tested by existing hairdressing, standard and facial series in the UK. Non-standard dyes were found in the following categories: yellow no. 6 in all 3 categories, red no. 4, red no. 33, blue no. 1 in shampoos/conditioners and styling gels/mousses/perms. In addition, the following dyes were found in colours/bleaches: acid red 92, disperse red 17, acid yellow 1, basic yellow 87, basic orange 31, basic blue 77, tetra-bromophenol blue, ultramarine blue and titanium dioxide. A wide range of preservatives were found in all three categories. A wide range of plant derivatives including hydrolysed wheat protein were found in shampoos/conditioners and styling gels/mousses/perms. Sunscreens were found in styling gels/mousses/perms.

Our study showed that existing hairdressing, standard and facial batteries will detect most allergens in hairdressing products. However, hairdressing products contained a wide range of non-standard dyes, plant derivatives, sunscreens and preservatives, which may occasionally cause sensitization or irritant reactions (Pecquet C, Bayrou O, Vigan M et al. Hydrolysed wheat protein: a new allergen in cosmetics and food. *Contact Dermatitis* 2004; **50**: 182.). This study highlights the importance of testing patients' own products and/or product ingredients where there is a high suspicion of allergic contact dermatitis to hairdressing products.

CD-17**Analysis of para-phenylenediamine allergic patients in relation to strength of patch-test reaction**

S. G. Y. HO, I. R. WHITE, R. J. G. RYCROFT, D. A. BASKETTER

AND J. P. MCFADDEN

St. John's Institute of Dermatology, St. Thoma's Hospital, London, UK

Despite having a positive patch test reaction to para-phenylenediamine (PPD), some patients continue to dye their hair, whilst others are forced to give up or abandon this practice. This difference in patient behaviour could be due to the degree of sensitization. The objectives of this study were to establish whether the ability to continue dyeing hair in PPD allergic patients is related to the strength of patch-test reaction, and to note differences in other clinical features in relation to the strength of patch-test reaction.

We retrospectively analysed the sequential patch test records of 400 sequential PPD-positive patients for the strength of patch test reaction (+, ++, +++) and different clinical features. Data was analysed using Mantel Haenszel chi squared and ANOVA statistical tests. There was a strong linear relationship between the strength of patch-test reaction and continuation with hair dyeing. Patients were more likely to report a history of hair-dye reaction with increasing strength of patch-test reaction. There was no difference in strength of patch-test reaction in relation to age, site of rash, occupation (hairdressing) or history of atopic eczema. Overall concomitant reactivity with related aromatic amine allergens (benzocaine, N-isopropyl-N-phenyl-*para*-phenylenediamine, *para*-aminobenzoic acid) was infrequent.

We conclude that patients with stronger patch test reactions (++, +++) are more likely to have a clear history of reacting to hair dye and less likely to still be dyeing their hair.

CD-18

Traditional tattoo treatment trauma

A.HAFEJE, I.H.COULSON, P.LAKSHIMINARASIMIN* AND C.LEON*

Burnley General Hospital, Burnley and *The Royal Botanic Gardens, Kew, UK

A 31-year-old man was admitted under the care of the Orthopaedic Surgeons with a diagnosis of 'spreading cellulitis' of the left forearm. After failure to respond to intravenous antibiotics, a dermatology opinion was sought prior to considering debridement.

Examination showed a weeping eczematous eruption over the inner aspect of the forearm surrounding an area of necrosis 60 × 60 mm in diameter. Acute eczema extended towards his upper arm. He then confided that 2 weeks previously he had applied a paste made from extracts of a crushed nut that a friend obtained from a traditional healer in Pakistan. The sap was applied in an attempt to remove an amateur tattoo (the initials of a past girlfriend) he had previously inscribed on his left forearm. A few hours after application, he developed redness, itching and blistering of this area followed by skin necrosis at the application site. The acute dermatitis resolved rapidly with topical betamethasone cream and potassium permanganate soaks without scarring, any visible remnants of the tattoo, or the need for debridement.

Botanists at the Royal Botanic Gardens, Kew identified the nut as originating from a Himalayan tree species, *Semecarpus anacardium*, commonly known as 'the marking nut tree' (family Anacardiaceae). The almost black juice of the pericarp (the nut wall) is documented in the herbal medicine literature of India as a well-known 'irritant' (though it is known also to be a potent allergen) and is used both for tattooing and for removing tattoos. It is believed to have anti-bacterial and anti-cancer properties. Other species of dermatological interest in the Anacardiaceae include poison ivy and poison oak, sumac, the Japanese lacquer tree, ginkgo, cashew and mango. Cross-reactivity is common between all the members of this group and may provide a possible explanation for the immediate reaction seen here. The allergen is a pentadecylcatechol. Marking nut oil was used to label garments by laundry workers in India, when it was responsible for 'dhobie mark dermatitis' seen in servicemen stationed in India in World War Two.

With increasing interest in alternative therapies and ethnic diversity of our local populations, exotic allergen dermatitis will increase.

CD-19

Co-amoxiclav (Augmentin®) induced acute generalized exanthematous pustulosis confirmed by patch testing

M.J.HARRIES AND T.P.KINGSTON

Department of Dermatology, Macclesfield District General Hospital, Macclesfield, UK

A 34-year-old woman was referred from the maternity department with a rapidly evolving rash that had developed 2 days after an elective caesarean section. Examination revealed a generalized itchy rash mainly

involving her chest, back and proximal limbs. The skin was erythematous, oedematous and slightly scaly, and was studded with small pustules, particularly over the groin and thighs. The patient was pyrexial, tachycardic and felt unwell. She had received a single intravenous dose of co-amoxiclav (Augmentin®) during the caesarean section as a prophylactic measure based on departmental protocol. She had also received diclofenac, subcutaneous enoxaparin, and granesitron prior to the rash developing. A skin biopsy showed acute inflammation of both the epidermis and dermis, predominantly with neutrophils, dermal oedema and small subcorneal pustule formation. Diagnosis of acute generalized exanthematous pustulosis (AGEP) was made. The rash settled over 7 days with conservative management.

Three months later, she was patch tested to the British Contact Dermatitis Society standard series, co-amoxiclav (1%, 5% and 10% pet.), diclofenac (1% and 5% pet.), enoxaparin (1% and 5% aq.) and granesitron (1% and 5% aq.). She had +++ allergic reactions to all three concentrations of co-amoxiclav tested, along with a +++ reaction to nickel.

AGEP is an acute febrile eruption that is drug-induced in over 90% cases. Beta-lactam and macrolide antibiotics are the most common causative agents. A study of 29 patients who had suffered a severe cutaneous adverse drug reaction (including AGEP, Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN)) were patch tested to the potential culprit drug(s). It was found that 50% patients (n = 7) with AGEP had a relevant positive result when patch tested to the suspect drug. The proportion of relevant positive tests were significantly higher in AGEP than in SJS/TEN (Wolkenstein P, Chosidow O, Flechet M-L et al. Patch testing in severe cutaneous adverse drug reactions, including Stevens-Johnson syndrome and toxic epidermal necrolysis. *Contact Dermatitis* 1996; **35**: 234–6).

This case highlights the potential role of patch testing in AGEP. It appears that the probability of getting a relevant positive result is greater in AGEP than other severe adverse drug reactions, including SJS/TEN. Patch testing may have a role in assessing the culpability of a suspect drug while avoiding the need for potentially dangerous provocation tests. It may also be particularly beneficial when numerous suspect drugs are considered as the cause of the reaction.

Posters

CD-20

Allergic contact dermatitis from bisphenol-A-glycidyl dimethacrylate during application of an orthodontic fixed appliance

M.CONNOLLY, I.HUTHCHINSON, A.J.IRELAND AND J.E.SANSOM

Bristol Dermatology Centre, Bristol Royal Infirmary, Whitetree Orthodontic/Dental Centre and Bristol Dental Hospital, Bristol, UK

A 13-year-old schoolgirl was referred to the contact dermatitis clinic with a history of having developed a florid swelling of the upper lip and gingivae, with marked inflammation of the perioral skin 24 h after having an orthodontic fixed appliance fitted. The appliance was removed and a new one fitted using a different composite resin and stainless steel archwires. She was treated with oral antihistamines and 1% hydrocortisone, and her symptoms settled over the next few days. The orthodontist had used a dental composite resin to attach the permanent fixed appliance to the patients' teeth. The adhesive was directly applied to the teeth and cured using blue light, as is standard practice.

There was no personal or family history of atopy and she was otherwise well, although she gave a history of jewellery intolerance. At the time of review, examination was unremarkable. Patch testing was performed to the British standard series, and additional dental and rubber series. She had a strikingly positive reaction (++) to both epoxy resin 1% pet. and bisphenol-A-glycidyl dimethacrylate (BIS-GMA) 2% pet. All other patch tests, including nickel, were negative. Skin prick tests to latex were also negative.

The orthodontic fixed appliance that was originally fitted to the patient consisted of stainless steel brackets, with a nickel content of approximately 18%, along with archwires with a nickel content of approximately 50%. The adhesive used to bond the appliance to the teeth contained a variety of acrylates. BIS-GMA is the most commonly used monomer in dental composite resins and is produced by the reaction of methyl methacrylate and diglycidylether (epoxy resin). [Carmichael AJ, Gibson JJ, Walls AWG. Allergic contact dermatitis to bisphenol-A-glycidylidimethacrylate (BIS-GMA) dental resin associated with sensitivity to epoxy resin. *Br Dent J* 1997; **183**: 297–8]. It is cured by the peroxide/amine method or visible light to produce the final non-allergenic polymer in the mouth (Carmichael *et al*, as before) BIS-GMA sensitivity is a rare cause of allergic contact dermatitis in dental patients, as they are only briefly exposed to the resin before it is polymerized and made non-allergenic.

Our patient had no previous history of exposure to acrylates or epoxy resins and thus we assume the fitting of the orthodontic appliance was a sensitizing episode. Interestingly, she did not react adversely when the second brace was applied. This may be due to the use of resin with a differing acrylate/epoxy composition or altered technique.

CD-21

Allergic contact dermatitis from abitol (dihydroabietyl alcohol) in a temporary tattoo

A.G. AFFLECK AND J.S.C. ENGLISH

Department of Dermatology, Queen's Medical Centre, Nottingham, UK

A 28-year-old barmaid developed an acute dermatitis on the dorsum of her left hand on St. George's Day 12 h after applying a 'St. George's cross' temporary tattoo as part of a brewery promotional event. There was a past history of a severe cutaneous reaction to an unknown eyelash product 5 years previously, suggestive of a sensitizing event. Patch testing to the BCDS standard series was negative. Negative reactions were also found with four individual dyes (black, yellow, blue and red) in the tattoo, latex as is and abietic acid. There were ++++ reactions to tattoo as is and abitol.

Abitol is also known as dihydroabietyl alcohol and is an organic alcohol derived from wood rosin. It is a colourless, tacky balsamic resin with a high refractive index, low colour, low odour and resistance to oxidation. Abitol has a wide range of applications especially in difficult non-structural coatings. It has a wide range of compatibility and solvency. Typical markets include pressure-sensitive adhesives, medical and cosmetic products. It is also used in inks and sealants and is a plasticizer in natural and synthetic rubber, nitrocellulose and various polymers and other plastic materials and a tackifier in emulsions, solvents and hot-melt adhesives. It is a constituent in mascara where it is a film former, enabling water to run off the eyelashes. Abitol is produced from abietic acid and other rosin acids, but cross-reactions with abietic acid and colophony appear to be variable. There is one case report of allergy to abitol in adhesive tape (Cronin E, Calnan CD. Allergy to hydroabietic alcohol in adhesive tape. *Contact Dermatitis* 1978; **4**: 57). Abitol is non-irritant and very rarely causes sensitization (Rapaport MJ. Sensitization to abitol. *Contact Dermatitis* 1980; **6**: 137).

There have been several publications highlighting the problem of allergic contact dermatitis from *para*-phenylenediamine in temporary tattoos but, to the best of our knowledge, this is the first case report of allergic contact dermatitis from abitol in a temporary tattoo.

CD-22

Two patients with chromate allergy from contact with leather furnishings

C.E. KLEYN, T. PATEL, N.J.E. WILSON AND C.M. KING

Royal Liverpool and Broadgreen University Hospitals, Liverpool, UK

Patient 1: A 40-year-old woman with a history of mild atopic eczema presented with worsening hand eczema for 2 months associated with

eczematous patches affecting the ankles, lower back, neck and the extensor arms and legs. She was patch tested with the BCDS standard and steroid series as well as her own medicaments. Positive patch tests were noted to potassium dichromate at D4 (++) and nickel at D2 (++) and D4 (+). Collaborative history confirmed that she occasionally wore leather shoes as well as a leather coat, and had purchased a new leather sofa 2 years prior to the flare-up. Patch tests to samples from the leather sofa and the leather upper and inner from a pair of shoes demonstrated a positive reaction at D2 (++) and D4 (++) . She has improved since avoiding nickel and leather.

Patient 2: A 69-year-old woman with a 20-year history of mild eczema presented with a sudden severe flare-up which initially affected the hands and feet and gradually involved the back, extensor arms and calves. She was patch tested with the BCDS standard and steroid series. A positive reaction to potassium dichromate was noted at D2 (+++) and D4 (+++). Direct questioning elicited that 2 months prior to the exacerbation the patient had purchased a leather sofa that doubled as her bed. She infrequently wore leather shoes. It was not possible to obtain samples from the leather sofa or shoes; however, when all contact with leather was avoided the skin cleared dramatically.

Potassium dichromate is a strong oxidizing agent used for tanning in the leather industry to produce soft leathers. In the non-occupational setting, it has been implicated mainly in shoe dermatitis, attributed to the chromium leaching from the shoe leather. It is likely that our patients' eczema on the feet was due to wearing leather shoes; the rash on the back and limbs was consistent with contact dermatitis to the leather covering of the sofas. To the best of our knowledge, contact with leather in furnishings has not previously been reported to be an exacerbating factor in chromate dermatitis. This case series highlights the importance of considering environmental factors that negate the response to conventional therapies.

CD-23

Patch testing in Asian patients

D.A. FAIRHURST AND M. SHAH

Dewsbury and District Hospital, Dewsbury, UK

Most data on patch testing are based on single ethnic groups. As 18% of our local population is Asian, this allows us to study differences between the Asian and white populations regarding features of contact dermatitis.

Between January and December 2004, 157 patients underwent patch testing. Of these, only 17 (10.8%) were Asian (6 males, 11 females). The mean age of the Asian patients tested was 33.3 years and the average duration of symptoms was 4.8 years prior to testing. There was a history of atopy (asthma/atopic eczema/hay fever) in nine (53%). In nine of the patients (53%), skin disease was generalized rather than localized. Six patients (35%) had one or more positive allergic reactions on patch testing. There were a total of nine positive reactions: nickel (three), *para*-phenylene diamine (PPD) (two), cobalt (one), amerchol (one), thiomersal (one), clotrimazole (one). Of the 140 white patients, 46 were male and 94 female. The mean patient age at testing was 46.2 years and symptoms had been present for an average of 5.1 years. There was a history of atopy in 74 (53%). Most patients were tested due to localized dermatitis, with only 26 (19%) having generalized eczema. There were one or more positive allergic reactions in 80 patients (57%), with a total of 192 positive reactions. The commonest reactions were to nickel (33), cobalt (14) thiomersal (10), balsam of Peru (9), phenylmercuric acetate (8), PPD (6), thiuram (6), methylchloro & methyl isothiazolinone (6) and fragrance mix (6).

We tested fewer Asian patients than would have been expected given the size of the local Asian population. There were similarities between the Asian and white populations regarding sex distribution, duration of dermatitis and rates of atopy. Asian patients reacted less frequently to the patch-test allergens. There were some notable differences between the two ethnic groups regarding types of allergen causing allergic reactions.