CONTACT POINTS

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Contact dermatitis due to lipsticks and a cream containing isopalmityl diglyceryl sebacate (DGS)

Contact Dermatitis 2006: 54: 213–214

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Key words: allergic contact dermatitis; cheilitis; cosmetics; isopalmityl diglyceryl sebacate; lipstick; patch test.

Cases

Case 1

A 27-year-old female did not experience any problems when she used a lipstick containing isopalmityl diglyceryl sebacate (DGS) for 1 year in 2001. She suffered from itchy erythema on her face in 2003 after she used a cream containing DGS for 3 months. She used 2 lipsticks containing DGS after having the problem on her face, and she had dryness with itchy sensation on her lips.

Case 2

A 32-year-old female used a lipstick containing DGS for 2 years from January 2002 to May 2004. She suffered from lip dermatitis in November 2003.

Case 3

A 50-year-old female had used 2 lipsticks containing DGS from June of 2000 to June 2004. She suffered from lip dermatitis in May 2004.

Case 4

A 46-year-old female used a lipstick containing DGS from February 2004. She bought 2 more lipsticks containing DGS on April 2004. She developed lip dermatitis in July 2004.

Patch Testing

We performed a 48-hr closed patch test on our patients' back using Finn Chamber (Epitest Ltd Oy) and Scanpor tape (Alpharma AS). We patch-tested patients' lipsticks, 6 lipsticks that were from the same brand but different colour and formulated with DGS, and a series of lipstick ingredients (33 kinds of oils, 5 kinds of dyes and 3 others) prepared in our clinic. In addition, we tested all ingredients (6 kinds of oils, 7 kinds of dyes and 5 others) of the 6 lipsticks. Readings were made at 1 and 24 hr

Table 1. Results of patch testing

	D2	D3
(Case 1)		
Lipstick A, F of case1's	+	++
Cream A	+	++
Cream B	+	+
Cream C	+?	+
Cream D	+	+
Sunscreen	+	+
Lotion	+	+
Foundation cream	+	+
Lipstick A–F	+	++
DGS 30% pet	+	++
1, 3-BG 5% aq	+	+
Other ingredients of lipstick A–F	–	–
Series of lipstick ingredients	–	–
(Case 2)		
Lipstick E of case 2's	+	++
Cream A	+	+
Emulsion A	+	+
Lipstick A–F	+	++
DGS 30% pet	+	++
1, 3-BG 5% aq	+	+
Diisostearyl malate 30% pet	+?	+
Ester gum 10% pet	+	++
Pentaerythritol rosinate 30% pet	+	++
Lithol Rubine B 1% pet	+?	+
Lithol Rubine BCA 1% pet	+?	+
Geranium oil 20% pet	+?	+
Lavender oil 20% pet	+?	+
Other ingredients of lipstick A–F	–	–
Others of lipstick ingredients series	–	–
(Case 3)		
Lipstick G, H	+	+
Lipstick A–F	+	+
DGS 30% pet	+	+
Other ingredients of lipstick A–F	–	–
Series of lipstick ingredients	–	–
(Case 4)		
Lipstick D	+	+
DGS 30% pet	+	+
Other ingredients of lipstick A–F	–	–
Series of lipstick ingredients	–	–

DGS: isopalmityl diglyceryl sebacate
1, 3-BG: 1,3-butylene glycol

after removal according to International Contact Dermatitis Research Group (ICDRG) recommendations.

Results

Table 1 summarizes results of patch testing in cases 1–4. All cases reacted positively to DGS 30% pet. and lipsticks containing DGS. Moreover, case 1 reacted positively to a cream containing DGS.

Case 2 reacted positively to cream A and emulsion A containing DGS and 1,3-butylene glycol (1,3-BG) which was prepared by us. She also reacted positively to lipsticks, lotions, creams, foundation creams and sunscreens which were prepared in our clinic. She showed allergic reactions of diisostearyl malate 30% pet., 1,3-BG 5% aq., ester gum 10% pet., pentaerythritol rosinate 30% pet., Lithol Rubine B 1% pet., Lithol Rubine BCA 1% pet., geranium oil 20% pet. and lavender oil 20% pet. which were prepared in our clinic.

Discussion

DGS was developed as an ingredient of lipsticks in 1994 (1). DGS is an oily base that has hygroscopic water-holding capacity and water-releasing ability. DGS was formulated not only for lipsticks but also for creams, emulsions, foundation creams and so on. The cosmetics containing DGS are produced only in Japan. They are exported to Taiwan and Korea, but not to Europe.

Our 4 cases used cosmetics formulated with DGS from 3 months to 4 years. All patients' lipsticks (A–H) included DGS; however, lipsticks A–F were of a brand different from that of lipsticks G and H. There were some cases of DGS allergy (2–6). Those cases used lipsticks formulated with DGS from 2 weeks to several years. DGS allergy resulted only from using their lipsticks in the past cases. The concentrations of DGS in lipsticks are 3–29%, the concentrations in lip gloss are about 60%, the concentrations in foundation creams are about 3% and the concentration in a cream of case 1 is even lower. We determined that the cause of her allergy in case 1 was her cosmetic cream containing DGS. She also had a 1,3-BG allergy (7, 8) during that time. Her cream containing DGS was also formulated with 1,3-BG. We must consider not only lipsticks but also other cosmetics formulated with DGS as a cause of allergies.

References

1. Fujii M. Development of DGS (isopalmityl diglyceryl sebacate) as a vehicle component of lipsticks for the purpose of protecting lips from dryness. *FRAGANCE J* 1994: 2: 31–37.
2. Suzuki K, Matsunaga K, Suzuki M. Allergic contact dermatitis due to isopalmityl diglyceryl sebacate in a lipstick. *Contact Dermatitis* 1999: 41: 110.
3. Watanabe Y. Two cases of contact dermatitis from lipsticks. *Nishinihon J Dermatol* 2001: 63: 668.
4. Sugiura K, Sugiura M, Kato Y, Hayakawa R. Lip dermatitis due to isopalmityl diglyceryl sebacate. *Environ Dermatol* 2002: 9 (Suppl. 1): 44.
5. Adachi A, Yamada Y. Allergic contact cheilitis due to isopalmityl diglyceryl sebacate and pentaerythritol rosinate in the lipsticks. *Environ Dermatol* 2003: 10: 70–74.
6. Shono M. Allergic contact dermatitis from isopalmityl diglyceryl sebacate in lipsticks. *Contact Dermatitis* 2003: 48: 48–49.
7. Sugiura M, Hayakawa R. Contact dermatitis due to 1,3-butylene glycol. *Contact Dermatitis* 1997: 37: 90.
8. Sugiura M, Hayakawa R, Kato Y, Sugiura K, Hashimoto R, Shamoto M. Results of patch testing with 1,3-butylene glycol from 1994 to 1999. *Environ Dermatol* 2001: 8: 1–5.

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Oral Lichen planus and sensitization to manganese in a dental prosthesis

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Key words: dental prosthesis; manganese; oral lichen planus.

Patients undergoing dental treatment can be exposed to a wide range of potential allergens. The last works point at the type IV delayed hypersensitivity as local reactions to dental materials resulting in a lichenoid pattern in the oral soft tissues (1–3). Very few cases of manganese sensitivity of dental prosthesis have been reported.

Case Report

A 82-year-old woman with antecedents of hypertension, osteopososis and hepatitis C is under treatment with enalapryl, alendronate and calcium. After placing an upper metallic removable partial dentures, the patient presented pain and burning sensation in the mouth and white lesions in the tongue. The prescriptions, first amoxicillin and then nystatin suspension, were unsuccessful, and the lesions moreover persisted. So that, the tongue surface was swab for microbiological culture, but any pathogen agent was found. The result of the biopsy demonstrated a lichenoid reaction pattern compatible with oral lichen planus. Accordingly, she was treated successively first with retinoic acid during 5 months and then with triamcinolone acetonide 0.1% in Orabase® during 6 months without any type of clinical improvement.

12 months after the symptoms, the lesions begun still remained, and the physical examination of the oral cavity still showed erosions and white streaks on the buccal mucosae and white lesions inserted with depapillated areas in the surface of the tongue. There were no lesions outside the mouth.

Patch testing was performed with the Spanish standard series and the metals and acrylates series (Chemotecnique Diagnostics, Malmö, Sweden). These tests only revealed positivity to manganese chloride 5% pet. (++). Because the patient prosthesis was made of chromium-cobalt alloy containing manganese (0.5%), we recommended to removed it. Then, a manganese-free prosthesis was placed instead, and the symptoms (pain and burning sensation) improved

quickly. 6 months later, the lesions disappeared completely.

Discussion

Allergy to metallic compounds of dental prosthesis may induce lichenoid lesions in their adjacent oral mucosa (4). However, mercury is the most commonly investigated and associated with such lesions, a few cases had been described in relation to manganese (5). The manganese is being increasingly used in the manufacture of dental prosthesis as a nickel substitutive, (6) and, although the potential of manganese to cause allergic contact dermatitis is lacking, in our case report, we have been able to demonstrated a direct causal relationship, because the symtoms and the lesions disappeared after removing the prosthesis. Therefore, similar cases must be reported to define the importance of the manganese in patient with orodynia or oral lichen planus. We suggest that a metal series in the evaluation of patients who suffer stomatitis should be included, particularly in those wearing dental prosthesis to avoid the delay in the diagnosis and treatment of such oral lesions.

References

1. Gawkrodger D J. Investigation of reactions to dental materials. *Br J Dermatol* 2005: 153: 479–485.
2. Lopez-Jornet P, Camacho Alonso F, Gomez-Garcia F, Bermejo Fenoll A. The clinicopathological characteristics of oral lichen planus and its relationship with dental materials. *Contact Dermatitis* 2004: 51: 210–211.
3. Sockanathan S, Setterfield J, Wakelin S. Oral lichenoid reaction due to chromate/cobalt in dental prosthesis. *Contact Dermatitis* 2003: 48: 342–343.
4. Vergara G, Silvestre J F, Botella R, Albares M P, Pascual J C. Oral lichen planus and sensitization to copper sulfate. *Contact Dermatitis* 2004: 50: 374.
5. Pardo J, Rodríguez-Serna M, De la Cuadra J, Fortea J M. Allergic contact stomatitis due to manganese in a dental prosthesis. *Contact Dermatitis* 2004: 50: 41.
6. Vilaplana J, Romaguera C. Contact dermatitis and adverse oral mucous membrane reactions related to the use of dental prostheses. *Contact Dermatitis* 2000: 43: 183–185.

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Delayed hypersensitivity following intravenous lidocaine

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Key words: allergic contact dermatitis; lidocaine; lignocaine.

Case Report

An 80-year-old lady presented with a widespread eruption following general anaesthesia for cataract surgery. She had noticed a burning sensation around her eyes in the immediate postoperative period and 36 hr later developed an extensive eczematous eruption that extended from her neckline to just below her knees. This delayed eruption settled over 2 weeks without treatment. Both features were unusual, and the possibility of an allergic reaction was raised. Suxamethonium and lidocaine used during the induction of general anaesthesia, and cefuroxime that had been injected subconjunctivally were suspected.

Our patient was otherwise well, with no personal or family history of atopy and took no medication. Her only prior exposure to local anaesthetics had been during dental treatment, and this had been uneventful. Use of topical medicaments containing local anaesthetics was not reported. During this episode, the lidocaine (Hameln®) used was a preservative free, 2% solution, containing inactive ingredients; hydrochloric acid, sodium hydroxide and water; a dose of 30 mg was given intravenously.

Patch testing was undertaken to the British standard series, and additional medicament, rubber, local anaesthetic series and cefuroxime as is. On D4, she showed a positive reaction to lidocaine (++), the other anaesthetics, cinchocaine, tetracaine, procaine, prilocaine, benzocaine and amylocaine were negative. (Fig. 1) Her IgE was 145 kIU/l (<87), and RAST to cefuroxime, penicillin G and penicillin V were negative. Prick testing to both latex and lidocaine was negative. Additional intradermal testing with 0.1 ml preservative-free 1% lidocaine was undertaken. At 15 min, examination was unremarkable, at 2 days, a pronounced 1.5-cm wheal was evident which increased in size and intensity at 4 days.

Based on these results, she has been advised to avoid lidocaine and other amide anaesthetics. Should



Fig. 1. A positive D4 reaction to lidocaine, the other anaesthetics were negative.

local anaesthesia be required ester anaesthetics, such as procaine are suggested (1).

Discussion

Local anaesthetics are composed of three distinct moieties: an aromatic portion, an intermediate chain and an amine group. The intermediate chain is either an amide or an ester creating two distinct groups (2, 3). Cross-reaction between esters and amides is unlikely, but within a group, particularly esters, it is well documented. Lidocaine (an amide) is a favoured local anaesthetic agent. It is also used during the induction of general anaesthesia and to treat cardiac arrhythmias. Despite widespread use, adverse reactions to local anaesthetic are rare. These include non-allergic, pseudo-allergic and true allergic reactions. Overall, immunologically mediated allergic reactions are thought to account for 1% of these adverse reactions with reported lidocaine allergy being very rare (4, 5). When encountered, it is often as a delayed type IV hypersensitivity related to prior topical lidocaine use (2, 3, 6, 7). When investigated by the North American Contact Dermatitis Group in 2002, the results were unexpectedly high with 0.7% of patch test patients having a positive reaction to lidocaine (8). Mackley review of similar positive patch test reactions suggested that only those who also develop a positive reaction to intradermal lidocaine gave a clinically relevant history consistent with lidocaine hypersensitivity (8).

Although reports are rare, our patient shows similarity to a case of generalized exfoliative dermatitis secondary to lidocaine reported by Hofmann in 1975 (9). In support of this, our patient had positive patch and intradermal tests and a history consistent with delayed hypersensitivity following intravenous lidocaine. Clinicians should be aware of the potential problem of lidocaine sensitivity although it may be rarely encountered.

References

1. Curley R K, Macfarlane A W, King C M. Contact sensitivity to the amide anesthetics lignocaine, prilocaine, and mepivacaine. *Arch Dermatol* 1986: 122: 924–926.
2. Skidmore R A, Patterson J D, Tomsick R S. Local anesthetics. *Dermatol Surg* 1996: 22: 511–522.
3. Ruzicka T, Gerstmeier M, Przybilla B, Ring J. Allergy to local anaesthetics: comparison of patch test with prick and intradermal test results. *J Am Acad Dermatol* 1987: 16: 1202–1208.
4. Amsler E, Flahault A, Mathelier-Fusade P, Aractingi S. Evaluation of re-challenge in patients with suspected lidocaine allergy. *Dermatology* 2004: 208: 109–111.
5. deShazo R D, Nelson H S. An approach to the patient with a history of local anaesthetic hypersensitivity: experience with 90 patients. *J Allergy Clin Immunol* 1979: 63: 387–394.
6. Weightman W, Turner T. Allergic contact dermatitis from lignocaine: report of 29 cases and review of the literature. *Contact Dermatitis* 1998: 39: 265–266.
7. Handfield-Jones S E, Cronin E. Contact sensitivity to lignocaine. *Clin Exp Dermatol* 1993: 18: 342–343.
8. Mackley C L, Marks J G, Anderson B E. Delayed-type hypersensitivity to lidocaine. *Arch Dermatol* 2003: 139: 343–346.
9. Hofmann H, Maibach H I, Prout E. Presumed generalised exfoliative dermatitis to lidocaine. *Arch Dermatol* 1975: 111: 266.

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Skin reaction to hydroxyzine (Atarax®): patch test utility

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Key words: hydroxyzine; patch test.

The sensitizing capacity of topical antihistaminic preparations may cause contact and photocontact dermatitis, while systemic administration rarely induces allergic hypersensitivity. Hovewer, several cases of drug eruptions related to oral antihistaminic treatment have been described but it is not always easy to demonstrate the cause relationship.

Case Report

A 36-year-old male with past medical history of celiac disease, hepatitis C virus positive and congenital pyloric stenosis with surgical correction during early childhood was first visited at our dermatology service in 1996. He presented with a 7-year history of mild psoriasis consisting of small plaques and affecting about 20% of the body surface. The patient had been treated with PUVA, acitretin, cyclosporin, methotrexate and topical corticoids with partial improvement but recurrent episodes.

Coinciding with a new episode of psoriasis including mild itching, the patient began treatment with 50 μg/g of calcipotriol with 0.5 mg/g of betamethasone dipropionate (Daivobet®) and oral hydroxyzine (Atarax®) every 8th hours. 48 hr later, he presented a desquamative erythematous maculopapular rash with severe pruritus. The patient reported that he had previously taken oral hydroxyzine without any complications and also he had used Daivobet® several times. He denied taking any other oral medication or using any other topical application in the last month.

On the basis of presumed diagnosis of contact dermatitis due to Daiovobet and/or drug eruption due to hydroxyzine, an epicutaneous test was performed. The results of the European standard battery Trolab, the Trolab series of vehicles, the 0.12% betamethasone valerate, the Daivonex® and the Daivobet® were negative. However, the 2.5% hydroxyzine in petrolatum was positive (++) at 48 hr and 96 hr, and so the patient was orientated as a maculopapular drug eruption due to hydroxyzine. The patient rejected the oral provocation test. Patch test with 2.5% hydroxyzine in 10 control subjects were all negative (Fig. 1)

Conclusion

Hydroxyzine is an ethylenediamine dihydrochloride (1). It is a first generation antihistaminic derived from piperacine (2). 5 maculopapular eruptions case due to hydroxyzine (Table 1) (2–4) have been reported. In all cases, an oral provocation test



Fig. 1. Skin-positive reaction ++ of the patch test with 2.5% hydroxyzine (Atarax®). Negativity for 0.12% betamethasone valerate (B), Daivonex® (DI) and Daivobet® (DC).

Table 1. Maculopapular reactions due to hydroxyzine

Patient	Sex	Age	Oral provocation test	Patch test	Prick test	References
1	Female	65	+	+	–	Michel et al. (2)
2	Female	20	+	+	–	Michel et al. (2)
3	Female	35	+	+	–	Michel et al. (2)
4	Female	48	+	+	Not done	Ash and Scheman (3)
5	Male	44	+	+	Not done	Lew et al. (4)

was performed and was positive, and a patch test with hydroxyzine – in different concentrations – was also positive. A prick test was carried out in only 3 cases, and the results were negative. Cases of fixed drug eruption have also been described due to hydroxyzine (5). Furthermore, 2 cases of a cross-reaction between cetirizine and hydroxyzine have been reported, 1 in a generalized morbilliform eruption pattern with pruritus (4) and the other appeared as a drug eruption (6). As our patient had taken cetirizine on several occasions without a secondary skin reaction, we do not consider that there was a cross-reaction in this case.

On the other hand, a patient with probable primary sensitization due to oral hydroxyzine without history of exposure to ethylenediamine has been reported. This patient had a positive patch test to this substance, suggesting a cross-reaction (3). For this reason, we agree with Menne (7) that the relation between the systemic exposure and contact dermatitis was probably misdiagnosed.

We believe it is of considerable importance to study every patient whose skin condition worsens after the reintroduction of antihistaminics, especially hydroxyzine. We recommend the patch test with 2.5% hydroxizine in petrolatum as the first diagnostic step to be made in these cases, especially in patients who do not wish to perform the oral provocation test or in whom the test could induce severe side effects.

References

1. Stingeni L, Caraffini S, Agostinelli D, Ricci F, Lisi P. Maculopapular and urticarial eruption from cetirizine. *Contact Dermatitis* 1997: 37(5): 249–250.
2. Michel M, Dompmartin A, Louvet S, Szczurko C, Castel B, Leroy D. Skin reactions to hydroxyzine. *Contact Dermatitis* 1997: 36: 147–149.
3. Ash S, Scheman A J. Systemic contact dermatitis to hydroxyzine. *Am J Contact Dermat* 1997: 8: 2–5.
4. Lew B L, Haw C R, Lee M H. Cutaneous drug eruption from cetirizine and hydroxyzine. *J Am Acad Dermatol* 2004: 50: 953–956.
5. Cohen H A, Cohen Z, Frydman M. Fixed drug eruption of the scrotum due to hydroxyzine hydrochloride (Atarax). *Cutis* 1996: 57: 431–432.
6. Assouere M N, Mazereeuw-Hautier J, Bonafe J L. Toxidermie à deux antihistaminiques ayant une parenté chimique: la cétirizine et l'hydroxyzine. *Ann Dermatol Venereol* 2002: 129: 1295–1298.
7. Menne T. Systemic contact dermatitis to hydroxyzine. *Am J Contact Dermat* 1997: 8: 1.

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Contact dermatitis to 2-hydroxyethylamino-5-nitroanisole and 3-nitro-*p*-hydroxyethyl aminophenol in a hair dye

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Key words: 2-hydroxyethylamino-5-nitroanisole; 3-nitro-*p*-hydroxyethyl aminophenol, allergic contact dermatitis; cosmetics; hair colouring; hair dyes; patch testing.

Case Report

Hair dyes may be responsible for severe reactions among consumers. We describe the responsibility of 2 unusual components in hair dyes.

A 40-year-old atopic woman presented with an oedema of the face and eczema of scalp, 2 days after use of a semipermanent hair colouring preparation, during 6 days, briefly treated with systemic corticoids. This oedema was more important on the left side of the face. She had presented a similar episode 6 months before, after a colouration at her hairdresser. Patch tests were

Table 1. Patch tests results (first session)

	D2	D4
Nickel sulfate (5% pet.)	+ +	+ +
Cobalt chloride (1% pet.)	+ +	+ +
Fragrance mix (8% pet.)	+ +	+ +
Mercapto mix (2% pet.)	+	–
N-isopropyl-*N*-phenyl-4-phenylenediamine (0.1% pet.)	–	+

Table 2. Patch tests results (second session)

	D2	D3
2-Hydroxyethylamino-5-nitroanisole (0.06%)	+ +	+
3-Nitro-*p*-hydoxyethyl aminophenol (0.14%)	–	+ +
3-Methylamino-4-nitrophenoxyethanol (0.10%)	–	?+
Other components	–	–

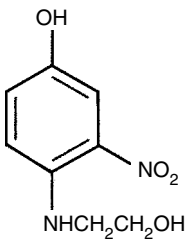


Fig. 1. 3-nitro-*p*-hydroxyethyl aminophenol.

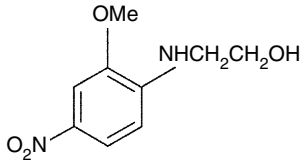


Fig. 2. 2-hydroxyethylamino-5-nitroanisole.

performed with European standard series (Trolab®), hairdressing series (Chemotechnique Diagnostics®), with Finn Chambers® tests (Table 1).

Patch tests of the hairdressing series were negative. Semi-open test with the hair dye as is was positive + +/+ +. The patient was then patch tested with components of the hair dye obtained from the manufacturer, which were in ethanol 95° diluted in water (50/50), with Leucotest® (Table 2) (Figs 1 and 2). The 2 positive components of the hair dye were negative in 10 controls at D2 and D3.

Discussion

Semipermanent hair dyes contain low molecular weight nitrophenylene diamine, antraquinone dyes which penetrate the hair cortex to some extent. Their colour lasts through approximately 5 shampoos (1, 2).

In our patient, 2 unusual molecules were responsible of a severe reaction after use of a hair dye; an important oedema was noticed in our patient, and this symptomatology could be confused with angioedema, but in our case, the symptoms occurred after 48 hr and it was associated with eczema. The oedema was more important on the left side of the face, and it could perhaps be explained by the fact she was on this side in her sleep because of the declivity.

Contact dermatitis to 3-nitro-*p*-hydroxyethyl aminophenol has already been described since 2003 (3, 4), and we have already presented our case in 1999 (5). An other name of this molecule is 4-hydroxyethylamino-3-nitrophenol. Its trade name is Imexine FH (Chimex Gonesse, France); its colour is red. The patch testing concentration also used were 1.35% in ethanol (3) and 1% in pet. (4). Clinical picture was also severe in these 2 cases (3, 4).

2-hydroxyethylamino-5-nitroanisole has CAS number 66095-81-6 and belongs to the amine class; it is used in hair dyes and colours; its trade name is Imexine FM (Chimex, Gonesse, France) (6). Its colour is yellow.

References

1. Fisher A A. *Contact Dermatitis*, 3rd edition. Philadelphia: Lea & Febiger, 1986.
2. Zviak C, ed. *Science Des Traitements capillaires*. Paris: Masson, 1988.
3. Le Coz C J, Kühne S, Engel F. Hair dye allergy due to 3-nitro-*p*-hydroxyethylaminophenol. *Contact Dermatitis* 2003: 49: 103.
4. Sosted H, Menné T. Allergy to 3-nitro-*p*-hydroxyethylaminophenol and 4-amino-3-nitrophenol in a hair dye. *Contact Dermatitis* 2005: 52: 317–319.
5. Dejobert Y, Piette F, Thomas P. Contact dermatitis to 2-hydroxy ethylamino-5-nitroanisole and to 3-nitro-*p*-hydroxyethyl aminophenol in a hair dye, 12th International Contact Dermatitis Symposium, San Francisco, October 14–18, 1999.
6. Gottschalck T E, McEven G N, eds. *International Cosmetic Ingredient Dictionnary*, 10th edition. Washington: The Cosmetic, Toiletry and Fragrance Association, 2004.

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The influence of contact dermatitis on career change in hairdressers

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Key words: allergic contact dermatitis; hairdressers; patch tests.

Hand dermatitis is an important cause of morbidity in hairdressers, and a significant proportion are forced to leave the profession as a direct consequence.

Our aim was to determine the proportion of hairdressers with hand dermatitis who changed their career due to debilitating dermatitis.

Patients and Methods

Patch test results of 51 hairdressers (47 female and 4 male) with hand dermatitis attending the dermatology service between 1987 and 2004 were analysed retrospectively. The age

range was 16–60 years, mean age 19.7 years and 21 were apprentice hairdressers. Patients were tested to allergens of the British standard and hairdressing series. A telephone questionnaire was carried out 0.5–17 years later (mean 8.75 years) to evaluate the proportion of hairdressers who changed their occupation due to hand dermatitis.

Results

29 hairdressers had positive reactions to the hairdressing series. 35 had positive reactions to the standard series. 11 patients had negative patch test results. The results show an occupationally relevant sensitization of 56.86%.

Among hair dyes, para-phenylenediamine caused positive reactions in 26 patients (50.9%), p-toluenediamine caused 12 reactions (23%) and a-nitro-p-phenyldiamine 9 reactions (17.6%). Among permanent wave allergens, positive reactions to glycerylmonothioglycolate were found in 23.5%. There were no reactions to ammoniumthioglycolate. Reactions to ammoniumpersulphate occurred frequently (27.4%).

Contact was made with 21/29 (72%) of hairdressers with positive reactions to the hairdressing series. Duration of follow up ranged from 6 months to 17 years (mean 8.75 years). 14 (66%) had ceased hairdressing due to hand dermatitis. 3 of 14 had persistant hand dermatitis despite a change of career. Of note, of the 3 hairdressers with ongoing dermatitis despite a change of career 1 was atopic and 1 was allergic to nickel. 3 of 7 patients still hairdressing had persistent dermatitis, and four had altered their work practices and denied further problems with hand dermatitis. 10 of 11 hairdressers with negative patch test results were contacted. Three had stopped hairdressing due to irritant hand dermatitis.

Discussion

Occupational hand dermatitis in hairdressers results in days lost at work and more significantly can force hairdressers to change their career.

In this study, 29 of 51 hairdressers (56.86%) had positive patch test results to the hairdressing series which is similar to most reported series (1). In our follow-up study, 66% of contactable patients with allergic contact dermatitis had left hairdressing as opposed to 30% of those with irritant contact dermatitis. Overall 17 of 31 (54.8%), contactable hairdressers had left their work due to contact dermatitis either allergic or irritant. This compares with one small series of 20 patients where just over 50% were forced to leave hairdressing as a consequence of occupational contact dermatitis (2). In another study, Cronin contacted 20 hairdressers with dermatitis whom they had previously examined. 8 (40%) had changed their occupation due to hand dermatitis (3).

Opinions are divided concerning the effect on prognosis of a change of occupation for patients who contracted hand dermatitis at work. In our study, 3 of 14 who left their jobs due to hand dermatitis had persistant dermatitis despite a change of career. One of these patients was atopic, and one was allergic to nickel, factors which may have been responsible for persistant postoccupational dermatitis. Management of occupational skin disease should begin in pre-employment and training stages of hairdressing by education and adherence to preventive measures such as wearing vinyl gloves. In particular, atopic patients contemplating career choices should be appraised of the occupational hazards of hairdressing (4).

References

1. Lee A, Nixon R. Occupational skin disease in hairdressers. *Australas J Dermatol* 2001: 42: 1–10.
2. Linn Holness D, Nethercott J R. Epicutaneous testing results in hairdressers. *Am J Contact Dermat* 1990: 1: 34.
3. Cronin E, Kullavanijaya P. Hand dermatitis in hairdressers. *Acta Derm Venereol Suppl (Stockh)* 1979: 59: 47–50.
4. Fischer A A. Dermatitis due to cosmetics. In: *Contact Dermatitis*, 3rd edn. New York: Lea & Fabiger Philadelphia, 1986: 390–510.

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A painful experience: black henna tattoo causing severe, bullous contact dermatitis

Contact Dermatitis 2006: 54: 219–220

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Key words: black henna tattoo; contact dermatitis; PPD.

Case Report

A 40-year-old patient had a henna tattoo painted on his left upper arm while on holiday in Italy. Several hours later, painful, itchy, exudative, bullous eruptions appeared at the application site (Fig. 1). He went to the local outpatient clinic, where oral betamethasone 0.75 mg/day and clindamycin 900 mg/day were prescribed for 1 week. 7 days after the initial application, he was admitted to our clinic, where patch testing was performed. He developed a + + + positive reaction to paraphenylendiamine (PPD). His past medical history revealed that he had acquired a temporary henna tattoo 4 years earlier. 2 weeks afterwards, he had developed erythematous, vesiculous dermatitis in the tattooed areas. Post-inflammatory hypopigmentation in the design of the original tattoo appeared and persisted for 1 year after the resolution of the lesions.

Discussion

Although numerous reports about severe allergic contact reactions to temporary henna tattoos have been published concurrently, henna tattoos are still fashionable at holiday resorts, and tourists seem to remain unaware of potential risks. In 'black henna', PPD is added to speed up the dying process, darken the colour and improve the pattern definition.

PPD, not henna, is the causative agent of the majority of cases of



Fig. 1. + + + bullous patch test reaction to paraphenylendiamine.



Fig. 2. Severe, bullous contact dermatitis after application of a black-henna tattoo.

allergic contact dermatitis due to henna tattoos (1) and may provoke severe, bullous contact reactions in presensitized patients, when applied onto the skin. Sensitization to PPD in a henna tattoo increases the risk of subsequent allergic reactions to PPD-containing products such as hair dye, cosmetic products and textile dyes (2). Case reports about severe allergic contact dermatitis to PPD in hair dyes following sensitization to henna tattoos have been published (3).

Because the use of PPD at a concentration of 1% often results in very severe patch test reactions, as seen in our patients as well (Fig. 2), testing of patients with adverse reactions to henna tattoos with lower concentrations seems to be advisable, as suggested by Ho et al. (4) In the case of a negative result, patch testing with 1% may be performed subsequently, to ensure that allergy to PPD is not missed.

Because of the mentioned implications on patients' health, tourists should be advised against the use of paint-on tattoos.

References

1. Marcoux D, Couture-Trudel P M, Riboulet-Delmas G, Sasseville D. Sensitization to para-phenylenediamine from a streetside temporary tattoo. *Pediatr Dermatol* 2002: 19: 498–502.
2. Matulich J, Sullivan J. A temporary henna tattoo causing hair and clothing dye allergy. *Contact Dermatitis* 2005: 1: 33–36.
3. Jasim Z F, Darling J R, Handley J M. Severe allergic contact dermatitis to paraphenylene diamine in hair dye following sensitization to black henna tattoos. *Contact Dermatitis* 2005: 52: 116–117.
4. Ho S G, White I R, Rycroft R J, McFadden J P. A new approach to patch testing patients with paraphenylenediamine allergy secondary to temporary black henna tattoos. *Contact Dermatitis* 2004: 51: 213–214.

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Allergic contact dermatitis from methyl gentisate in a bleaching cream

Contact Dermatitis 2006: 54: 220–221

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Key words: allergic contact dermatitis; bleaching gel; cosmetics; gentisic acid; hydroquinone analogue; methyl gentisate; skin-lightening agent.

Case Report

A 38-year-old non-atopic lady reported developing a strong eczematous face reaction within a few days of daily applications of a skin-lightening gel (Dermovital Clair®, ICIM, Milan, Italy), containing methyl gentisate 0.5% as the active bleaching agent. The patient reported no previous skin-lightening treatments nor a past history of cosmetics intolerance.

Patch testing with the Società Italiana di Dermatologia Allergologica e Professionale (SIDAPA) standard series and the patient's gel as is showed a + + reaction to the bleaching gel at D2 and D4. A non-relevant + reaction to nickel was also present. A repeated open application test performed with the cream in the antecubital fossa was positive within 2 days.

The manufacturer kindly provided samples of the ingredients of the gel, appropriately diluted for patch testing, each at the same concentration used in the finished product, and the patient was further patch tested with these substances. Readings performed at 2 and 4 days showed a clearly positive erythemato-oedematous, vesicular reaction to methyl gentisate (methyl 2,5-dihydroxybenzoate) 0.5% in denaturated alcohol. Denaturated alcohol as is was negative. 20 controls were patch tested with methyl gentisate, and no positive reactions were seen.

Comment

Methyl gentisate [$(HO)_2C_6H_3CO_2CH_3$; CAS: 2150-46-1] is the methyl ester of gentisic acid (Fig. 1), a natural

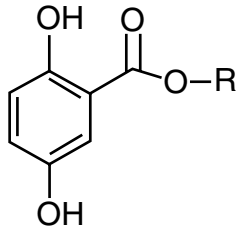


Fig. 1. Chemical structure of gentisic acid and its derivative methyl gentisate (R = CH_3).

product derived from the roots of plants of the genus *Gentiana*. It is a rather recent skin-lightening agent structurally similar to hydroquinone (1). Although rare cases of allergic contact dermatitis from hydroquinone in bleaching creams are described in the literature (2), methyl gentisate has never previously been reported as a possible contact allergen.

References

1. Curto E V, Kwong C, Hermersdörfer H, Glatt H, Santis C, Virador V, Hearing V J Jr, Dooley T P. Inhibitors of mammalian melanocyte tyrosinase: in vitro comparisons of alkyl esters of gentisic acid with other putative inhibitors. *Biochem Pharmacol* 1999: 57: 663–672.
2. Barrientos J N, Ortiz-Frutos E, Gómez E, Iglesias L. Allergic contact dermatitis from a bleaching cream. *Am J Contact Dermat* 2001: 12: 33–34.

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Gold concentration in blood in patients with gold-plated stents

Contact Dermatitis 2006: 54: 221–222

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Key words: contact allergy to gold; inductive coupled plasma mass spectrometry; PTCA; restenosis; stent

We have previously reported our findings regarding contact allergy to gold in a small number of patients who had received gold-plated stents after percutaneous transluminal coronary angiography (1). Also in-stent restenosis was registered (1). We found a high frequency of contact allergy to gold in the patients treated with gold-plated stents. Here, we report the gold concentrations of blood (B-Au) found in the patients.

Materials and Methods

22 patients agreed to participate (15 males and 7 females, mean age 62; SD 9.7; range 39–75) in the study. In these patients, restenosis had been evaluated by the cardiologist. In-stent restenosis was defined as target lesion revascularization rate where the clinical effects of restenosis is evaluated, e.g. using the portion of the stented patients in whom a clinically motivated second angiography has led to a reintervention at the dilated site as opposed to the rest of the population. Before testing, the patients filled out a questionnaire regarding exposure to gold and possible adverse reactions to such an exposure. Before the patch test, a blood sample was taken from 20 of the 22 patients to enable analysis of the gold concentration in blood. 2 patients objected to blood test. The patients then underwent epicutaneous testing with the European standard series with additional metals (1). Gold was tested as gold sodium thiosulphate (GSTS) 2.0% w/w in pet., and if the reaction was doubtful on D3, a retest was made with GSTS 5.0% w/w in pet. Thus original tests were read on D3 and D7 and retests on D7 and D10.

The samples (blood from 14 males and 6 females) were analysed at the same time. Analysis of B-Au was made using inductive coupled plasma mass spectrometry; the detection limit for Au determination was 0.005 μg/l (2).

Results

According to the questionnaire results, there were no significant differences between the allergic and non-allergic patients with regard to dental gold, topical, systemic and occupational exposure to gold.

In Table 1, the patients are listed with their B-Au and patch test results regarding GSTS. Also findings of restenosis are listed there. The material is very small, but there was a statistically significant difference (Mann–Whitney $P < 0.05$); patients with contact allergy to gold had higher values of gold in their blood than those with no contact allergy.

Table 1. Gold concentration in blood, patch test results and findings of in-stent restenosis in 20 patients

Patient's sex and age	Blood concentration μg/l	Test result to gold	Restenosis (TLR)
Male, 55	0.003	–	+
Male, 46	0.005	–	–
Male, 69	0.005	–	–
Male, 62	0.005	–	–
Male, 56	0.005	+	–
Male, 39	0.006	–	–
Female, 58	0.006	–	+
Male, 57	0.006	–	–
Male, 61	0.007	–	–
Female, 72	0.007	+	–
Male, 65	0.007	–	–
Female, 74	0.009	+	+
Male, 75	0.015	+	–
Female, 70	0.020	+	–
Male, 68	0.023	+	–
Male, 69	0.052	+	–
Male, 55	0.064	–	–
Female, 59	0.084	+	+
Male, 55	0.118	+	–
Female, 59	0.444	–	–

There was no significant difference in gold concentrations of blood between those patients who had a restenosis and those who had not. There was no significant difference between patients allergic to gold and patients non-allergic regarding gold dental restorations, but the material was small.

Discussion

A frequency of about 10% of gold allergy has been reported (3). Previous studies have demonstrated that dental gold may be decisive for sensitization (4). It has been shown that patients with dental restorations had about 2 times higher value of gold in their blood compared with patients without gold restorations (range <0.04–1.07 micorg/l compared with 0.04–0.15 microg/l) (2). This is strongly indicating that gold is released from dental restorations and taken into the circulation (2).

Today, implants are increasingly being used in our bodies: vessels, tissues and bones. These implants are often made of stainless steel containing several metals (5). Sometimes the implants can be coated to obtain a particular effect, e.g. gold-plating of metal stents for good visibility on X-ray.

We have previously shown a high frequency of contact allergy to gold in patients being treated with gold-plated stents (1). A correlation to an increased risk of restenosis has also been found (6). The gold concentration in our patients ranged from 0.002 to 0.444 microg/l, thus being in the lower range compared with patients with gold restorations. The material was very small, but still there is a difference between those allergic and those not. However, the patient with the highest gold concentration was not allergic and had not had any restenosis. On the other hand, the patient had had several gold restorations that had been removed 5 years before the study, and 2 gold restorations remained.

A larger study and, if possible, a prospective one will have to be done to show whether gold is released into the circulation from gold-plated stents and whether this is important for sensitization.

References

1. Svedman C, Tillman C, Gustavsson C-G, Möller H, Frennby B, Bruze M. Contact allergy to gold in patients with gold-plated intracoronary stents. *Contact Dermatitis* 2005: 52: 192–196.
2. Ahnlide I, Ahlgren C, Björkner B et al. Gold concentration in blood in relation to the number of gold restorations and contact allergy to gold. *Acta Odontol Scand* 2002: 60: 301–305.
3. Bruze M. Andersen K E. Gold-a controversial sensitizer. *Contact Dermatitis* 1999: 40: 295–299.
4. Ahlgren C, Ahnlide I, Björkner B et al. Contact allergy to gold is correlated to dental gold. *Acta Derm Venereol* 2002: 82: 41–44.
5. Gotman I. Characteristics of metals used in implants. *J Endourol* 1997: 11: 383–389.
6. Svedman C, Holmström E, Kehler M, Gustavsson C-G, Möller H, Bruze M. Increased rates of contact allergy to stent material among patients who have been treated with PTCA (percutaneous transluminal coroanry angioplasty) and have been stented. Abstract at the American Academy of Dermatology 63rd annnual meeting February 18–22, 2005 New Orleans, USA.

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Osteosynthesis associated contact dermatitis with unusual perpetuation of hyperreactivity in a nickel allergic patient

Contact Dermatitis 2006: 54: 222–225

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Key words: allergy; contact dermatitis; implant; metal; nickel; osteosynthesis

A 35-year-old patient without previous history of contact allergy developed eczema at the right lower leg following plate fixation of right tibial fracture. Initial patch testing revealed nickel contact allergy and removal of the implanted alloy after fracture healing was expected to solve the eczema. However, eczema recurred and re-evaluation of the patient's history demonstrated that a broken drill bit was left *in situ* at the time of osteosynthesis plate removal. Radiographs showed co-localization of the metal fragment with the recurring eczema. Thus, local metal release even from metal fragments in periimplantar tissue may be sufficient for eczema provocation.

Background

In association with metallic implants, hyperreactivity reactions have been reported under the picture of localized or generalized eczema, local swelling or recurrent urticaria (1–4). It is also under discussion, whether aseptic loosening or persistent pain in arthroplasty could be partly due to allergy. Various studies have shown that metallic alloys may undergo corrosion and release their constituents into the periimplantar tissue (5). Correspondingly – in the case of patients with hip or knee arthroplasty – elevated levels of nickel, chromium and/or cobalt may be found both in blood and in urine (6, 7). We report on a patient who developed local eczema upon osteosynthesis of right tibial fracture. Allergological diagnostics showed contact allergy to cobalt and nickel with corresponding T-cellular hyperreactivity *in vitro*. Because eczema continued even after removal of osteosynthesis material with a drill bit left within the distal tibia, we consider local metal release as elicitor of the patient's ongoing eczema.

Case Report and Methods

A 35-year-old healthy woman with no previous history of metal allergy was referred for allergological diagnostics for suspected intolerance reaction to post-traumatic tibial osteosynthesis. A few weeks after open reduction and internal locked plate and screw fixation of a comminuted tibial pilon fracture using osteosynthesis metal implants, erythema, itching and finally eczematous reaction appeared at the right lower leg. Upon consultation of a

dermatologist, patch testing was performed at half-year distance to initial surgery and revealed contact allergy to nickel. 3 months after complete fracture healing osteosynthesis material was removed, and this was considered to resolve the patient's eczema. However, eczema at the right lower leg persisted (Fig. 1). The patient then additionally reported that with her informed consent at the time of material removal a broken drill bit was left in place to avoid further trauma to the previously damaged distal tibia. Figure 2 gives the corresponding radiograph.

Patch test was repeated to examine the sensitization status to implant constituents and to exclude concurrent contact allergies to constituents of the different regimen used for eczema-therapy. Patch testing to the German Contact Dermatitis Society Standard Series as well as to an extended metal series (including manganese, molybdenum and vanadium) gave at D2 and D3 a positive reaction to nickel, at D3 also to cobalt (Fig. 3a). In addition, a lymphocyte transformation test was performed. Peripheral blood mononuclear cells (PBMC) were obtained from heparinized blood by density centrifugation on Ficoll-Hypaque (Pharmacia, Freiburg, Germany) and cells (1×10^6/ml) were cultured in 10% AB-Serum containing enriched RPMI 1640 medium (Sigma, Taufkirchen, Germany). Stimulation was performed with the pan T-cell mitogen phytohemagglutinin (PHA 2.4 μg/ml), tetanus toxoid/TT 5 μg/ml), $NiSO_4$ at 10^{-4}M and 10^{-5}M, $CrCl_2$, $CoCl_3$, Na_2MoO_4, $MnCl_2$, TiO_2 (reagents from Sigma) and culture medium alone as control. After 5 days, cells were pulsed with 3H thymidine, proliferation was assessed by incorporated radioactivity and expressed in relation to unstimulated cultures as stimulation index. As shown in Fig. 3b, T-cellular hyperreactivity to nickel was observed in the patient's PBMC.

It was concluded that the patient had become sensitized to nickel and cobalt in the orthopaedic fixation material and that local eczema was maintained by the presence of the metallic drill fragment. Being a surgical intervention with risk of complications, the patient so far did not decide to undergo surgery for fragment removal. She, however, still suffers from relapsing eczema at the lower leg and has developed intolerance to nickel-containing jewelry.



Fig. 1. Persistence of eczema at the right lower leg.

Discussion

Most static orthopaedic implants like plates, nails or screws are made from stainless steel or cobalt-chromium-based materials. Their corrosion-related release of nickel, cobalt or chromium is well known (5), but its clinical significance is still controversial. With the restriction of often missing allergological work-up in respective patients, it is difficult to reconcile the rather low number of allergy-related complications in implant recipients with the high inci-



Fig. 2. A-P and lateral radiograph revealing correct fracture healing and persistence of a foreign body corresponding to the broken metallic drill bit.

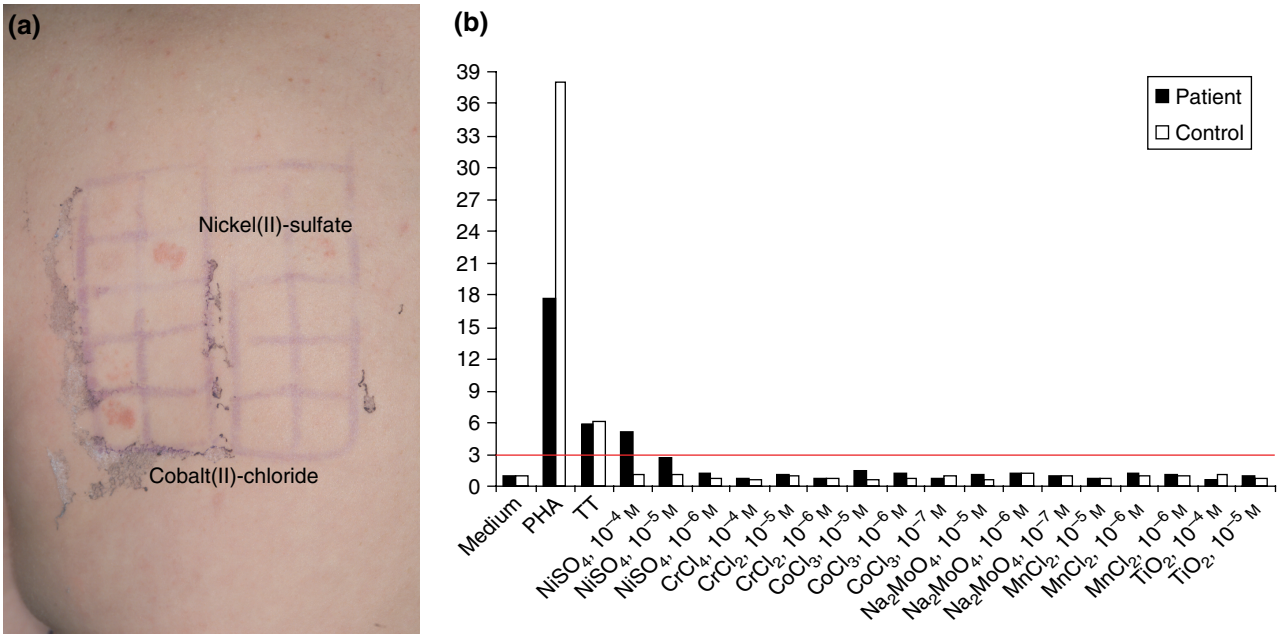


Fig. 3. (a) Patch test reactions at D3 revealing contact allergy to cobalt and nickel. (b) Proliferative response (expressed as stimulation index, SI) of the patient's PBMC and of a-non-allergic control. Stimulations: PHA, phytohemagglutinin; TT, tetanus toxoid; $NiSO_4$, nickel sulphate; $CrCl_2$, chromium chloride; $CoCl_3$, cobalt chloride; Na_2MoO_4, sodium molybdenate; $MnCl_2$, manganese chloride; TiO_2, titanium oxide.

dence of metal (particularly nickel) allergy in the general population. It may well be that elevated local and systemic metal concentrations in arthroplasty patients could even represent tolerance-favouring conditions (8, 9). In our case, the temporal and local coincidence of eczema and metal implantation together with ongoing eczema at the skin site overlying an remaining metallic fragment with concomitant nickel/cobalt allergy support the causal link between these findings. It also stresses the importance of allergological diagnostics in the case of otherwise unexplained implant-related complications. Clinical pictures encompass not only local but also generalized eruptions, vasculitic changes or contact dermatitis together with itching and even sterile osteomyelitis upon use of stainless steel wires after sternotomy (10–12). Furthermore, impaired fracture healing has been reported after use of a cobalt-chromium-based alloy in a chromate allergic patient (13). In that patient molecular analysis of periimplantar tissue further supported the diagnosis of hyperreactivity-induced complications. Recently, in patients bearing metal to metal prosthesis – when showing complications such as current pain, local seroma or loosening – a substantial rate of metal contact allergy has been reported (14, 15) However, the causal link to implant failure still remains to be shown. Similarly, the DTH-like periimplantar histological changes reported in some patients with loosening of hip arthroplasty need to be evaluated by larger studies (16, 17).

References

1. Kubba R, Taylor J S, Marks K E. Cutaneous complications of orthopedic implants. *Arch Dermatol* 1981: 117: 554–560.
2. Kanerva L, Förström L. Allergic nickel and chromate hand dermatitis induced by orthopaedic metal implant. *Contact Dermatitis* 2001: 44: 103–104.
3. Thomas P. Allergic reactions to implant materials. *Orthopade* 2003: 32: 60–64.
4. McKenzie A W, Aitken C V, Ridsdill-Smith R. Urticaria after insertion of Smith-Peterson vitallium nail. *Br Med J* 1967: 4: 36.
5. Merritt K, Brown S A. Distribution of cobalt chromium wear and corrosion products and biologic reactions. *Clin Orthop Rel Res* 1996: 329: 233–243.
6. Coleman R F, Harrington J, Scales J T. Concentration of wear products in hair, blood and urine after total hip replacement. *Br Med J* 1973: 1: 527–529.
7. Sunderman F WJr, Hopfer S M, Swift T. Cobalt, chromium and nickel concentrations in body fluids of patients with porous coated knee or hip prostheses. *J Orthop Res* 1989: 7: 307–315.
8. Carlsson A, Möller H. Implantation of orthopaedic devices in patients with metal allergy. *Acta Derm Venereol* 1989: 69: 52–56.
9. Gawkrodger J. Nickel sensitivity and the implantation of orthopaedic prosthesis. *Contact Dermatitis* 1993: 28: 257–259.
10. Munro-Ashman D, Miller A J. Rejection of metal prosthesis and skin sensitivity to cobalt. *Contact Dermatitis* 1976: 2: 65–67.
11. Gordon P M, Buxton P K, McLaren K M, Aldridge R D. Sensitivity to sternotomy wires may cause post-operative pruritus. *Ann Thorac Surg* 1996: 61: 1514–1516.
12. Hayashi K, Kaneko H, Kawachi S, Saida T. Allergic contact dermatitis and osteomyelitis due to sternal stainless steel wire. *Contact Dermatitis* 1999: 41: 115–116.
13. Thomas P, Thomas M, Summer B, Naumann T, Sander C A, Przybilla B. Intolerance of osteosynthesis material: evidence of dichromate contact allergy with concomitant oligoclonal T-cell infiltrate and Th1-type cytokine expression in the periimplantar tissue. *Allergy* 2000: 55: 969–972.
14. Hallab N, Merritt K, Jacobs J J. Metal sensitivity in patients with

orthopaedic implants. *J Bone Joint Surg Am* 2005: 83: 428–436.
15. Granchi D, Cenni E, Trisolino G, Giunti A, Baldini N. Sensitivity to implant materials in patients undergoing total hip replacement. J Biomed Mater Res B Appl Biomater 2005 (Epub ahead of print).
16. Schöberl S, Summer B, Jakob K, Barnstorf S, Thomas P. Periimplantar cobalt-specific DTH reaction in a patch test negative patient with failure of hip arthroplasty. *J Allergy Clin Immunol* 2004: 113: S250–S251.
17. Willert H G, Buchhorn G H, Fayazzi A et al. Metal-on-metal bearings and hypersensitivity in patients with artificial hip joints. A clinical and histomorphologicol study. *J Bone Joint Surg* 2005: 87: 28–36.

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Acute hypersensitivity to dentifrice

Contact Dermatitis 2006: 54: 225

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Key words: acute hypersensitivity; dentifrice; polyethylene glycol, polyoxyethylene-polyoxypyrene glycol.

Case Report

A 42-year-old woman presented to our hospital with an unpleasant sensation in her oral cavity, acute widespread erythema on her entire body and breathing difficulty. She had used a dentifrice 'A' immediately before the appearance of these clinical symptoms.

Prick tests were done with 0.1% aqueous solution of dentifrice 'A' and 10% aqueous solutions of dentifrices 'B' and 'C' from other manufacturers. Readings were made according to the criteria of Turjanma et al. (1). Only dentifrice 'A' provoked a strong positive reaction (++++, 15 min). Then, prick tests for ingredients were performed with the surface-active agent polyoxyethylenepolyoxypyrene glycol (POEPOPG), polyethylene glycol (PEG), fragrances and bactericides contained in dentifrice 'A'. In these tests, only POEPOPG and PEG showed strong positive (+++, 15 min). Any positive reactions were not seen with either POEPOPG or PEG in 2 healthy controls. Then, prick tests for 0.01% aqueous solution of several molecular weight (MW) of PEG were done. Positive reactions were observed to MW 4000, 6000 and 20 000 of PEG (++, ++++ and +++, 15 min). On the other hand, MW 400 and 1500 of PEG showed negative. On enquiry to manufacturers, dentifrice 'A' contained MW 5000 of PEG, and dentifrices 'B' and 'C' contained 400 and 600 MW of PEG, respectively. Neither 'B' nor 'C' contained POEPOPG.

Discussion

Hypersensitivity to dentifrices has been described mainly as contact cheilitis and dermatitis but immediate hypersensitivity is rare (2). In the present case, the positive prick test reaction to POEPOPG and PEG contained in dentifrice 'A' was observed.

POEPOPG is non-ionic block copolymer surfactant of one large hydrophobic chain or block of polyoxypropylene flanked by two small hydrophilic chains of polyoxyethlene. Like PEG, POEPOPG is widely used as emulsifier agents and solubilizing agents in many medicines or cosmetics. POEPOPG is also known to have several immunomodulating activities. It has been reported that POEPOPG has activities as a vaccine adjuvant (3, 4). Moreover, POEPOPG itself can induce histamine release from mouse mast cells and human basophils (5, 6). These properties of POEPOPG may have an important role in inducing hypersensitivity reactions.

In our case, only high MW of PEG (over 4000) showed positive reactions by prick test. These results correlated with the MW of PEG which contained in each dentifrices. Fisher reported 2 cases of immediate urticaria and 2 cases of delayed hypersensitivity to PEG with low MW of 200–400 (7). On the other hand, Kwee (8) described a case of an anaphylactic reaction due to a vitamin tablet containing PEG with high MW of 8000 and 20 000. In summary, our results indicate that patients with allergies against PEG should be analysed by MW.

References

1. Turjanmaa K, Reunala T, Rasanen L. Comparison of diagnostic methods in latex surgical glove contact urticaria. *Contact Dermatitis* 1988: 19: 241–247.
2. Sainio E L, Kanerva L. Contact allergens in toothpastes and a review of their hypersensitivity. *Contact Dermatitis* 1995: 33: 100–105.
3. Takayama K, Olsen M, Datta P, Hunter R L. Adjuvant activity of non-ionic block copolymers. V. Modulation of antibody isotype by lipopolysaccharides, lipid A and precursors. *Vaccine* 1991: 9: 257–265.
4. Barrios C, Brandt C, Berney M, Lambert P H, Siegrist C A. Partial correction of the TH2/TH1 imbalance in neonatal murine responses to vaccine antigens through selective adjuvant effects. *Eur J Immunol* 1996: 26: 2666–2670.
5. Atkinson T P, Smith T F, Hunter R L. In vitro release of histamine from murine mast cells by block co-polymers composed of polyoxyethylene and polyoxypropylene. *J Immunol* 1988: 141: 1302–1306.
6. Atkinson T P, Smith T F, Hunter R L. Histamine release from human basophils by synthetic block co-polymers composed of polyoxyethylene and polyoxypropylene and synergy with immunologic and non-immunologic stimuli. *J Immunol* 1988: 141: 1307–1310.
7. Fisher A A. Immediate and delayed allergic contact reactions to polyethylene glycol. *Contact Dermatitis* 1978: 4: 135–138.
8. Kwee Y N. Anaphylaxis to polyethylene glycol (PEG) in a multivitamin tablet. *J Allergy Clin Immunol* 1982: 69: 138.

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Kiss-induced allergy to amoxycillin

Contact Dermatitis 2006: 54: 226

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Key words: amoxycillin; drug allergy; immediate and delayed hypersensivity; kissing; salivary secretion.

Kiss-induced anaphylactic reactions have been reported in patients allergic to peanuts, fish, fruit or vegetables (1–3). Reactions are reported to start from after just a few minutes (1, 2) to, in exceptional cases, several hours after ingestion of the food by the non-allergic partner (3). The symptoms are usually confined to those of the oral allergy syndrome, very occasionally being severe (2). A few cases of kiss-induced anaphylactic reactions are attributed to β-lactam antibiotics (4–6).

Case Report

A 31-year-old non-atopic woman experienced itching and oedema of the lips and some wheals on the arm and face a few minutes after kissing the lips of her 5-year-old son, who had ingested amoxycillin about 3 h before. In the following days, she developed an eczematous dermatitis involving the perioral area. In the hours before the kiss, she had not eaten any new food or taken drugs and in particular amoxycillin, the oral intake of which had caused an anaphylactic shock 6 months earlier. The patient required intramuscular and topical corticosteroids, and the rash cleared within 1 week. Serum-specific IgE antibody levels against amoxycillin, ampicillin and penicillin were determined by commercial CAP immunoassay (Pharmacia Diagnostics, Sweden), and a positive result was obtained against amoxycillin (16.4 kU/l) and ampicillin (3.6 KU/l). Specific IgE ruled out sensitization to any common inhalant or food allergen. A 20-min occluded patch-test with amoxycillin 5% in aqueous solution caused an immediate urticarial reaction at the test site (right ventral forearm); 48 h later, an eczematous + + patch test reaction developed at this site. Further patch tests with the European standard series gave negative results.

Discussion

The salivary secretion of amoxycillin causes a low (around 1 μg/ml, according to the data in the literature) (7) but probably sufficient concentration in the saliva to induce the signs of the allergy in the mother as a result of the contact with the labial mucosa of her son. An increase in the concentration of the drug in the saliva at the time of the kiss linked to an exogenous contribution seems very unlikely, considering the long interval (around 3 h) between the amoxycillin oral intake and the kiss. This is, on the other hand, a concrete possibility according to another report (6) in which the kiss followed the amoxycillin oral intake by just a few minutes.

IgE-mediated allergy occurs in all kiss-induced adverse reactions to β-lactam antibiotics (4–6); combined immediate and delayed-type hypersensitivity occurring in the same patient, as in this case, has not been previously reported.

References

1. Wüthrich B, Däscher M, Borelli S. Kiss-induced allergy to peanut. *Allergy* 2001: 56: 913.
2. Steensma D P. The kiss of death: a severe allergic reaction to a shellfish induced by a good-night kiss. *Mayo Clin Proc* 2003: 78: 221–222.
3. Monti G, Bonfante G, Muratore M C, Peltran A, Oggero G, Silvestro L, Mussa G C. Kiss-induced facial urticaria and angioedema in a child allergic to fish. *Allergy* 2003: 58: 684–685.
4. Grims R H, Reiter H, Aberer W, Kranke B. Masked penicillin exposure leading to intensive care unit treatment. *Br J Dermatol* 2005: 153: 228–229.
5. Liccardi G, Gilder J, D'Amato M, D'Amato G. Drug allergy transmitted by passionate kissing. *Lancet* 2002: 359: 1700.
6. Pétavy-Catala C, Machet L, Vaillant L. Consort contact urticaria due to amoxycillin. *Contact Dermatitis* 2001: 44: 251.
7. Stewart S M, Anderson M E, Jones G R, Calder M A. Amoxycillin levels in sputum, serum and saliva. *Thorax* 1974: 29: 110–114.

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Allergic contact dermatitis to guggul extract contained in an anticellulite gel-cream

Contact Dermatitis 2006: 54: 226–227

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Key words: allergic contact dermatitis, anticellulite gel-cream, guggul extract.

Guggul or *Commiphora mukul* is a plant widely used in traditional Indian medicine for a variety of conditions, including hypercholesterolaemia and obesity. We report the first case of contact allergy to the guggul extract used in a topical cosmetic product, an anticellulite cream gel.

Case Report

A 22-year-old woman developed diffuse eczematous rash in May 2005, when she started using a slimming cream that contained plants. This product had never been used before by the patient. After 15 days of application of the anticellulite cream on her thighs, she experienced recurrent itchy maculo-papular lesions on her legs, bottom, arms and abdomen. She continued using the cream for 1 month, which worsened the clinical condition. The reaction resolved in 3 weeks with the avoidance of the cream and topical application of a corticosteroid (hydrocortisone butyrate), without leaving residual hyperpigmentation.

Patch tests to the European standard and cosmetic series were all negative. Contact allergy to the patient's cream was suspected and confirmed by patch testing to the product 'as is': there were + + at 48 h and 72 h.

Further patch tests were undertaken to individual ingredients of the cream, kindly supplied by the French laboratory. It contained extracts of different plants, such as red algae, bamboo milk and Perou liana, but the only one that gave positive reactions was the guggul extract in 1%

vaseline (+ + at 48 h and 72 h) and 1% water (+ at 48 h and + + at 72 h). The same ingredient gave negative results in 5 voluntary controls.

Discussion

Guggul is a gum resin from *Commiphora mukul* (synonyms: *Balsamodendron mukul*, Indian bdellium tree) (1), a small thorny bush which grows naturally throughout India and Arabia. Guggul has been used in Ayurvedic herbalism since more than 2000 years (2). It is commonly used in the United States as a complementary and alternative medicine (3). Guggul resin contains a number of constituents including the plant sterols, guggulsterones, that are controversially considered to exhibit hypocholesterolaemic (4), thyroid-stimulating or antiacne action (3). Among side-effects, in one previous report, Szapary et al. (3, 5) related hypersensitivity rash (especially of erythemato-papular and pruriginous type) in 6 patients orally treated for hypercholesterolaemia.

Some other Commiphora species have implied in allergic/irritant reactions.

Commiphora gileadense has been suspected of 'allergic effects', and *Commiphora pyracanthoides* may cause stinging or burning sensation on the lips followed by swelling (1). Myrrh belongs to the same family (*Commiphora myrrha*) and has been described as a cause of contact dermatitis in 2 patients who used myrrh-impregnated plasters for tendinitis (6) and in another patient who applied myrrh to a surgical wound to promote healing (7).

This is the first reported case of allergic contact dermatitis to guggul extract contained in a topical cosmetic product.

References

1. Mitchell J C, Rook A. *Botanical Dermatology*. Vancouver, Greengrass, 1979: p. 146.
2. Satyavati G V. Gum guggul (Commiphora mukul)–the success story of an ancient insight leading to a modern discovery. *Indian J Med Res* 1988: 87: 327–335.
3. Gelfand J M, Crawford G H, Brod B A, Szapary P O. Adverse cutaneous reactions to guggulipid. *J Am Acad Dermatol* 2005: 52: 533–534.
4. Singh R B, Niaz M A, Ghosh S. Hypolipidemic and antioxidant effects of Commiphora mukul as an adjunct to dietary therapy in patients with hypercholesterolemia. *Cardiovasc Drugs Ther* 1994: 8: 659–664.
5. Szapary P O, Wolfe M L, Bloedon L T et al Guggulipid for the treatment of hypercholesterolemia: a randomized controlled trial. *JAMA* 2003: 13: 765–772.
6. Gallo R, Rivara G, Cattarini G, Cozzani E, Guarrera M. Allergic contact dermatitis from myrrh. *Contact Dermatitis* 1999: 41: 230–231.
7. Al-Suwaidan S N, Gad el Rab M O, Al-Fakhiry S et al. Allergic contact dermatitis from myrrh, a topical herbal medicine used to promote healing. *Contact Dermatitis* 1998: 39: 137.

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Delayed patch positivity to corticosteroids in chronic eczema

Contact Dermatitis 2006: 54: 227–228

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Key words: allergic contact dermatitis, corticosteroids, feet, hand.

Case Report

A 64-year-old man presented with chronic bilateral hand and feet eczema since 15 years. He had recurrent episodes of flares during which he had used a variety of topical corticosteroids. He had never experienced any exacerbation after application of any topical medications. However, the eczema was refractory to the medications and never completely went to remission. Although his occupation involved prolonged standing, there were no obvious changes of stasis or varicose veins. There was no specific contact with chemicals on his lifestyle. Clinical examination showed scaling, lichenification and fissuring on both hands and feet. The pattern on the feet did not appear to be due to his footwear. He was patch tested with Indian standard Universal series and Medicament series. While the D2 and D7 readings were negative, he developed a 1+ positivity (ICDRG Grading) on D10 to Clobetasol-17-propionate and Betamethasone-17-valereate. He did not develop allergic positive reactions to any other ingredient of our series.

Discussion

Contact allergy to corticosteroids is now a well-established phenomenon, and cases from all over the world have been reported. Patients with contact allergy to corticosteroids generally present with a chronic dermatitis that is not exacerbated by, but fail to respond to, corticosteroid therapy. The allergenic and simultaneous anti-inflammatory effects of topical corticosteroids cause a non-specific, self-supporting, eczematous condition, which is rarely recognized as a potentially iatrogenic sensitivity (1). It is worthwhile to note that although topical corticosteroid therapy reduces the epidermal Langerhans' cells and also reduces their capacity to present antigens to lymphocytes, it does not prevent sensitization to corticosteroids (2).

Several authors have reiterated the importance of late readings upto at least 5 days to avoid missing delayed positive reactions (2). Our case showed no positive patch test reactions on D2 and D7 and developed a delayed reaction on D10 after patch testing, which has been mentioned in literature (3).

Coopman et al. (4) classified cross-reactions between corticosteroids in 4 groups in a literature review. The differences in this classification were based on the D ring chains, which suggested that the antigenic determinant resides in these sites. In accordance to the subclassification of group D (1), both the corticosteroids which tested positive in our case were of the class D1 group (stable esters).

Detecting contact sensitivity to topical corticosteroids is a unique problem, because allergic contact dermatitis to corticosteroids can be 'masked' under the anti-inflammatory action of the corticosteroid itself, thus rendering the condition difficult to

diagnose. Our case reiterates the significance of routine patch testing with corticosteroid series in cases of chronic unresponsive eczema. Moreover, delayed patch test reading on D10 should be implemented to avoid concealed allergens.

References

1. Goossens A, Matura M, Degreef H. Reactions to corticosteroids: some new aspects regarding cross-sensitivity. *Cutis* 2000: 65: 43–45.
2. Dooms-Goossens A, Degreef H, Karel J C et al. Contact allergy to corticosteroids: a frequently missed diagnosis? *J Am Acad Dermatol* 1989: 21: 538–543.
3. Isaksson M, Bruze M. Late patch-test reactions to budesonide need not be a sign of sensitization induced by test procedure. *Am J Contact Derm* 2003: 14: 154–156.
4. Coopman S, Degreef H, Dooms-Goossens A. Identification of cross-reaction patterns in allergic contact dermatitis from topical corticosteroids. *Br J Dermatol* 1989: 121: 27–34.
5. Scheuer E, Warshaw E. Allergy to corticosteroids: update and review of epidemiology, clinical characteristics, and structural cross-reactivity. *Am J Contact Dermat* 2003: 14: 179–187.

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Dermatitis on the knee following knee replacement: a minority of cases show contact allergy to chromate, cobalt or nickel but a causal association is unproven

Contact Dermatitis 2006: 54: 228–229

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Key words: chromium; cobalt; eczema; knee replacement; nickel

Skin reactions occur in a small proportion of patients following hip replacements and occasionally in association with static orthopaedic implants (1). However, there is only one report of a reaction being associated with a knee replacement. That was from 1975 when a patient developed eczema over the knee following a metal-on-metal prosthesis. Cobalt allergy was demonstrated on patch testing (2). Knee replacements are being increasingly performed for arthritis, and little is known about cutaneous complications.

Case Report

Over a period of 3 years (2002–2004), one of us (Shyam B. Verma) observed 30 patients. They presented with an erythematous papular scaly pruritic, sometimes exudative, eczema around the knee area following knee replacement. 13 women and 2 men, age ranges 65–80 (mean 65 years) were available for evaluation and patch testing. None is recorded as giving any history of jewellery reaction.

The eruption started 1–3 months following knee replacement. In each case, it was localized to the outer aspect of the knee lateral to the anterior midline incision scar (Fig. 1). In each instance, a Johnson and Johnson DePuy total and total condylar knee prosthesis had been inserted for osteoarthritis. No patient was thought to have mechanical failure of the prosthesis.

The DePuy arthroplasty is made of, for the femoral component, a cobalt–chrome alloy containing chromium 27%–30%, molybdenum 5%–7%, nickel 0.7%, other elements 4%, balance cobalt (59%–64%). The tibial component comprised a titanium alloy containing aluminium 5.5%–6.5%, vanadium 3.5%–4.5% and titanium 88%–91%. The level of nickel release from the cobalt–chrome alloy is not known.

The 15 patients were patch tested to nickel sulphate (5% in pet), cobalt chloride (1% pet) and potassium dichromate (0.5% pet) with readings at 2 and 3 days. 7 of the 15 patients showed a + or ++ reaction to a metal: Ni, 4; Cr, 2; Co, 1. The 2



Fig. 1. Eczema on the lateral aspect of the knee following total knee replacement.

males were negative to all tested substances. All patients were treated with a topical corticosteroid. This resulted in clearing of the eruption within 2 weeks. No patient has had recurrence of the eruption or any problem with the prosthesis to date.

Discussion

Knee replacement surgery was introduced in 1968 but has become more common in recent years. Complications, seen in 7%–11%, include aseptic loosening, seen in 0.5%–2% (3). In the reported series, there is only one mention of an eruption as complicating the operation. In this case, the patient was positive on patch test to chromium, cobalt and copper, (4).

Total knee replacements consist of tibial and femoral components, made of titanium alloy and chrome–cobalt alloy. A high-density polyethylene polymer is used as a spacer and articulating surface between. After knee arthroplasty, wear products appear and levels of metals such as cobalt and chromium in the synovial fluid increase (5). Eczema over an orthopaedic implant is occasionally observed in static implants and rarely over joint replacements. In such patients, contact sensitivity to a metallic component of the prosthesis has been demonstrated.

It is possible, but not proven that there is some connection between the positive patch test to cobalt or chromium (and possibly nickel) and the onset of the dermatitis over the knee. However, the demonstration of positive patch tests to nickel in 4 women may represent previous sensitization by jewellery, despite the absence of a positive history. It is difficult to know whether the small amount of nickel (0.7%) present in the cobalt–chrome alloy is of potential importance in the causation of the eczema. The potential for this cobalt–chrome alloy to sensitize or to induce a reaction in a nickel-allergic subject is unknown.

Sensitization by prosthetic joints did occur with the original metal-on-metal hip replacement in the 1960s; it is not thought to be common with metal-on-plastic hip joints (6). However, preliminary data on new metal-on-metal hip replacements suggest that in a small number of cases, these prostheses may induce a contact allergy (7). The total knee arthroplasties currently being used do not have a metal-on-metal articulation, as there is a polypropylene spacer between the metal parts.

Clearly, other causes for dermatitis on the knee following knee replacement need to be considered as 8 of the 15 cases had negative patch tests. Eczema related to disruption of the lymphatic channels may be a possibility in some. More studies are needed to determine the exact cause of eczema localized to the knee, post-knee replacement.

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References

1. Gawkrodger D J. Nickel sensitivity and the implantation of orthopaedic prostheses. *Contact Dermatitis* 1993: 28: 257–259.
2. Wigren A, Fischer T. Allergic cobalt reaction (metallosis) following knee arthroplasty with vitallium endoprosthesis ad modum Walldius. *Z Orthop Ihre Grenzgeb* 1975: 113: 273–274.
3. Bozic K J, Kinder J, Menegini M et al. Implant survivorship and complication rates after total knee arthroplasty with a third-generation cemented system: to 8 years follow up. *Clin Orthop Relat Res* 2005: 430: 117–124.
4. Handa S, Dogra S, Prasad R. Metal sensitivity in a patient with a total knee replacement. *Contact Dermatitis* 2003: 49: 259–260.
5. Cracchiolo A, Revell P. Metal concentration in synovial fluids of patients with prosthetic knee arthroplasty. *Clin Orthop Relat Res* 1982: 170: 169–174.
6. Gawkrodger D J. Metal sensitivities and orthopaedic implants revisited: the potential for metal allergy with the new metal-on-metal joint prostheses. *Br J Dermatol* 2003: 148: 1089–1093.
7. Antony F C, Holden C A. Metal allergy resurfaces in failed hip endoprostheses. *Contact Dermatitis* 2003: 48: 49–50.

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Methyldibromoglutaronitrile contact allergy – the beginning of the end?

Contact Dermatitis 2006: 54: 229

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Key words: allergic contact dermatitis; biocide; skin barrier.

The biocide, methyldibromoglutaronitrile (MDBGN) was banned in leave-on products in 2003 by the European Union. In March 2005, the European Scientific Committee for Cosmetic Products recommended that this biocide should not be present in rinse-off products, as no safe use-level could be established. We report a case of MDBGN contact allergy highlighting the need to remain vigilant of such allergy.

Case Report

A 53-year-old maintenance technician was referred in August 2005 with a recent history of hand dermatitis related to the use of Proteks Dry® cream at a nickel refinery. His patch test in 2001, including MDBGN, was negative.

After reviewing the material data sheet, patch testing using the British Contact Dermatitis Society standard series and Proteks Dry® cream as is was performed. D2 and D4 readings reviewed a grade ++ reaction to MDBGN and the cream.

Discussion

This case highlighted that despite the fact that MDBGN had been banned in leave-on products, it is and will still be present in the market until all existing products are sold or removed, which may take several years. Hopefully, we are now seeing the beginning of the end of MDBGN's presence in the European cosmetic market.

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IgE-mediated allergy to formaldehyde from topical application

Contact Dermatitis 2006: 54: 230

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Key words: allergy; formaldehyde; immediate-type hypersensitivity; specific IgE; topical application.

We report a rare case of IgE-mediated allergy following topical application of formaldehyde.

Formaldehyde is a volatile chemical widely used in industry, disinfection, cosmetics, medications and dental materials (1, 2, 3). It may cause delayed-type allergy (type 4), but there have been occasional reports of immediate-type allergy (type 1) or coexisting immediate and delayed hypersensitivity (1, 2). We report a case of immediate allergy with anaphylaxis after topical application of formaldehyde solution.

Case History

A 68-year-old male developed facial and lip oedema, generalized pruritus and generalized urticaria (without local reaction) with central chest ache, 30 min after topical application of Bilo Household Pine Disinfectant® (benzylkonium chloride <10%, pine oil <10%, chocolate brown dye <10% and water) combined with a formaldehyde solution (formaldehyde 10% aqueous) to his right hand. He was sent urgently to the emergency department by his neighbour where he responded to treatment with adrenaline, promethazine and hydrocortisone and improved over the next 2 days. Serum tryptase level 8 hr after the onset of symptoms was elevated at 13 μg/l (normal <9 μg/l). The patient's baseline tryptase level 4 months later was 4 μg/l.

He had dermatitis of his feet, misdiagnosed as tinea and had been using topical formaldehyde solution at home to treat the condition on alternate days over the previous few weeks. This was apparently common practice for him, especially when he had been in military service. There was no clinical history of allergic disease or relevant medical conditions, but we demonstrated subclinical atopy on skin prick testing to standard inhalant allergens.

He underwent skin prick testing with Bilo Household Pine Disinfectant® (wheal 0 mm/flare 0 mm), formaldehyde solution 1% (wheal 5 mm/flare 7 mm), histamine 10 mg/ml (5 mm/8 mm) and normal saline (0 mm/0 mm). Skin prick testing with the same solution on 5 normal individuals was not significant.

Serum formaldehyde-specific IgE (Immulite® 2000 allergy assay) was 2.65 KUA/ml (normal <0.34 KUA/ml), considered strongly positive.

The patient has been advised to avoid further topical application of formaldehyde; he has had no further reactions. He did not have a formal provocation challenge.

Discussion

Type 1 hypersensitivity to formaldehyde is rare (1, 3–5). IgE-mediated reactions to formaldehyde have been reported to occur from dental compounds (1, 2, 3) and in haemodialysis where formaldehyde was used as a sterilizing agent for the equipment (6) and have ranged from urticaria to anaphylaxis. In most patients with immediate allergic symptoms to formaldehyde, specific IgE was detected.

As formaldehyde may elicit local irritant reactions, it is important to test below the irritance threshold. We used formaldehyde 1% aqueous for our skin prick tests. Formaldehyde is thought to act as a hapten, having to conjugate with proteins to form IgE-binding epitopes (3). We detected specific IgE in the serum. An elevated tryptase level at the time of exposure confirms the clinical impression of an immediate type 1 reaction.

This case is interesting because of the unusual method of exposure. We postulate that our patient had become sensitized percutaneously through previous topical application of formaldehyde solution [although environmental exposure, cigarette smoke, domestic and professional contact have previously been postulated as potential sensitizing sources (1, 3)] and he reacted to formaldehyde from application to the rash on his hand after systemic absorption of this chemical through broken skin.

This case demonstrates that formaldehyde can cause systemic reactions on contact with the skin. Patients with such reactions should be advised that formaldehyde is a common component in many preparations. This has implications in healthcare settings.

References

1. Haikel Y, Braun J J, Zana H, Boukari A, de Blay F, Pauli G. Anaphylactic shock during endodontic treatment due to allergy to formaldehyde in a root canal sealant. *J Endod* 2000: 26: 529–531.
2. Kunisada M, Adachi A, Asano H, Horikawa T. Anaphylaxis due to formaldehyde released from root-canal disinfectant. *Contact Dermatitis* 2002: 47: 215–218.
3. Tas E, Pletscher M, Bircher A J. IgE-mediated urticaria from formaldehyde in a dental root canal compound. *J Investig Allergol Clin Immunol* 2002: 12: 130–133.
4. Doi S, Suzuki S, Morishita M, Yamada M, Kanda Y, Torii S, Sakamoto T. The prevalence of IgE sensitization to formaldehyde in asthmatic children. *Allergy* 2003: 58: 668–671.
5. Kramps J A, Peltenburg L T C, Kerklaan P R M, Spieksma F T H M, Valentijm R M, Dijkman J H. Measurement of specific IgE antibodies in individuals exposed to formaldehyde. *Clin Exp Allergy* 1989: 19: 509–514.
6. Maurice F. Anaphylactic shock caused by formaldehyde in a patient undergoing long term hemodialysis. *J Allergy Clin Immunol* 1986: 77: 594–597.

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