

A biopsy taken from an acute lesion on the arm after seconds of exposure to metal showed slight oedema and vasculitic changes compatible with urticarial vasculitis. Immunofluorescence showed complement deposits and fibrin in dermal vessels.

The patient was totally free of symptoms taking 10–20 mg cetirizine per day for 5 days. Continuous usage then kept the patient symptom-free for 6 years. Test exposures to nickel sulfate and aluminium, performed 4 days after withdrawal of antihistamine, has repeatedly shown return of urticaria.

Discussion

Our patient showed a contact-urticarial reaction to both nickel and aluminium. Aluminium is present in coins as a contaminant, with a maximum concentration of 0.01%, while the nickel content in Norwegian coins is up to 25% (10).

There are several substances that can elicit acute allergic contact urticaria, followed by a late eczematous reaction, among which is nickel (11). The anatomically differing patterns of reaction may be a consequence of previously eczematized skin retaining a compromised barrier to allergens (12). To our knowledge, this is the 1st report of contact urticaria from aluminium.

References

1. Otkjær Nielsen A, Kaaber K, Veien N. Aluminiumallergi forårsaget af Di-Te-Pol-Vaccine. *Ugeskrift læger* 1992; 154/27: 1900–1901.
2. Lopez S et Al. Aluminium allergy in patients hyposensitized with aluminium-precipitated antigen extracts. *Contact Dermatitis*. 1994; 31: 37–40.
3. Dwyer C M, Kerr R E. Contact allergy to aluminium in two brothers. *Contact Dermatitis* 1993; 29: 36–38.
4. Rasanien L, Tuomi M-L. Diagnostic value of the lymphocyte proliferation test in nickel contact allergy and provocation in occupational coin dermatitis. *Contact Dermatitis* 1992; 27: 250–254.
5. España A, Alonso M L, Soria C, Guimaraens D, Ledo A. Chronic urticaria after implantation of 2 nickel-containing prostheses in a nickel-sensitive patient. *Contact Dermatitis* 1989; 21: 204.
6. Van Joost Th, Roesyanto-Mahadi I D. Combined sensitization to palladium and nickel. *Contact Dermatitis* 1990; 22: 227.
7. Osmundsen P E. Contact urticaria from nickel and plastic additives. *Contact Dermatitis* 1980; 6: 452–454.
8. Valsecchi R, Cainella T. Contact urticaria from nickel. *Contact Dermatitis* 1987; 17: 187.
9. Abeck D, Traenckner I, Steinkraus V, Vieluf D, Ring J. Chronic urticaria due to nickel intake. *Acta Dermatovenereologica* 1993; 73: 438–439.
10. Royal Norwegian Mint. *Material specification for copper-nickel-zinc alloy CuZn₁₀Ni₉*. DKM nr. 002-MAT, side 2A, 04.06.91.
11. Fischer A A. *Contact dermatitis*, 3rd edition. Philadelphia: Lea & Febiger, 1986: 704.
12. Winton G B, Lewis C W. Contact urticaria. *Int J Dermatology* 1982; 21: 573–578.

Contact allergy to salicyl alcohol in aspen bark

R. JOLANKI¹, R. SUHONEN², M.-L. HENRIKS-ECKERMAN³, T. ESTLANDER¹ AND L. KANERVA¹

¹Finnish Institute of Occupational Health (FIOH), Section of Dermatology, FIN-00250 Helsinki, Finland

²Mikkeli Central Hospital, Department of Dermatology, Mikkeli, Finland

³Turku Regional Institute of Occupational Health, Turku, Finland

Key words: chemical analyses; aspen bark; balsam of Peru; contact allergy; 2-hydroxybenzyl alcohol; 2-methylolphenol; occupational; *Populus tremula*; salicyl alcohol; CAS 90-01-7; cross-sensitivity. © Munksgaard, 1997.

Case Report

A 38-year-old farmer developed dermatitis on the face, especially the eyelids, neck, wrists and legs. The dermatitis worsened during forestry work, when he used a chain saw. When he stayed away from the forest, his skin symptoms disappeared. He was patch tested with a modified European standard series (Chemotechnique Diagnostics AB, Sweden), and showed reactions to neomycin sulfate, balsam of Peru and chlorhexidine digluconate, but not to colophony. He showed no reactions to a modified Scandinavian photopatch test series including lichen compounds, i.e., lichen acid mix, atranorin, evernic acid, D-usnic acid and oak moss (Chemotechnique

Diagnostics AB, Sweden). He was also patch tested with sawdust from 5 tree trunks (sawdust moistened with a drop of water in the Finn Chambers). In the 1st patch test session, skin reactions were noted to rowan, i.e., European mountain ash, and European aspen (*Populus tremula*), but not to pine, spruce or alder. A test to the undiluted chain oil of his chain saw was also negative.

At our subsequent patch testing, he did not react to rowan, but allergy to aspen was confirmed: a test with the outer layer of bark gave a ++ reaction, with the inner layer, a +++ reaction, and with aspen wood, a + reaction. Patch tests with bark (layers unseparated) and wood extracts (50 mg of both samples extracted with 10 ml water) gave ++ and + reactions, respectively. Patch

tests to antimicrobials, cosmetics and medicaments, fragrances and flavours, wood tars (Chemotechnique Diagnostics AB, Sweden; Trolab, Hermal Chemie, Germany, Epikon Oy, Finland or FIOH, Helsinki), and plant extracts and contact allergens in pure form from plants supplied by Professor B. M. Hausen (ref. (1), Tables 1a, b, except primin and lapachol) were negative, as well as prick tests to common environmental allergens (Allergologisk Laboratorium A/S, Denmark), dusts from pine, spruce and aspen, and water extracts of aspen bark and wood. Control tests with aspen bark (layers unseparated) and wood in 20 subjects were negative.

Identification of bark allergens

500 mg of bark samples of the patch-tested twigs were extracted with 10 ml of 0.1 M borax in water. After extraction, 2 ml were made acidic with 0.1 M HCl to pH 3–4. The acidic solution was extracted by diethyl-ether and the extract was analyzed for aromatic acids. Another 2 ml of borax extract was acetylated with acetic anhydride (in pyridine) and the phenolic compounds were simultaneously extracted into the hexane phase. The extracts of the bark from the patch-tested twigs were analyzed by gas chromatography and mass spectrometry (Finnegan ion trap ITS40 in the electron impact ionization mode). 4 chemicals were tentatively identified, i.e., benzyl benzoate, benzoic acid, salicylaldehyde and salicyl alcohol (2-hydroxybenzyl alcohol) by comparing their mass spectra to the spectra given in the NB library. All the chemicals were patch tested. The patient did not react to benzyl benzoate at 5% pet., benzoic acid at 5% pet., or salicylaldehyde at 2% pet., but produced ++ allergic reactions to water-diluted salicyl alcohol at 2, 0.6, 0.2, 0.06 and 0.02%, + allergic reactions to 0.006 and 0.002% and no reaction to 0.006%. Thus, the patient was highly allergic to salicyl alcohol. Control tests in 20 patients with salicyl alcohol at 2% aq. were negative.

Determination of salicyl alcohol in bark

About 50 mg of finely cut clips of bark samples of different origin (thick twig, diameter 20 mm, and fine twig, diameter 12 mm) were extracted with 1 ml of millipore purified water in an ultrasonic bath for 30 min. The water extracts were analyzed for their content of salicyl alcohol by liquid chromatography. The liquid chromatograph was built up of a Variant 5000 Series chromatograph, Perkin Elmer ISS-101 autosampler, Hewlett-Packard 1040A UV detector and 3393A integrator. The column was Ultratech-sphere 50DS 250×4.6 mm. The eluent was acetonitrile+water (12+88)+1% acetic acid. The flow rate was 1.5 ml/min. The injection volume was 30 µl and the alcohol was detected at 265 nm (slit 10 nm). All reagents were commercially available and of

analytical grade or purer. External standards of 10–20 µg/ml in water were used. Salicyl alcohol was found in thin twigs (diameter 12 mm) of aspen barks in amounts between 0.01–0.07%, though its amount in a thick twig (20 mm) was below the detection limit of 0.01%.

Discussion

To our knowledge, only dermatitis without patch test confirmation has previously been reported from aspen (2). Salicyl alcohol is a low-molecular-weight compound which is also known as 2-hydroxybenzyl alcohol and 2-methylolphenol. It is a white solid crystal substance, and it is sparingly soluble in cold water, soluble in hot water and very soluble in some organic solvents, e.g., alcohol, chloroform and ether. It can be used as a local anesthetic (3). The compound under the same name of 2-methylolphenol became well-known as an allergen of phenol-formaldehyde resin after the Bruze investigations (4).

Our patient also had contact allergy to balsam of Peru. Bruze (5) found that unexplained contact allergy to balsam of Peru may indicate a clinically relevant contact allergy to phenol-formaldehyde resins and vice versa. Our case suggests that contact allergy to balsam of Peru may also indicate a clinically relevant contact allergy to aspen tree.

This case report demonstrates that salicyl alcohol is a potential contact allergen in forest workers coming into contact with aspen trees. The main distribution areas of European aspen are Europe and central and northern Asia (6). We recommend that salicyl alcohol be added to patch tests for forest-workers living in such areas.

References

1. Lamminpää A, Kanerva L, Estlander T, Jolanki R. Occupational allergic contact dermatitis caused by decorative plants. *Contact Dermatitis* 1996; 34: 330–335.
2. Gamble J F. *Small plants and their medical problems. The furniture industry: health effects of wood dust*. Occupational Safety and Health Symposia 1979, NIOSH, US Department of Health and Human Services, Cincinnati, Ohio, DHHS (NIOSH) Publication nos. 80–139, Contract o. 210–79–0009, 1980: 68–89.
3. Lewis R J. *Hawley's condensed chemical dictionary*, 12th edition. New York; Van Nostrand Reinhold, 1993: 1019.
4. Bruze M. Sensitizers in resins based on phenol and formaldehyde. *Acta Dermato-venereologica* 1985; suppl. 119: 1–83.
5. Bruze M. Simultaneous reactions to phenol-formaldehyde resins, colophony/hydroabietyl alcohol and balsam of Peru/perfume mixture. *Contact Dermatitis* 1986; 14: 119–120.
6. Mausel H, Jäger E, Weinert E. *Vergleichende Chorologie der Zentraleuropäischen Flora*. Jena; VEB Gustav Fisher Verlag, 1965.

This document is a scanned copy of a printed document. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material.