

Discussion

Adverse skin reactions to estrogen-supplying TTS are quite common (3) and usually irritant, since rotating the site of application reduces their occurrence (4). In contrast, true Type IV hypersensitivity reactions are rare and more frequently to components other than the active drug, including the adhesive (5), hydroxypropyl cellulose (5, 6), and ethanol (7). We are aware of only 1 patient reported with a positive patch test to estradiol itself, who probably also had an allergy to the adhesive (5). Carmichael & Foulds (8) also documented patch tests in a patient suggesting estradiol as the causative agent, though no direct tests with this substance were described.

Our patient showed positive patch test reactions not only to the TTS but also to 17- β -estradiol alone in 96% ethanol, acute dermatitis being verified by biopsy of the latter test reaction at 3 days. Control patch tests were negative in 10 volunteers, thus ruling out an irritant reaction. The test vehicle ethanol and all other components of the TTS were negative, leaving 17- β -estradiol as the sole cause of the Type IV hypersensitivity reaction described.

2 points are of particular interest. Firstly, this is a further example of type-IV hypersensitivity to an endogenous steroid being induced by its topical application (9, 10). Secondly, the identical drug remained well tolerated orally, demonstrating preferential homing of T-lymphocytes (11). Selective T-cell recirculation has previously been demonstrated and compartment-specific T-cell receptor repertoires defined (12). Similar findings are not unique within the context of applying TTS (13), and have also been documented in other clinical settings, e.g., for s.c. versus i.v. application of heparin (14).

References

1. Holdiness M R. A review of contact dermatitis associated with transdermal therapeutic systems. *Contact Dermatitis* 1989; 20: 3-9.
2. Chetkowski R J, Meldrum O R, Steingold K A, Randle D, Lu J K, Eggena P, Hershan J M, Alkjaersig N K, Fletcher A P, Judd H L. Biological effects of transdermal estradiol. *New Eng J Med* 1986; 314: 1620-1625.
3. Utian W H. Transdermal estradiol overall safety profile. *Am J Obstet Gynecol* 1987; 156: 1335-1338.
4. Davis G F, Winter L. Cumulative irritation study of placebo transdermal estrogen patches. *Curr Ther Res* 1987; 42: 712-719.
5. McBurney E I, Noel S B, Collins J H. Contact dermatitis to transdermal estradiol system. *J Am Acad Dermatol* 1989; 20: 508-510.
6. Schwartz B K, Clendenning W E. Allergic contact dermatitis from hydroxypropyl cellulose in a transdermal estradiol patch. *Contact Dermatitis* 1988; 18: 106-107.
7. Pecquet C, Pradalier A, Dry J. Allergic contact dermatitis from ethanol in a transdermal estradiol patch. *Contact Dermatitis* 1992; 27: 275-276.
8. Carmichael A J, Foulds I S. Allergic contact dermatitis from oestradiol in oestrogen patches. *Contact Dermatitis* 1992; 26: 194-195.
9. Lauerma AI. Screening for corticosteroid contact sensitivity. Comparison of tixocortol pivalate, hydrocortisone-17-butyrate and hydrocortisone. *Contact Dermatitis* 1991; 24: 123-130.
10. Almond-Roesler B, Blume-Peytavi U, Orfanos C E. Kontaktallergien auf Kortikosteroide. *Hautarzt* 1995; 46: 228-233.
11. Picker LJ, Butcher EC. Physiological and molecular mechanisms of lymphocyte homing. *Ann Rev Immunol* 1992; 10: 561-591.
12. Dunn D A, Gadenne A S, Simha S, Lerner E A, Bigby M, Bleicher P A. T-cell receptor VB expression in normal human skin. *Proc Natl Acad Sci USA* 1993; 90: 1267-1271.
13. Carmichael A J. Skin sensitivity and transdermal drug delivery. A review of the problem. *Drug Safety* 1994; 10: 151-159.
14. Boehncke W-H, Weber L, Gall H. Tolerance to intravenous administration of heparin and heparinoid in a patient with delayed-type hypersensitivity to heparins and heparinoids. *Contact Dermatitis* 1996; 36: in press.

A large outbreak of bitumen-induced phototoxicity in a dockyard

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Key words: photosensitivity; phototoxicity; photocontact dermatitis; occupational; dockyard workers; paints; bitumen; coal tar; ocular symptoms. © Munksgaard, 1996.

Incident Report

Over 2-3 days in April 1992, at least 28 employees in the Naval Dockyard Plymouth, UK, sustained cutaneous and ocular photosensitivity reactions of varying severity

as a result of exposure at their workplace. A gate in a dry dock was being shot blasted prior to repainting, and this had been previously painted with bitumen-containing 'hotblack' paint. The men wore full protection, including helmet, overalls, gloves and air-fed full-face

masks, and no problems occurred during shot blasting itself, despite the weather being dry, sunny and windy throughout.

Skin and eye signs were noted during subsequent dismantling of the contaminated scaffolding and cleaning up the dry dock. Dismantling was carried out by 9 men, some of whom were also involved in cleaning up. Of the remaining 19 men, 17 were solely involved in cleaning up and 2 also in the transfer of debris. The men all wore hard hats, overalls and gloves. Those cleaning up also wore face masks, though these conferred only partial protection.

All became aware of being covered in fine dust and some began to develop irritation and soreness on light- and dust-exposed skin within 3 h of commencing their shifts, others taking up to 8 h. Signs varied from erythema, through marked oedema, to vesiculation and exudation in 3 cases. 15 of the 28 men had ocular symptoms, in the main varying degrees of photophobia and conjunctival irritation, plus, in 4 cases, marked epiphora.

Both cutaneous and ocular symptoms resolved over 7–10 days, though in 4 cases, there was residual cutaneous photosensitivity, and in 2 of these, photophobia that went on for 2 to 3 weeks. 3 men also complained of sore throat lasting up to 48 h after exposure. Examination of the skin and eyes 3 to 4 months later showed

no permanent sequelae. 6 of the 28 men had a past or current history of asthma, eczema or hay fever. This atopic group had no more severe symptomatology than the other men.

Comment

The toxic effects of coal tar and its products were first well described by Lewin (1). Crow et al. (2) described a small outbreak of "smarts" due to photosensitivity in pitch workers, which, in 40% of whom, was accompanied by photophobia and epiphora. Bitumen is an impure mixture of hydrocarbons, several of which, including anthracene and phenanthrene, are potent photosensitizers. It is widely used in paints and coatings for steel and wood, and as a roofing material. This outbreak stresses the need for total skin, eye and respiratory tract protection when working in a bitumen-contaminated environment.

References

1. Lewin R. The photodynamic influence of fluorescent bodies in coal tar. *Munch med Wschr* 1913; 60: 1529.
2. Crow K D, Alexander E, Buck W H L, Johnson B E, Magnus I A & Porter A D. Photosensitivity due to pitch. *Br J Dermatol* 1961; 73: 220–232.

Occupational allergic contact dermatitis from sunflower

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Key words: Compositae; sunflower; allergic contact dermatitis; occupational; agriculture; cattle fodder; *Helianthus annuus*. © Munksgaard, 1996.

The Compositae are a large group of plants frequently responsible for allergic contact dermatitis (1, 2). Sunflower is widely cultivated for oil production in Spain, but allergic contact dermatitis has rarely been reported (3, 4).

Case Report

A 62-year-old cowherd, with a previous history of hay fever, presented with forehead dermatitis of 2 months standing. He had frequently handled cattle fodder over the previous 6 months, and was also exposed to *Helianthus* plants while taking care of the livestock. Topical corticosteroids gave complete relief with rapid relapse when stopped.

He was patch tested with the European standard series, an additional Compositae plant series (lettuce, artichoke and endive), a cosmetics series, *Helianthus* pollen, the cattle fodder, and sunflower leaves. Only sunflower leaves and the cattle fodder gave positive results. The leaves were tested in 7 controls, with negative results. The patient showed positive prick tests to olea,

weeds and graminea pollen, but negative results with sunflower pollen. Specific Ig E for pollens was positive, whereas total Ig E was normal.

Discussion

One Compositae species may contain several sesquiterpene lactones (5, 6). Patch testing with the sesquiterpene lactone mix is considered by some (7) to be an unreliable indicator of Compositae allergy and was negative in our patient. The cattle fodder was composed of sunflower plants and the patient had daily contact with it in his work. Cross-sensitivity is frequent within the Compositae family (4, 8), though in our patient, patch tests with another Compositae were negative.

References

1. Lowell C R, Rowan M. Dandelion dermatitis. *Contact Dermatitis* 1991; 25: 185–188.

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