

Short Communications

Eczematous reaction to hepatitis B vaccine

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Case Report

A 46-year-old woman, involved in missionary work in Eastern Europe, developed eczema of her extremities 5 days following administration of a hepatitis B booster vaccine (Engerix B). The rash was treated with a topical corticosteroid and settled after 2 months. She had experienced a similar episode 6 years previously after 3 doses of the same vaccine over a 3-month period. At that time, she had had eczema mainly affecting the dorsum of the hands and extensor aspects of the elbows and knees. The rash was treated with a potent topical corticosteroid and gradually settled over a 4-month period.

The patient had also been troubled by an itchy rash mainly affecting her extremities during the summer months, suggestive of a polymorphic light eruption. She had a history of asthma and hay fever and there was a family history of atopic disease. She was not taking any oral medication and, in particular, no non-steroidal anti-inflammatory drugs.

Skin biopsy showed a superficial vesicle within the stratum corneum. It contained some oedema fluid, parakeratotic nuclei and scanty polymorph inflammatory cells. In the underlying papillary dermis, there was a mild degree of perivascular chronic inflammatory cell infiltrate, and occasional lymphocytes were present in the epidermal basal layer. Direct immunofluorescence was negative.

Patch testing to the European standard series, ammoniated mercury 1% and an antimicrobials, preservatives and antioxidants battery (Trolab) was carried out and read at D3. She showed a ++ reaction to thimerosal 0.1% and a + reaction to phenylmercuric acetate 0.05%. There was no reaction to the aluminium Finn Chambers. Other investigations, including autoantibody screen and porphyrin screen, were negative. The anti-HBsAg level was checked 14 months after her last hepatitis B vaccination and was 1000 mIU (>100 mIU indicates satisfactory seroconversion and protective immunity).

Discussion

A variety of cutaneous reactions have been reported as being associated with hepatitis B vaccination, including lichen planus (1), anetoderma (2), erythema multiforme

(3), systemic lupus erythematosus (4), erythema nodosum (5) and allergic contact dermatitis (6–8). Delayed-type hypersensitivity reactions to hepatitis B vaccine are most frequently induced by the preservative, thimerosal. Hypersensitivity to thimerosal in hepatitis B vaccine has also been reported to induce a variety of other reactions, including lichen striatus type and eczematous urticarial reactions (6), and urticarial eruptions (9, 10). Thimerosal hypersensitivity may also induce a generalized exanthematic eruption (9), laryngeal obstruction (11) and severe vesicular hand dermatitis (12).

The frequency of positive patch test reactions to thimerosal in patients with eczema varies between 1 and 16% (7, 8, 12–14). Hansson & Möller (15) found 78 (18%) of 432 healthy persons had delayed hypersensitivity to thimerosal. This was subsequently attributed to repeated tuberculin testing of children and young adults with solutions preserved with thimerosal (16). The high prevalence of delayed hypersensitivity to thimerosal in Japan can be explained by exposure to toxoid vaccines and thimerosal-containing antiseptics (14). It has variously been reported that the active radicals of thimerosal hypersensitivity are both mercury and thiosalicylate, and thimerosal itself (17–19).

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Contact dermatitis due to urea-formaldehyde resin in shin-pads

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Case Report

A 10-year-old boy presented with a 2-year history of eczema on both shins, which cleared with 0.05% clobetasol butyrate cream, but recurred each time that this was discontinued. He played football at least 3× a week and regularly used protective shin-pads during training. Wearing below-knee stockings under the shin-pads had not improved his skin. As a baby, he had had flexural eczema, but no asthma or hay fever. His mother had hay fever.

He was patch tested to a standard series and a textile series (Chemotechnique), together with a sample of his shin-pads. At D 2 and 4, there were the following positive reactions: formaldehyde ++/++, the formaldehyde-releasing preservatives quaternium 15 ++/++ and imidazolidinyl urea ++/++, and carba mix +; the fabric finishes dimethylol dihydroxyethylene urea 4.5% aq., dimethylol propylene urea 5% aq., and tetramethylol acetylenediurea +/+ each; ethylene urea melamine-formaldehyde resin 5% aq., and urea-formaldehyde resin 10% pet. ++/++ each; and the epoxy hardener hexamethylenetetramine ++/++. He did not react to the sample of his shin-pads.

A diagnosis of a combination of mechanical irritant and allergic contact dermatitis was made. After 1× daily 0.1% mometasone furoate ointment for 1 month and staying off football, the eczema completely resolved. The manufacturers of the shin-pads supplied product information and alternative shin-pads. The original shin-pads contained urea-formaldehyde resin, which was used to set and fix non-woven yarn. The new shin-pads were composed of a different backing material, which was also less abrasive. Our patient continued to play football several times a week without developing further dermatitis.

Discussion

Allergic contact dermatitis affects 20% of us at some time during childhood and is no more common in atopics (1). In a multicentre patch test study of 415 children, 0–2.3% reacted to formaldehyde 1% aq.: atopic children had fewer positive patch test reactions in this study than non-atopic (2). Patch testing and subsequent avoidance of a relevant allergen improves the prognosis (3).

Urea-formaldehyde resin has a relatively high formaldehyde release, and is nowadays less commonly used in textiles (4). Allergic reactions to such finishes are now unusual, except under aggravating conditions such as heat and friction (5). A significant number of patients are patch-test positive to textile formaldehyde resins without also being positive to formaldehyde (6, 7).

There has been 1 previous report of allergic contact dermatitis due to formaldehyde resins in sports gear: a professional basketball player allergic to phenol-formaldehyde resin in a knee-guard (8).

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