

Persistent nodules at sites of hepatitis B vaccination due to aluminium sensitization

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Case Reports

Case no. 1

A 26-year-old doctor's secretary received vaccination against hepatitis B (Genhevac B Pasteur®), with 2 intramuscular (i.m.) injections at monthly intervals, in the left deltoid. After several months, pruritic, sore, erythematous, subcutaneous nodules developed at the injection site, which had persisted for over 8 months.

Case no. 2

A 33-year-old doctor's secretary received the same vaccination in the right deltoid. She developed pruritic, painful papules and nodules at the injection site, which resolved within 6 months. In the weeks following a booster 1 year later, papules, nodules and brown hyperpigmentation had appeared at the injection site, which had persisted for 8 months.

Case no. 3

A 27-year-old woman received 3 monthly vaccinations against hepatitis B with Engerix B® in the left deltoid. 1 month after the 3rd, she showed a painful erythematous nodule, which became a brown hyperpigmented plaque with hypertrichosis and subcutaneous granuloma, and which persisted for over 1 year.

Case no. 4

A 27-year-old nursing auxiliary received 3 injections at monthly intervals with Genhevac B Pasteur®. 2 weeks after the booster, pruritic, inflammatory infiltrated nodules appeared, which increased premenstrually, and had persisted for 2 years.

All patients were found to have good immunization after, at least, 2 injections. Serology revealed no hepatitis B, chronic or cured. Anti-HB antibodies were high at between 4,600 and 17,300 IU/l. HB antigen and anti-HBc antibodies were negative.

In each case, the histopathologic features observed were as previously described (1). In 1 case, incontinentia pigmenti was noted. In 1 case, the typical appearance of benign cutaneous lymphocytoma was observed.

In all patients, patch tests in plastic van der Bend chambers were positive with aluminium salts (Table 1). All other components of the vaccine, in particular mercurial preservative and formaldehyde, were negative. Patch testing with empty Finn Chambers gave a + reaction at D3/D4 in 3 out of 4. The whole vaccine (Genhevac B Pasteur®), gave a + reaction at D3 in 1.

Comment

Side-effects of hepatitis B vaccination are usually transient (2), pain, induration, erythema, itching and oedema being reported in 5 to 10% of cases (3, 4). All aluminium-adsorbed vaccines can sensitize to aluminium, with persistent nodules at the injection site (5, 6). 2 different histopathologic patterns have been distinguished, corresponding to 2 different clinical lesions (1, 7, 8), transient and persistent nodules. Our patch tests showed 3 positives to aluminium chloride (5, 9, 10), 2 to aluminium oxide, and 3 to blank Finn Chambers (5, 11–13).

References

1. Garcia-Patos V, Pujol R-M, Alomar A, Cistero A, Curell R, Fernandez-Figueras T, Moragas J-M. Persistent subcutaneous nodules in patients hyposensitized with aluminium-containing allergen extracts. *Arch Dermatol* 1995; 131: 1421–1424.
2. Barbaud A, Schmutz J L, Mougeolle J M. Réactions immuno-allergiques cutanées dues aux vaccine. *Ann Dermatol Venerol* 1995; 122: 129–138.
3. Di Giusto C A, Bernhard J D. Erythema nodosum provoked by hepatitis B vaccine. *Lancet* 1986; ii: 1042.
4. Ring J. Exacerbation of eczema by formalin containing

Table 1. Patch test results with aluminium salts

		Case no. 1	Case no. 2	Case no. 3	Case no. 4
aluminium oxide 10% aq.	D3	++	—	+	—
	D4	+	—	+	—
aluminium oxide 10% pet.	D3	++	—	+	—
	D4	+	—	+	—
aluminium chloride 1% aq.	D3	—	+	+	+++
	D4	—	+	+	+++
aluminium hydroxide 10% aq.	D3	—	—	—	—
	D4	—	—	—	—
aluminium hydroxide 10% pet.	D3	+	—	—	—
	D4	+	—	—	—

- hepatitis B vaccine in formaldehyde-allergic patient. *Lancet* ii: 522–523.
5. Cosnes A, Flechet M-L, Revuz J. Inflammatory nodular reactions after hepatitis B vaccination due to aluminium sensitization. *Contact Dermatitis* 1990; 23: 65–67.
 6. Fiejka M, Aleksandrowicz J. Aluminium as an adjuvant in vaccines and post-vaccine reactions. *Rocz- Panstw- Zakl-Hig* 1993; 44: 73–80.
 7. Pineau A, Durand C, Guillard O, Bureau B, Stalder J F. Role of aluminium in skin reaction after diphtheria-tetanus-pertussis-poliomyelitis vaccination, an experimental study in rabbit. *Toxicology* 1992; 73: 117–125.
 8. Fawcett H A, Smith N P. Injection-site granuloma due to aluminium. *Arch Dermatol* 1984; 120: 1318–1322.
 9. Cox N H, Moss C, Forsyth A. Allergy to non-toxoid constituents of vaccines and implications for patch testing. *Contact Dermatitis* 1988; 18: 143–146.
 10. Dwyer C M, Kerr R E. Contact allergy to aluminium in 2 brothers. *Contact Dermatitis* 1993; 29: 36–38.
 11. Veien N K, Hattel T, Justesen O, Nørholm A. Aluminium allergy. *Contact Dermatitis* 1986; 15: 295–297.
 12. Böhler-Sommeregger K, Lindemayr H. Contact sensitivity to aluminium. *Contact Dermatitis* 1988; 15: 278–281.
 13. Castelain P-Y, Castelain M, Vervloet D, Garbe L, Mallet B. Sensitization to aluminium by aluminium-precipitated dust and pollen extracts. *Contact Dermatitis* 1988; 19: 58–60.

Allergy to 4-amino-3-nitrophenol in a hair dye

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Case Report

A 42-year-old woman developed intensely itchy erythema and edema of the scalp, ears and neck, several hours after application of a hair dye (Farandol Sarmiento®) that she had previously well tolerated. With systemic corticosteroids and antihistamines, the symptoms disappeared within 1 week. She had no personal history of atopy, though a daughter had hay fever.

Several months after resolution of lesions, patch tests were carried out with the European standard series (TRUE Test™, Pharmacia), and the ingredients of the hair dye supplied by the manufacturer. The standard series was negative. 4-amino-3-nitrophenol 2% pet. (pure) elicited a +++ reaction at D2 and D4, whereas the other constituents were negative. 10 control persons patch tested with the same substances were negative.

Discussion

Contact dermatitis in hairdressers has been recognized as an important occupational dermatosis (1). There have been some recent studies of its frequency and aetiology (2, 3). There are fewer reports of such dermatitis from non-occupational exposure in hairdressers' clients or other users of these products (4). According to a large

study (2), the commonest causes of allergic contact dermatitis in hairdressers are p-phenylenediamine, nickel, Disperse Orange 3- and 4-aminoazobenzene. Other related substances, such as 2-amino-4-nitrophenol or 2-amino-5-nitrophenol, are prohibited (5).

To the best of our knowledge, this is the 1st report of contact sensitization to 4-amino-3-nitrophenol. From a clinical standpoint, our case stresses the risk of adverse reactions due to hair dyes, including those that are advertised as safe for patients allergic to regular hair dyes.

References

1. Nethercott J R, MacPherson M, Choi B C K, Nixon P. Contact dermatitis in hairdressers. *Contact Dermatitis* 1986; 14: 73–79.
2. Condé-Salazar L, Baz M, Guimaraens D, Cannavo A. Contact dermatitis in hairdressers: patch test results in 379 hairdressers (1980–1993). *Am J Contact Dermat* 1995; 6: 19–23.
3. Guo Y L, Wang B-J, Chou S-Y. Occupational hand dermatoses of hairdressers in Tainan City. *Occup Environ Med* 1994; 51: 689–692.
4. Guerra L, Bardazzi F, Tosti A. Contact dermatitis in hairdressers' clients. *Contact Dermatitis* 1992; 26: 108–111.
5. De Groot A C, Weyland J W, Nater J P. *Unwanted effects of cosmetics and drugs used in dermatology*, 3rd edition. Amsterdam: Elsevier, 1993.