

Itching nodules and aluminium allergy following vaccination with aluminium-adsorbed vaccines—Not a negligible problem

In the current issue of *Acta Paediatrica*, an Irish study by Kelly et al describes 13 cases of itching nodules at the site of injection with aluminium-adsorbed vaccines. Patch testing for aluminium hypersensitivity was performed in nine children, and eight were positive. Interviews with the parents revealed that the children had experienced symptoms for a median time of 12 months (range 3–120 months) after they were vaccinated.¹

Aluminium salts, such as aluminium hydroxide and aluminium phosphate, are often used as adjuvants in many vaccines that are included in national child vaccination programmes, for example diphtheria, tetanus pertussis, hepatitis B and also in vaccines against tick-borne encephalitis and hepatitis A and in pneumococcal and meningococcal conjugate vaccines (both the quadrivalent conjugate vaccine and Bexsero[®], which is a protein vaccine against *Neisseria meningitidis* group B).

The first report of itching nodules after vaccinations appeared as early as 1960.² After that, scattered reports appeared and they concluded that postvaccination granulomas occurred but they were rare.^{3–5} The largest numbers of cases were reported in Gothenburg, Sweden, where a placebo-controlled trial of a new acellular aluminium hydroxide-adsorbed pertussis vaccine⁶ followed by a mass vaccination study⁷ was performed in the 1990s. Out of about 76 000 vaccinated children, 645 children developed itching granulomas, and of those, 77% had aluminium allergy according to a patch test compared to 8% ($P < .001$) of their siblings who had received the same vaccine.⁸ A follow-up study after the end of the studies showed that another 100 children had developed itching granulomas in the trials meaning that a total of 745 out of 76 000 vaccinated (1%) had developed itching nodules.⁹ Of those who were patch-tested, 377 out of 495 were positive (76%) compared to 17/211 (8%) of their siblings who had received the same vaccine without itching nodules ($P < .0001$).⁸ The 745 children with itching nodules in the Gothenburg trials are followed continuously (about every other year) since 1997 concerning duration of itching and persistence of aluminium allergy. Preliminary data indicate that the itching can persist for several years.

Importantly, subcutaneous nodules with itching and aluminium allergy are also seen in children undergoing hyposensitisation with aluminium-adsorbed allergens.¹⁰

Even though itching nodules and aluminium allergy are not serious or life-threatening, they are not trivial and can be

very troublesome for those afflicted. Small children scratch and cry at night disturbing themselves and the whole family. Hyperpigmentation and hypertrichosis are common in the scratched areas, and the parents get frustrated and anxious. The nodules may also be mistaken for tumours or malformations leading to unnecessary investigations. The children often scratch which makes the itching worse leading to a vicious circle with itching and scratching.

In our experience, topical treatment with hydrocortisone or covering the itching area with hydrocolloid dressing is the best way to relieve symptoms.

It is important that postvaccination, itching nodules are recognised and acknowledged as a vaccine side effect and are reported and studied with regard to prognosis and if the aluminium allergy decreases with time.

The first thing that parents tend to spot when children have sudden unexplained local pruritus is the appearance of a lump under the skin including one or both thighs. Primary care practitioners and others caring for children need to be aware of the symptoms. Pruritic vaccination granulomas are easy to recognise when they appear on the injection site after the child has received an aluminium-adsorbed vaccine. The earlier they are recognised the better. Parents do not need to be anxious. Further investigations are not necessary, and the parents can be reassured. Therefore, I hope that the report from Ireland can be spread where it is best needed, to the Irish Child Health Care/Primary Health Care.

Child health authorities should inform parents of the potential side effects of pruritus in an open and sensible way. It is important to do this, as any attempt to play down the side effects of vaccines could be highlighted by anti-vaccination campaigners, especially on social media. This, in turn, could undermine the trust that parents show in health services.

I also think that the vaccine-producing companies should test other adjuvants than aluminium. To my knowledge, the only aluminium-free non-live vaccine was against hepatitis A (produced by Crucell), but it is no longer available.

Persistent pruritic vaccination granulomas are still unrecognised or misunderstood in most countries so national reports like the Irish are valuable and welcomed. The Irish results correspond well with earlier published studies in Sweden.

CONFLICT OF INTEREST

The author has no conflicts of interest.

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