Lessons in giving vaccines: soft tissue complications of vaccinations

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Adverse reactions to vaccines vary from the mild to fatal.¹ Systemic reactions can be attributed to the vaccine itself, but local reactions are often due to hypersensitivity to other agents in the vaccine. These include adjuvant (e.g. aluminium hydroxide), stabilizers (e.g. gelatin), antibacterial preservatives (e.g. mercury-based thiomersal) and antibiotics (e.g. neomycin). There are many other causes.

Many of these substances are also found in other medicines, including anti toxins, contact lens solutions, allergy extracts, topical antibiotic agents and immunoglobulin.²

It has been suggested that alternative substances should be sought to prevent these problems but this has been difficult to achieve.³ Other reactions reported include urticaria, angioœdema, atopic eczema and granuloma annulare.⁴ Most of the hypersensitivity reactions settle on conservative treatment.

Aluminium hydroxide is the main causative agent in granuloma formation at the site of vaccination.⁵ This has been previously reported in one case of tetanus toxoid injection, three cases of diphtheria, pertussis and tetanus (DPT) inoculation,⁶ one case of Q fever vaccination⁷ and three cases of the quadruple vaccine (tetanus, diphtheria, pertussis, polio).⁸

The illustrated case (Fig. 1) had each of the three DPT injections in the lateral thigh at the appropriate times. The second and third injections were given in spite of the discharging lesion.

Aluminium was confirmed in the granulomata on electron microscopy.

These discharging sinuses require surgery.

Another significant problem is keloid scar formation at the site of BCG vaccination. This vaccine is traditionally given in the deltoid area (Fig. 2). This anatomical site has a bad reputation for scarring anyway but keloids occur more often if there is secondary bacterial infection or delay in healing. Problems can also arise when the vaccine is wrongly inserted in the superficial dermis. Keloid is also more common in some ethnic groups such as Afro-Caribbean and Chinese.

Once a keloid (or even a hypertrophic reaction) has developed, it can be very difficult to treat. Repeat BCG should be given in a less conspicuous site, for example, the upper inner arm.⁹

References


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