

Egg allergy and MMR vaccination

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Introduction

ANAPHYLAXIS is a recognised side effect of any vaccination. Life-threatening allergic reactions to the measles, mumps and rubella (MMR) vaccination are very rare¹ but the possibility still causes considerable anxiety among parents. This anxiety is particularly marked in parents of children with egg allergy.²

Sequence of events

A child presented to the allergy clinic at 1 year of age following type 1 hypersensitivity reactions to peanuts and eggs. The reactions had no cardiorespiratory features. Skin prick testing confirmed sensitisation to peanuts and eggs and these were thereafter excluded from the diet. The child also had eczema and later developed asthma.

Owing to initial parental concern about the risks of anaphylaxis to the MMR vaccine in egg-allergic children, the advice of the general practitioner (GP) was sought. The parents were counselled that an increased risk of anaphylaxis meant that hospital admission was required for vaccination. Frightened by this potential risk, they decided against vaccination at 13 months and against having the preschool booster.

By the age of 7 years old, the child remained sensitised to both peanuts and eggs. While attending an accident and emergency department, he came into contact with another child infected with the measles virus. Two weeks later he developed coryzal symptoms and a cough. As well as extreme misery, pyrexia, conjunctivitis, anorexia and lethargy, the child soon developed a rash that spread from his ears and head to become confluent over the rest of his body. On examination he was found to have cervical and axillary lymphadenopathy. His severe symptoms led to a complete refusal to take fluids, and the resulting dehydration required a 3-day hospital admission. Nasopharyngeal aspirate revealed the measles virus, and serology confirmed the presence of immunoglobulin M antibody to the measles virus.

Two weeks after an initial recovery, the child presented with bilateral hip pain that prevented weight bearing. There was no associated temperature and inflammatory markers were mildly elevated. The pain eventually settled with 5 days of bed rest and anti-inflammatory medication. A presumptive

diagnosis of reactive arthritis was made. The family later requested single vaccinations to mumps and rubella.

Discussion

MMR vaccine contains attenuated virus that has been grown in chick embryo fibroblasts, and has been shown to contain tiny amounts of egg protein.³ Despite this, most severe allergic reactions to MMR vaccine occur in children who are not allergic to eggs. Sensitisation to other vaccine components, such as gelatine or neomycin, is responsible for many reactions. Large case series have demonstrated that administration of MMR vaccine is safe in children with egg allergy,⁴ and the Royal College of Paediatrics and Child Health, and the British Society of Allergy and Clinical Immunology have endorsed the guidelines shown in Box 1.

However, concern among parents over the safety of vaccination in these children, and confusion among professionals⁵ is still leading to its erroneous deferral or exclusion from the vaccination schedule of some children.⁴ Given that egg allergy has a prevalence of up to 2.4% of 3-year-olds,⁶ this confusion poses a significant public health risk. The 'Green Book'⁷ is the most commonly used source of information when vaccination queries arise. Unfortunately, the current issue, published in 1996, predates the published guidelines and recommends paediatric advice is sought when there is uncertainty regarding the need for vaccination to take place in hospital. As a result, issues surrounding MMR vaccination in egg-allergic children are the most common reason for GP correspondence to our allergy clinic.

Failure to vaccinate against measles leaves a child vulnerable, not only to an unpleasant viral illness, but also to its potentially lethal sequelae. Pneumonitis and encephalitis are among the well-recognised complications, whereas mumps may also lead to pancreatitis and orchitis. With vaccine uptake falling as a result of misinformation regarding other associations with the MMR vaccine, herd immunity cannot be relied on to protect an individual child.

All vaccines, in any child, should only be administered in a setting where there is access to appropriate equipment and expertise were an allergic reaction to occur. Although evidence is lacking regarding the significant danger of vaccinating egg-allergic children, guidelines suggest, for

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Extra precautions, including continuous observation for 20 minutes after vaccination, with further monitoring of cardiorespiratory parameters to a total of 2 hours, are needed if:

- there is a history of any cardiorespiratory symptoms or signs after egg ingestion
- or
- there is the presence of active, chronic asthma

Box 1. Guidelines for the administration of the MMR vaccine to children with egg allergy.⁴

extra precaution, selection only of those most at risk of life-threatening hypersensitivity reactions.

Conclusions

With good evidence that MMR vaccination is safe in egg-allergic children, excluding or delaying vaccination in these children cannot be justified and places the child at risk of developing a potentially serious infection. Guidelines exist to select those children most at risk of any form of life-threatening hypersensitivity reaction and provide them with extra precautions.

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