

Yellow fever vaccine and egg allergy: really a problem?

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Yellow fever (YF) is a viral illness transmitted by the mosquito *Aedes aegypti*, widely distributed throughout the tropics, with a high case-fatality rate. Vaccination has been used for the prevention of YF since 1937 with over 500 million doses administered. Adverse reactions to YF vaccine are typically mild (headache, myalgia, fever and discomfort at the injection site), but severe reactions like neurotropic or viscerotropic disease have been associated. Anaphylactic reactions have been estimated to occur in 0.8–1.8 per 100 000 vaccinations, most often among people with allergies to egg or other vaccine constituents, such as gelatin (1, 2).

We describe the case of a 42-year-old woman with egg allergy who required a YF vaccine before travelling to Venezuela. She had previously experienced ocular angioedema and nasal blockage after egg ingestion or manipulation and oral allergy syndrome with raw egg. The patient was referred from the Centre for International Vaccination to the allergy department to evaluate the case.

Skin prick test (SPT) performed with commercial egg extracts was all positive, as well as specific IgE (ImmunoCAP®; Phadia, Uppsala, Sweden) to egg and fractions (yolk 0.72 kU/l, white 8.77 kU/

l, conalbumin 2.91 kU/l, ovoalbumin 0.57 kU/l, ovomucoid 8.38 kU/l), being negative for gelatine and chicken. SPT (dilution 1 : 10) and intradermal test (dilution 1 : 100) to YF vaccine were positive. These tests were also performed to a nonatopic subject previously exposed to the vaccine, resulting in negative results. Although there were positive results for both egg and YF vaccine, there was an absolute need for the vaccination, and so the patient received escalating doses of the vaccine as recommended by the American Academy of Pediatrics (3). This schedule was modified as shown in Table 1, completing the administration of the vaccine in half of the time of the previously recommended dosage. Two hours after the full administration of the vaccine, no adverse reactions were observed, rather than a small hive at the injection site. Late adverse reactions were not observed.

Nowadays people travel around the world for work and pleasure, and this phenomenon is growing. Vaccines are an important prophylactic tool of infectious diseases, especially when the mortality rate is high and there is no way to fight the infection but the symptomatic treatment, like in the case of YF. Some of the widespread used vaccines may present variable amount of egg protein in their composition, e.g. influenza or measles, mumps and rubella. This could be an issue in the patients who are allergic to egg, but

several studies have demonstrated its tolerance (4, 5). However, the safety of YF vaccine in egg allergic patients is not well established. Recently, Roukens et al. (6) have demonstrated that 0.1 ml of YF vaccine is sufficient to induce a protective antibody response in a group of seven patients with egg allergy who had presented a strong local urticarial reaction to the vaccine. This strategy could be an option in some patients; however the minimal necessary dose for the production of protective antibodies is not established and could not ensure the protection against YF in all patients.

As far as we know, we are presenting the first case of an egg allergic patient who has tolerated YF vaccination and with positive skin tests to YF vaccine. We describe a fast and safe protocol for the administration of the YF vaccine in patients with egg allergy.

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Table 1. Yellow fever vaccine administration schedule

American Academy of Pediatrics schedule		New schedule	
Time (minutes)	Dose (ml)	Time (minutes)	Dose (ml)
0	0.05 (1 : 10)	0	0.05 (1 : 1)
30	0.05 (1 : 1)	30	0.15 (1 : 1)
60	0.10 (1 : 1)	60	0.30 (1 : 1)
90	0.15 (1 : 1)		
120	0.20 (1 : 1)		

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