Phenotyping of immediate-type food allergies based on 10 years of research: A latent class analysis

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Abstract

Background: Food allergy is a disease with a diverse and variable natural history, and some patients may react to two or more food antigens. This study aimed to classify and characterize the long-term prognosis of infantile-onset, immediate-type food allergies in children, focusing on three major antigens in Japan: egg, milk, and wheat. **Methods:** All children visited to our hospital with food allergies, including suspected cases, were prospectively registered in our medical database. From this database, infants who had immediate-type symptoms or were sensitized to above three antigens were included. Cox regression analysis and repeated-measures latent class analysis were performed to reveal risk factors and tolerance patterns for food allergies. **Results:** Of 2,830 patients registered in the database, we included 915 patients with immediate-type food allergy symptoms and 276 sensitized asymptomatic patients in this study. The number of patients with immediate-type symptoms to egg, milk, and wheat was 609, 443, and 235, respectively. The number of patients with multiple food allergies was 302. Ratios of acquiring tolerance to egg, milk, and wheat at the age of 6 years were 74%, 69%, and 75%, respectively. Latent class analysis revealed 10 classes of prognosis for food allergies, including five with multiple food allergies. The largest class was *transient egg allergy alone* (21.4%), and there were severe cases of persistent allergy to three major allergens (3.2%). **Conclusions:** This study demonstrated the prognosis of food-allergy classes in Japan, including multiple food allergies, with 10 classes with its own characteristics.

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