Tolerance to Allergenic Foods Following Food Oral Immunotherapy (FOIT)

Introduction

Food allergy is a major problem for school aged children impairing quality of life, inhibiting socialization and increasing bullying.1,2 The avoidance management strategy does not address these issues and may exacerbate the problems. We suggest that most food allergic patients can be safely desensitized to their allergenic food3,4, but achieving tolerance is uncertain. Herein, we define desensitization as the ability to safely eat a previously allergenic food ad lib without the necessity of daily maintenance dosing. We report on 21 patients who completed FOIT escalation by following a period of maintenance dosing and later underwent a tolerance FC.

Subjects*

21 patients underwent a tolerance FC following treatment with FOIT. Most subjects were chosen based on the following criteria:
1. Successful completion of FOIT escalation followed by ≥ 3 years of FOIT maintenance dosing.
2. No reactions during maintenance dosing for ≥ 2 years.
3. Pre-FOIT IgE ≤ 13 kU/L, or <90% reduction in food specific IgE concentration.
4. Patients were evaluated at least yearly in our private allergist/immunology practice.
5. Patients P014 and P052 did not meet criteria #1. P014 stopping his peanut dose after approximately 304 days of maintenance dosing. He did not take a peanut dose for approximately 180 days and then paused a peanut tolerance FC. P052 stopped taking his peanut dose after approximately 368 days of maintenance dosing. He had two peanut exposures without reaction during the subsequent 60 days and then had no peanut exposure for 90 days before passing a peanut FC. P014 and P052 spent 355 and 104 days on escalation dosing, respectively.
6. Patients E10, P012, and P045 do not meet criteria #3. Tolerance FC was performed at the parent’s request.
7. The data reported here were obtained from a retrospective record review approved by the North Texas IRB. Each parent signed consent to use their child’s data.

Methods*

Patients with a history of an IgE mediated food reaction were desensitized according to a previously reported protocol.5 After completing FOIT escalation patients were instructed to ingest a daily maintenance dose of either 1 tablespoon of egg white powder (1 egg equivalent), 240 ml of whole or 2% milk, 8 peanuts, or 8 cashew nuts. They were allowed to freely incorporate the food into their diet during maintenance dosing. Patients were asked to report all reactions that occurred during both the escalation and maintenance phases.

Food-specific IgE was measured before FOIT, at the start of maintenance dosing, and then yearly. Because this is a retrospective review of clinical care, commercial laboratories were used to measure allergen-specific IgE. The choice of laboratory was often dictated by insurance companies. Therefore, some allergen-specific IgE values were determined by the HYCOR methodology and some by the IMMUNOCAP® methodology. In some instances, different methodologies were used for the same patient.

Tolerance FC Procedure

Patients were instructed to completely avoid the allergenic food for 1 month before tolerance FC. All challenges were performed under careful observation in an allergy practice office setting. Doses were administered every 20 minutes. The last dose was followed by a 90 minute observation period. All challenges were performed under careful observation in an allergy practice office setting.

Results

Only 44/102 FOIT patients who had completed 3 years of maintenance dosing met all three criteria for FC. Five patients underwent a tolerance FC because of non-compliance (P014, P045) or parental request (E10, P012, P045). Many FOIT maintenance patients refused a tolerance FC because they did not want to risk the allergenic food for 1 month before the challenge. They preferred daily maintenance dosing to stopping the food for 1 month before the challenge.

Conclusions/Discussion

•90% of tested FOIT patients and 94% of patients who met our pre-defined criteria for tolerance FC achieved tolerance to their allergenic food.
•Patients with high pre-FOIT IgE values and high pre-FC values appear to be less likely to pass FC.
•It is possible that some milk and egg OIT patients may have outgrown their food allergy without OIT, but OIT allowed these patients to freely eat the allergenic food during OIT maintenance dosing. We have previously reported that FOIT markedly improves quality of life.6
•More FOIT patients will need to undergo FC before meaningful conclusions may be drawn concerning the predictors and likelihood of achieving tolerance.
•FOIT, administered in an allergy office, can induce tolerance in a highly selected population of food allergic patients.

References