74 Quality of Life and Challenges with Peanut Consumption after OIT

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RATIONALE: Oral immunotherapy (OIT) has demonstrated efficacy in desensitizing patients with peanut allergy. However, follow-up data is needed to assess barriers to continued peanut consumption and long-term impact of OIT on quality of life (QoL).

METHODS: 11 children who completed rapid oral desensitization with omalizumab therapy for peanut allergy participated in follow-up assessments at six-month intervals post-OIT. Children and parents completed food allergy-specific measures of QoL and interviews about peanut consumption status. For each subject, data from the most recent follow-up was analyzed.

RESULTS: Children were aged 9 to 17 years, with a range of 6 to 25 months (mean 15.6) since completion of OIT. One child had discontinued peanut consumption due to allergic reactions, and one was taking 500 mg of peanut flour every 1 to 2 weeks due to aversion to the taste of peanut. The remainder were taking the equivalent of 5 to 20 peanuts per day. Nearly all children (91%) reported disliking the taste of peanut, with 55% of families describing periods of daily stress with child peanut consumption, due to aversion to the taste/smell. Allergy-related QoL (allergen avoidance, social/dietary limitations, anxiety about accidental exposure) was significantly improved at follow-up from pre-OIT, based on child report ($p<.01$), adolescent report ($p<.05$), and parent-proxy report ($p<.001$), as was parental burden due to food allergy ($p<.001$).

CONCLUSIONS: Results suggest improvements in allergy-related QoL following OIT. However, regular consumption of peanut is burdensome for many children, with implications for maintenance of desensitization. Larger studies with longer follow-up periods are recommended to evaluate QoL post-OIT.

75 Basophil Hyporesponsiveness Following Six Months of Peanut Oral Immunotherapy (OIT) Is Associated with Suppression of Syk Phosphorylation

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RATIONALE: Peanut OIT causes clinical desensitization in most subjects and is associated with suppression of basophil and mast cell responses, although the mechanisms of effector cell suppression are not understood. We hypothesized that diminished signaling through FcεRI is associated with basophil hyporesponsiveness.

METHODS: Subjects underwent 6 months of OIT then were assessed for desensitization and sustained unresponsiveness after OIT was stopped for 1 and 3 weeks, or 2 and 4 weeks. Whole-blood basophil assays were performed 2 months prior to OIT initiation, at several time points while on OIT, and up to one month off OIT. Basophils were defined as CCR3+ lymphocytes, and assessed for CD63, CD203c, and phosphorylated-Syk after 30 minutes of ex vivo stimulation.

RESULTS: Seven subjects on OIT for at least 3 months were included. Four subjects completing OIT were desensitized, but did not exhibit sustained unresponsiveness. While subjects were on OIT, there was a decrease in %CD63+ basophils stimulated with peanut or anti-IgE ($p<0.01$); decreased CD203c upregulation following stimulation with peanut ($p<0.05$); and Syk phosphorylation was reduced in response to both doses of peanut tested ($p<0.05$). Wheal diameters of skin prick tests to peanut decreased during OIT ($p<0.05$), whereas peanut-IgE and IgG4 increased. After subjects abstained from peanut OIT dosing for 4 weeks, % CD63+ basophils increased ($p<0.05$), whereas the other parameters did not change significantly.

CONCLUSIONS: A 6 month course of peanut OIT transiently suppresses basophil activation and is linked with decreased phosphorylation of Syk, suggesting that desensitization may be mediated by disruption of IgE-FcεRI signaling events.

76 Peanut Component Analysis Predicts Response to Ara h 2-Dominant Oral Immunotherapy

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RATIONALE: Studies indicate that oral immunotherapy (OIT) for food allergy effectively induces desensitization and even sustained unresponsiveness ('functional tolerance'). However, it remains unclear why this approach is not successful for all participants.

METHODS: Informed consent was obtained from subjects (ages 4-19) with peanut allergy to receive OIT with peanut flour (Greer; Lenoir, NC). Initial escalation, build-up and maintenance (300mg) phases were followed by a 5000mg oral food challenge (OFC) to assess desensitization. When peanut sIgE was <15 IU/mL, sustained unresponsiveness was assessed by a second OFC following 4 weeks of intentional avoidance. IgE-IgG levels and laboratory studies were performed at regular intervals.

RESULTS: The initial median peanut-specific IgE was 285.4 IU/mL (range, 22.1-795.0). Ten subjects qualified for intentional peanut avoidance and passed a second 5000mg OFC. However, 7 subjects continued to have elevated peanut sIgE despite daily peanut intake for >36 months and component analysis showed that these subjects had higher baseline levels of Arah1 sIgE (starting Arah1:Arah2 ratio >0.6). Not only was peanut IgG4 significantly lower at 36 months in the 7 subjects with persisting peanut sIgE ($p<0.01$; $7.6\pm2.2 mg_A/l$ vs 145 ± 44) but also IgG4 to Arah2 was significantly lower compared to the ten 'tolerized' subjects ($p<0.001$; $2.5\pm0.5 mg_A/l$ vs 65 ± 35). Interestingly, analysis of peanut flour showed that the dominant allergen is Arah2 (5,270μg/mL vs 487μg/mL of Arah1).

CONCLUSIONS: Combining new knowledge of the dominant allergens in peanut preparations with a baseline component analysis may assist in selecting participants likely to respond to OIT as well as guiding the appropriate form of therapy to offer.