

MEETING ABSTRACT

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Oral immunotherapy in clinical practice

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Introduction

Food avoidance is still considered the gold-standard treatment for food allergy (FA). However, recently it has been consolidating the theory that, where possible, the food intake might facilitate the induction of desensitization and tolerance, resulting more effective and safer -if we consider the possibility of accidental ingestion- than a strict avoidance diet [1].

Furthermore, specific oral immunotherapy (OIT) is the unique active treatment for IgE-mediated FAs [1].

Efficacy

Studies have shown short-term efficacy: namely the OIT-ability to induce desensitization (loss of responsiveness to food-antigen during continuous assumption of OIT-doses) [2-5]. Conversely, data are still insufficient and controversial regarding long-term efficacy: namely, the achievement of tolerance (configured when the offending food is removed from the diet and, if reintroduced, does not elicit any adverse reaction) [2-5].

Recent data have shown that a key role in the induction of tolerance by OIT is played by a subgroup of regulatory T cells known as “induced T reg” (iTreg) [6,7]. Epigenetic studies in vivo assess that OIT determines hypomethylation of FOXP3 protein in specific antigen-iTreg only in individuals tolerant. Therefore, changes in the DNA of iTreg - specific antigen may predict the development of a state of clinical immune tolerance during OIT [8].

Safety

About safety, allergic reactions occurred in the majority of patients treated. They are primarily mild reactions, severe in about 4%; however, no threatening-life events nor death has been reported [9]. Frequency and severity

of side effects seem reduced in protocols involving more gradual dose increases [1].

Careful clinical monitoring by qualified personnel in a medical environment is essential. Consequently, OIT costs are high.

In all immunotherapy treatments, safety is of paramount importance. Therefore, when severe adverse reactions occur, OIT should be stopped and reevaluated.

Possible approaches improving OIT

Several efforts have been made to perfect OIT: e.g. antigens with reduced allergenicity and adjuvants inducing faster immune responses of “protection”. Particularly promising is OIT associated with omalizumab, anti-IgE antibody, resulting safe and able to accelerate the desensitization compared to traditional protocols [10-12].

Conclusions

Further researches are needed in order to verify the degree of long-term safety as well as the long-term efficacy of OIT.

Given the interest and the celerity of development of this field of research in the recent years, we are confident in the near achievement of a personalized treatment, planned, safe and effective, to be used in clinical practice.

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References

1. Pajno GB, Nadeau KC, Passalacqua G, Caminiti L, Hobson B, Jay DC, et al: **The evolution of allergen and non-specific immunotherapy: past achievements, current applications and future outlook.** *Expert Rev Clin Immunol* 2015, **11**:141-54.
2. Shekelle P, Maglione M, Riedl M, et al: **Food Allergy: Evidence Report.** Accessed at <http://www.rand.org/health/centers/epc/>.
3. Chafen JJ, Newberry SJ, Riedl MA, Bravata DM, Maglione M, Suttrop MJ, et al: **Diagnosing and Managing Common Food Allergies: A Systematic Review.** *JAMA* 2010, **303**:1848-1856.
4. Calvani M, Giorgio V, Miceli Sopo S: **Specific oral tolerance induction for food. A systematic review.** *Eur Ann Allergy Clin Immunol* 2010, **42**:11-19.

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5. Fisher HR, du Toit G, Lack G: **Specific oral tolerance induction in food allergic children: is oral desensitisation more effective than allergen avoidance? A meta-analysis of published RCTs.** *Arch Dis Child* 2011, **96**:259-264.
6. Soyer O U, Akdis M, Ring J, Behrendt H, Cramer R, Lauener R, et al: **Mechanisms of peripheral tolerance to allergens.** *Allergy* 2013, **68**:161-170.
7. Pajno GB, Cox L, Caminiti L, Ramistella V, Crisafulli G: **Oral Immunotherapy for Treatment of Immunoglobulin E-Mediated Food Allergy: The Transition to Clinical Practice.** *Pediatr Allergy Immunol Pulmonol* 2014, **27**:42-50.
8. Syed A, Garcia MA, Lyu SC, Bucayu R, Kohli A, Ishida S, et al: **Peanut oral immunotherapy results in increased antigen-induced regulatory T-cell function and hypomethylation of forkhead box protein 3 (FOXP3).** *J Allergy Immunology* 2014, **10**:1.
9. Kim EH, Burks W: **Managing food allergy in childhood.** *Curr Opin Pediatr* 2012, **24**:615-20.
10. Nadeau KC, Schneider LC, Hoyte L, Borras I, Umetsu DT: **Rapid oral desensitization in combination with omalizumab therapy in patients with cow's milk allergy.** *J Allergy Clin Immunol* 2011, **127**:1622-4.
11. Schneider LC, Rachid R, Lebovidge J, Blood E, Mittal M, Umetsu DT: **A pilot study of omalizumab to facilitate rapid oral desensitization in high-risk peanut-allergic patients.** *J Allergy Clin Immunol* 2013, **132**:1368-1374.
12. Bégin P, Dominguez T, Wilson SP, Bacal L, Mehrotra A, Kausch B, et al: **Phase 1 results of safety and tolerability in a rush oral immunotherapy protocol to multiple foods using Omalizumab.** *Allergy Asthma Clin Immunol* 2014, **10**:7.

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