

Title: Low-dose oral food challenge (OFC) in a pediatric day-care hospital: a pre-immunotherapy approach for managing nut-allergies in children

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Background and objectives

Oral immunotherapy (OIT) for managing peanut (PN) and tree nut (TN) allergies has shown promising results, driving its increased demand in the allergy community¹. However, practical implementation of OIT in small clinical teams with limited manpower results in delay of treatment. Thus, we aim to develop strategies to meet the increasing demand for OIT and provide a safe, at-home-based immunotherapy approach for nut-allergic children.

Methods

PN and TN-allergic children were included if: (i) A convincing history of IgE-mediated reaction with confirmed sensitization on skin prick test (SPT) or specific-IgE (slgE) (ii) No history but either SPT or slgE fulfilling the 95% positive predictive value, or (iii) equivocal history or sensitization but had a positive OFC. We performed low-dose OFC using a modified PRACTALL² dosing upto a cumulative dose (CD) of 44 mg nut protein. Reactions were graded using consortium for food allergy research (CoFAR) grading scale. OIT was offered to eligible patients.

Results

Sixty patients (median age 6 years) were recruited: 28 (46.7%) PN-allergic and 32 (53.3%) TN-allergic. Amongst the TN-allergic patients, most were cashew-allergic (40.6%) followed by hazelnut (31.3%), pistachio (15.7%) and walnut (12.5%). Fifty-four patients (27 PN, 27 TN) underwent low-dose OFC while six were challenged with higher doses. A higher proportion of PN-allergic patients (11/27; 40.7%) reacted to the low-dose OFC compared to the TN group (6/27; 22.2%), $p=0.24$. The median cumulative reactive dose was 44 mg nut protein for PN vs 34.5 mg for TN, respectively. Most reactions during OFC were of CoFAR grade 1 (72.7% and 66.7% for PN vs TN). Following low-dose OFC, 34 (63%) patients initiated OIT (59.3% PN-OIT, 66.7% TN-OIT). A majority ($N=32$; 94.1%) completed the build-up phase (mean duration of 26 weeks) to reach a maintenance dose of 300 mg nut protein. Twenty-nine (85.3%) completed this phase without symptoms while only 14.7% experienced mild, CoFAR grade 1 reactions.

Conclusion

Our approach of challenging patients with low doses of nut allergens serves as an effective screening tool to identify candidates eligible for home-based OIT. This facilitates an earlier initiation of immunotherapy, thereby ensuring timely access to this emerging intervention.

References

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