Background: Food allergy may impact diet quality and nutrient intake. The aim of this study was to examine intake patterns of calcium-rich foods and supplements, and dairy quality amongst adolescents with or without a history of food allergy.
Methods: We examined intake patterns of calcium-rich products amongst Manitoba adolescents by food allergy status, using data from a cohort born in 1995 and followed to adolescence. At ages 7–8 (childhood) and 12–14 (adolescence) years, parents reported if their child had ever had food allergy. Adolescents completed food frequency questionnaires, which queried calcium-rich foods calcium-fortified orange juice and multivitamin/mineral supplements. Intake patterns were defined as 1+ weekly, vs. < 1 weekly, except calcium-fortified orange juice, which was categorized as no/yes. Dairy quality scores were classified based on the Youth Health Eating Index, with low-fat milk and yoghurt consumption scored twice as high as high-fat, high-sugar dairy. Logistic regression was used, with adjustments for confounders. This study was approved by The University of Manitoba Health Research Ethics Board (HS14742 (H2002:078)).
Results: Overall, 472 adolescents were included, including 60 (13%) with food allergy ever. Compared to adolescents without food allergy, adolescents with a history of food allergy were significantly less likely to consume milk 1+ weekly (OR 0.39; 95%I 0.20–0.77). In contrast, intake patterns of other calcium-rich foods and supplements were similar between the groups (all $p > 0.05$). Mean dairy quality was poor (4.1/10). Although dairy quality scores tended to be slightly higher amongst boys than girls ($p = 0.08$), it did not differ by food allergy status in childhood, in adolescence or by timing.
Conclusion: Manitoba adolescents with a history of food allergy consume less milk, but similar amounts of other calcium-rich foods, compared to their non-food allergic peers. Whereas dairy quality was poor amongst all adolescents, it did not differ by dairy quality scores.

#58

Specific IgE antibody levels during and after food-induced anaphylaxis

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Background: Little is known about the dynamics of specific IgE antibody (sIgE) levels during and after an allergic reaction. We evaluated the differences in food sIgE levels during and after food-induced anaphylaxis.
Methods: Patients presenting to the Emergency Department (ED) of the Montreal Children's Hospital with food-induced anaphylaxis were recruited for the Cross-Canada Anaphylaxis Registry (C-CARE) between 2013 and 2019. sIgE levels (Phadia ImmunoCAP) of the suspected culprit allergen and of other related and unrelated foods, in addition to tryptase levels, were drawn within 2 h of presentation and at least 24 h later. We compared sIgE (and tryptase) levels during and after the reaction with the paired Wilcoxon test. A multivariable linear regression model was used to predict factors associated with difference in sIgE levels of the reported culprit allergen during and after the reaction.
Results: Among 50 consenting pediatric cases, sIgE levels of the reported culprit allergen after anaphylaxis were higher than during the reaction, yielding a mean difference of 8.41 kUa/L ($p = 7.87 \times 10^{-6}$). The median time interval for sIgE differences was 4 weeks (IQR = 5). Among the 34 patients who had their sIgE levels of unrelated foods measured, the difference was not substantial (2.15 kUa/L, $p = 0.473$). In 46 patients, tryptase levels during and after anaphylaxis were also measured. All had decreased levels after the reaction consistent with the definition of anaphylaxis with a total mean difference of 7.03 µg/L ($p = 2.59 \times 10^{-9}$). Older children (0.067 (95%CI 0.00094, 0.13)) and children with higher tryptase level difference (0.83 (95%CI 0.14, 1.52)) were found to be more likely to have higher differences in sIgE levels, while adjusting for sex, and difference in sIgE levels of unrelated foods.
Conclusion: The results suggest that changes in sIgE levels may contribute to identifying the culprit allergen when history is unclear.
The study was approved by McGill University Health Center Research Ethics Board. REB # 12-084 PED.

#59

Extended daily dosing of AR101 for peanut allergy results in higher tolerated doses and continued immunomodulation in subjects aged 4–17 years

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Background: In PALISADE, a phase 3 study of AR101 in North America and Europe, immunological changes suggested immunomodulation of peanut allergy during the first year of treatment, including 6 months of dose escalation and 6 months at the therapeutic dose (300 mg/day). Efficacy, safety, and immunological changes after 28 additional weeks of 300 mg/day in subjects 4–17-years-old is reported.
Method: AR101-treated PALISADE completers tolerating ≥ 300 mg peanut protein at double-blind, placebo-controlled food challenge (DBPCFC) entered the follow-on study ARC004. A subset (including Canadian subjects) continued 300 mg/day AR101 for 28 weeks and completed a DBPCFC with an additional 2000 mg (4043 mg cumulative) challenge dose. Peanut skin-prick test (SPT) and peanut-specific IgE (psIgE) measurements (reported as median [Q1, Q3]) were compared (PALISADE vs. ARC004).
Results: 110/285 AR101-treated subjects aged 4–17 years continued 300 mg/day AR101; the remainder were assigned to other dosing arms (not reported here). 94% of subjects completed the additional 6-month dosing period and exit DBPCFC. Two subjects discontinued AR101 due to adverse events (AEs). The proportion of subjects reporting related AEs were similar (PALISADE 45% vs. ARC004 43%) but the number of events decreased (739 vs. 371 events). Median tolerated dose at ARC004 DBPCFC was 1000 mg (1000, 2000) (n = 104). Of subjects who tolerated < 1000 mg at PALISADE exit (n = 37), 70% tolerated a higher challenge dose at ARC004 exit. 49% of subjects tolerated the 2000 mg challenge dose. Immunological changes continued (PALISADE vs. ARC004 exits): SPT wheal diameter, 7.5 mm (5.5, 10.0) vs. 7.0 mm (5.0, 9.0); psIgE, 59.3 (19.8, 245.5) vs. 40.5 (15.8, 90.0); psIgE/IgG4, 12.5 (2.3, 29.9) vs. 5.1 (1.2, 16.0).
Conclusion: AR101 showed improved tolerability after 28 additional weeks of 300 mg/day AR101, with AEs decreasing over time. Higher tolerated doses were matched by favourable immunological changes, suggestive of ongoing immunomodulation with therapeutic dose continuation, reinforcing the rationale for continued daily AR101 dosing after 1 year.