SATURDAY

372 Decreased pollen sensitization in school-age children after the COVID-19 pandemic : COCOA study

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RATIONALE: Coronavirus disease 2019 (COVID-19) pandemic has changed lifestyles dramatically. The impact of COVID-19 on inhalant sensitization remains unknown. The purpose of this study is to investigate whether the COVID-19 outbreak affects the changes of inhalant sensitization and allergic disease at age 7 according to a birth year in a general population-based birth cohort.

METHODS: We analyzed 923 children from the cohort for childhood origin of asthma and allergic diseases (COCOA). Allergic diseases were diagnosed annually by pediatric allergists. The skin prick tests were performed with 14 common inhalant allergens at age 7. In order to confirm the changes before and after the COVID-19 pandemic, the results of skin prick tests conducted for 2 years, respectively, were analyzed.

RESULTS: Of the 923 eligible children, tree pollen sensitization at 7 years of age increased from 2015 to 2019 continuously ($p = 0.006$). The sensitization rates to birch and oak among tree pollen, increased significantly ($p = 0.011$, 0.005, respectively). However, tree pollen sensitization, especially oak sensitization decreased after covid-19 pandemic ($p = 0.027$, 0.002, respectively). The prevalence of sensitization to indoor allergens did not show a significant difference before and after COVID-19 pandemic. On the other hand, prevalence of allergic rhinitis increased from 2015 to 2020 continuously and did not decrease after COVID-19 pandemic.

CONCLUSIONS: Sensitization to tree pollen in general population-based Korean children increased steadily until 2019, and declined since 2020 with starting COVID-19 pandemic. Changes in lifestyle due to the COVID-19 pandemic may affect pollen sensitization. Further research is needed in the future.

373 Pooled Analysis Of Long-term Immunological And Safety Outcomes Of Daily Oral Immunotherapy For Peanut Allergy Up To ~5 Years

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RATIONALE: Peanut (*Arachis hypogaea*) allergen powder-dnfp (PTAH) is a daily oral immunotherapy approved to mitigate allergic reactions in individuals aged 4–17 years following accidental peanut exposure. Little patient data is available beyond ~2 years of treatment. We describe long-term peanut sensitization changes/safety data up to ~5 years of PTAH from pooled phase 3 and open-label, follow-on trials.

METHODS: Immunological/safety data from 6 trials (ARC003 [PALISADE], ARC004, ARC007 [RAMSES], ARC008, ARC010 [ARTEMIS], and ARC011) were pooled and analyzed descriptively (N=1127); data cutoff for ARC008 (ongoing) was July 31, 2021. Peanut sensitization markers were identified from blood samples collected at prespecified time points.

RESULTS: 90.6% of patients experienced ≥1 treatment-related AE (TRAE). During up-dosing, 58.0% and 26.2% of patients reported mild and moderate TRAEs, respectively; rates decreased substantially during maintenance treatment, continuing to decrease over time on PTAH (mild: ≤4.2%; moderate: ≤0.9% in Year 5). Severe systemic allergic reactions were generally absent after Year 2. Median peanut-specific immunoglobulin E (psIgE) decreased from 83.85 kUA/L (baseline) to 11.25 kUA/L (Year 5); baseline peanut-specific immunoglobulin G4 (psIgG4; 0.58 mgA/L) increased to 12.5 mgA/L (Year 3) and declined to 7.84 mgA/L (Year 5). Median psIgE/psIgG4 ratio trended downward (baseline: 139.21; Year 1: 16.44; Year 5: 0.79). Median baseline skin prick test wheal diameter was 11.50 mm, decreasing to 5.75 mm (Year 5). Number of participants with data was lower at Year 5.

CONCLUSIONS: PTAH treatment up to ~5 years in children with peanut allergy showed long-term immunomodulation and a reduction in AEs over time.

374 Baseline Epitope-Specific IgE Profiles are Predictive of Sustained Unresponsiveness One Year Post OIT in the POISED Trial

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RATIONALE: Results from the POISED trial suggest that discontinuation of peanut desensitization can increase the risk of regaining clinical reactivity to peanut. We hypothesized that those who achieved sustained unresponsiveness (SU) have lower levels of baseline sequential epitope-specific (ses-)IgE than those who achieved transient desensitization (TD).

METHODS: Subjects in the POISED trial (NCT02103270) were randomized to peanut (n=95) or placebo (oat flour, n=25) for 24 months. Then OIT-desensitized subjects were assigned to no peanut (Peanut-0, n=51) or 300mg (Peanut-300, n=30) for 12 months. SU was determined by passing 4g peanut oral challenge. Specific IgEs and IgG4s to peanut, Ara h 1-3 proteins (ImmunoCap) and 64 allergenic epitopes (BBEA) were measured. We developed machine learning *glmnet* models with bootstrap simulations using baseline data to predict SU.

RESULTS: Eighty (84%) subjects were desensitized to peanut during OIT. Of those, only 13% (n=8) and 37% (n=13) achieved SU in Peanut-0 and Peanut-300. Decreases in epitope- and protein-specific IgEs and increases in IgG4s were observed during 2 years of OIT. At baseline, only patients with SU in Peanut-0 but not Peanut-300 had lower ses-IgEs and protein-sIgEs compared to the TD group. A machine learning model with 15 baseline ses-IgEs could predict SU with an accuracy of 87%, 0.90 (sd=0.7) AUC, 0.78 (sd=0.16) Sensitivity, and 0.9 (sd=0.21) Specificity.

CONCLUSIONS: Patients who achieved SU have different baseline protein- and epitope-specific IgE profiles than those with TD. These molecular markers may be helpful in identifying patients with an increased likelihood of achieving SU.