228 Trend Analysis Of New Orleans Outdoor Mold Spore Counts: A Comparison Of Heal Preliminary Data And Post-katrina Mold Concentrations

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RATIONALE: After the hurricanes and the levee breaches, New Orleans was a breeding ground for mold proliferation that resulted in atypical levels and types of mold. The question remains; has outdoor mold in New Orleans returned to normal?

METHODS: Analysis of outdoor spore trap samples collected in flooded areas during the 11 months immediately after the flooding (9/05 - 7/06), defined here as Post-Katrina (PK), were compared to outdoor samples collected in the Head-off Environmental Asthma in Louisiana (HEAL) investigation, a study among children with asthma in New Orleans (3/07 - 4/09).

RESULTS: Seasonal average total spore concentrations were significantly ($p < 0.01$) higher for PK ($n = 130$) vs HEAL ($n = 463$) samples. Also, HEAL samples showed an expected seasonal dip in winter that failed to appear in the PK samples. Significantly more PK samples had detectable levels of mold types associated with water damaged (WD) building materials ($p = 0.0001$) and soil mold (SM) types that are typical in compost ($p = 0.0001$). SM percent of total was higher ($p < 0.0001$) in PK than in HEAL. The concentration and percent of SM fell over time among PK samples but HEAL samples reflected expected seasonal variability.

CONCLUSIONS: Compared to 2 years after Katrina in New Orleans, PK outdoor airspora was elevated overall and enriched in mold colonized types typically associated with composting. This is added to expected indoor effects and likely reflects the amounts of mold-colonized material removed.

229 Correlation of IgE and IgG_4 Milk Epitopes with Different Clinical Phenotypes of Milk Allergy Using Microarray Immunoassay

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RATIONALE: Recently, peptide microarray has been developed for large-scale epitope mapping using small quantities of serum, and results have been shown to correlate with clinical features of milk allergy. In this study, we sought to determine whether IgE and IgG_4 epitope diversity were correlated with the different clinical phenotypes for milk allergy, including milk-allergic, milk-tolerant, and heated milk (HM) tolerant phenotypes.

METHODS: Forty-one subjects were recruited from a larger clinical study on the effects of ingesting heat-denatured milk proteins in milk-allergic individuals. Subjects were characterized based on the results of food challenges as allergic ($n = 17$), HM tolerant ($n = 16$), or outgrown milk allergy ($n = 8$). Blood samples from subjects were obtained at the baseline challenge. Eleven non-milk allergic, healthy volunteers served as controls. Peptide microarray was performed using the previously published protocol.

RESULTS: Patients with persistent milk allergy had increased epitope diversity as compared to those who outgrew their allergy. Individuals who were HM tolerant had IgE binding patterns similar to those who had outgrown their milk allergy, but IgG_4 binding patterns that were more similar to the allergic group. Furthermore, binding to increased numbers of IgE peptides correlated with increased severity of allergic reactions during food challenge. There was no correlation between number of IgG_4 peptides and severity of allergic reactions during challenge or between number of IgE or IgG_4 peptides bound and the eliciting dose during challenge.

CONCLUSIONS: IgE epitope diversity on peptide microarray correlated with clinical phenotypes and severity of milk allergy.

230 Double-Blind, Placebo-Controlled Trial of Oral Immunotherapy (OIT) in Peanut (PN) Allergic Children: A Follow-up

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RATIONALE: The goals of our study are to determine if PN-OIT 1) results in clinical desensitization and 2) induces long-term tolerance.

METHODS: PN-allergic children were randomized to receive PN-OIT or placebo (Plb-OIT). Study phases included: initial escalation, build-up, and maintenance dosing then oral food challenge (OFC) and either continued PN-OIT or cross-over to PN-OIT. PN-IgE, PN-IgG4 and titrated skin tests were measured and safety monitored.

RESULTS: Of 29 enrolled, 23 subjects (15 PN; 8 Plb) have reached OFC. The 15 PN-OIT subjects have continued on OIT for 1-17mo beyond OFC; 7 Plb-OIT subjects have started PN-OIT. At escalation, 21/22 subjects (PN-OIT plus 7 Plb crossovers) reached maximum dosing (6 mg) and all reached 4g maintenance. During OFC, median cumulative PN dose tolerated was 315mg for Plb-OIT and 5000mg for Pn-OIT ($p < 0.001$). Symptoms during dosing were typically mild-moderate with epinephrine given to subjects in each phase as follows: 2 in escalation (both PN), 2 at OFC (both Plb), 2 during PN-OIT home dosing. Median PN-IgE levels did not change from baseline to OFC in either group, or when comparing PN-OIT from baseline to ~12 mo ($n = 9$) past OFC. PN-IgG4 increased from baseline to OFC (PN-OIT: 0.26 vs. 24.9mg/L; Plb-OIT 0.18 vs. 0.35mg/L, $p < 0.005$) and persisted with active treatment. Median titrated skin tests decreased from baseline to OFC in PN-OIT only (PN: 15mm to 7.9mm vs. Plb: 16.3mm to 15.8mm, $p < 0.001$).

CONCLUSION: PN-OIT induces clinical desensitization while immune parameters suggest long-term changes in the PN-specific response. Immune profile, long-term tolerance and clinical safety are being continually monitored.

231 Basophil CD203c Expression Induced By Egg White Ovomucoid Domain 3 Antigen Predicts Persistent Intolerance To Egg

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RATIONALE: Food allergy in young children may be classified into transient, prolonged and persistent types depending the period and possibility to acquire natural tolerance. Although higher specific IgE levels have been reported to correlate with persistent intolerance, prediction of future outcome at early ages is usually difficult. Ovomucoid domain 3 (OM-DM3) is a major sequential epitope of egg white (EW) allergen and may be related with intolerance. We investigated the utility of basophil CD203c expression induced by OM-DM3 for prediction of natural course of egg allergy.

METHODS: One hundred and six egg allergy children diagnosed by oral food challenge OFC) or recent history (<1 month) of egg-ingestion-related immediate symptoms were enrolled in the study. Whole blood was incubated with OM-DM3 and induced expression CD203c on basophils was analyzed by a flow cytometry At 1 and 2 years later, OFCs were again performed to test acquirement of tolerance and were correlated with the initial laboratory tests including CD203c and specific IgE levels.

RESULTS: The initial DM3-induced CD203c expression predicted intolerance to egg at 1 year with sensitivity of 75.6%, specificity of 77.8%, positive predictive value (PPV) of 90.8%, and negative predict value(NPV) of 52.5%, at 2 years with sensitivity of 93.0%, specificity of 79.2%, PPV of 84.1%, and NPV of 90.5%. Predictabilities of specific IgE levels to EW or OM were low.

CONCLUSIONS: Patients with positive OM-DM3-induced CD203c expression on basophils may not attain natural outgrow within, at least, 1 or 2 years and may be possible candidates for oral immunotherapy.