Prevalence and Perception of Environmental Allergen Testing in Children with Moderate-to-Severe Persistent Asthma

Zara Arain, DO1,2; Madeleine Kanaley, BA2,3; Jamie Fierstein, PhD1,3; Ruchi Gupta, MD MPH1,2,3

1Ann & Robert H. Lurie Children’s Hospital of Chicago, 2Northwestern University Feinberg School of Medicine, 3Center for Food Allergy and Asthma Research

Introduction

- Asthma is the most prevalent chronic disease of childhood, affecting 6 million children in the US.
- Allergens are one aspect of poor asthma control and allergen testing is recommended by NHLBI guidelines in patients with persistent asthma.
- Current literature has shown allergen avoidance improves asthma outcomes, however, the benefit of allergen testing that leads to behavioral change has not been evaluated which our study aimed to investigate.
- Study aims: 1) assess the prevalence of allergen sensitization among a cohort of moderate to severe asthmatic patients 2) determine the usefulness of allergen testing from a parent reported survey. 3.) evaluate behavior changes based on positive allergen test results.

Methods

- Improving Technology Assisted Recording of Asthma Control in Children (iTRACC) clinical trial inclusion criteria: 4-17 years of age, moderate to severe persistent asthma based on NHLBI guidelines, Inhaled corticosteroid use, 2 oral steroid prescriptions in past year.
- Investigator created survey assessed the familial perception of allergen testing and environmental allergen testing variables respectively.
- Statistical analysis: Univariate and bivariate statistics to describe the distribution of positive allergens and associations between categorical variables respectively.

Results

- Most common allergen sensitizations: Dog (49.5%), Cat (45.3%), white ash tree (27%)
- Other outcomes:
  - Age: Older age group 12-18 years of age more sensitized than younger age group
  - Gender: Males: 4x more likely to be sensitized to oak, cottonwood trees and 2x more likely to dust mites, cockroach, elm, maple leaf trees
  - Race: Aspergillus alternate mold: 50% in Non-Hispanic black versus Non-Hispanic White 10.3%, p=0.03
  - Aspergillus Fumigatus: Non-Hispanic Blacks 54.2% versus non-Hispanic Whites 6.9%, p=0.01
  - Cockroach: 24.2% in Latino population versus 12.5% in non-Hispanic Blacks, p=0.03

Conclusions

- Our results suggest that allergen testing is useful to parents of our study participants to understand allergen triggers and enact behavioral modifications.
- The greatest prevalence of allergen sensitization was to animal dander and trees. The prevalence of allergen sensitization did vary by race, gender, and age.
- Awareness of test results allowed families to actively enact changes their indoor environment and avoid outdoor triggers.
- Areas of further research
  - Evaluate impact of behavioral modifications on clinical allergy symptoms, asthma control and health care utilization
  - Investigate the role of allergen testing in resource limited areas without access to an allergist to undergo allergen testing.

References