

Peanut Allergy: An epidemiologic analysis of a large database



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Characteristics of the Patient Population (n=700)

	Number	%
Sex (male)	448	64
Race		
White	551	78.7
African- American	68	9.7
Biracial	55	7.9
Asian	21	3.0
Hispanic	2	0.3
Other	3	0.4
Health Care Coverage		
Private	558	79.7
Medicaid	122	17.4
Self-Pay	20	2.9

Rationale: This study describes one of the largest, well characterized, databases of children seen at a major children's hospital with peanut allergy (PA) or peanut sensitization (PS).

Methods: Children with newly diagnosed or established PA/PS were asked to participate in an IRB approved peanut database.

Results: Over a 3 year period (2011-2014) 700 PA/PS children seen in the allergy clinics were registered. Demographic features; 64% were male, 80% were white and 10% were African-American. Medicaid covered 17%. Atopic dermatitis was diagnosed in 61% and asthma in 45%. Having a sibling with PA/PS occurred in 14%. A second food sensitivity/allergy occurred in 71.4%; milk in 20%, egg in 43%, and tree nuts in 39%. The current average age of this population is 6.9 years.

PA/PS features; 34% had a positive test for peanut and no history of a reaction. In this group, 86% had no peanut exposure. The average age in those with a reaction was 2 yrs. Reactions in the 463 children included anaphylaxis (37%), contact urticaria (28%), and diffuse urticaria (18.1%). In those who had peanut specific IgE performed (ImmunoCap, kU/L) the average values were; positive test only = 15, anaphylaxis = 25, diffuse urticaria = 17, and contact urticaria = 13. There were 11 reports of a second reaction that differed from the first reaction; anaphylaxis occurred in 6.

Conclusions: Over 3 years we have seen a significant number of children with PA/PS who have undergone an extensive evaluation. This analysis supports established observations and reveals new associations in this population of children.

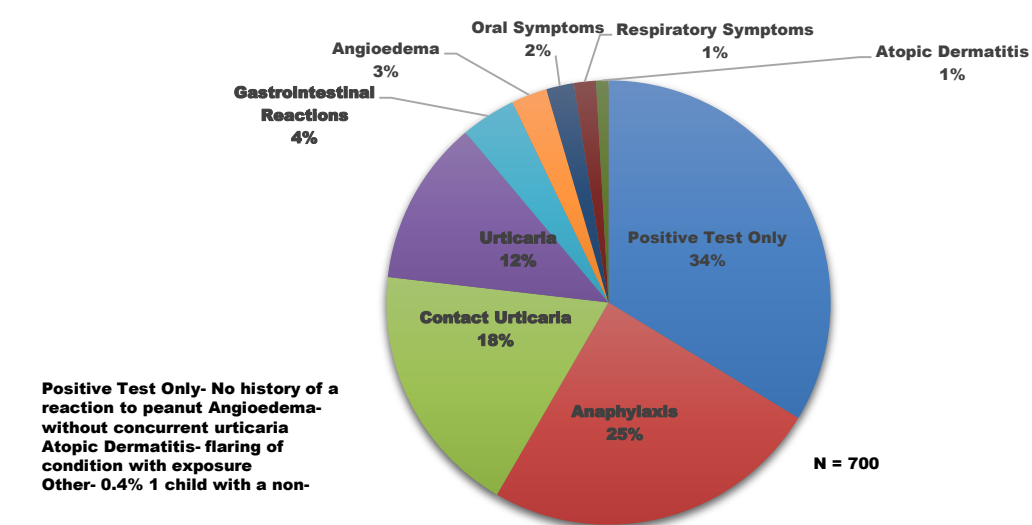
Background

- Of all the foods responsible for significant allergic reactions and/or for the potential of an allergic reaction, the peanut stands alone.
- In the practice of pediatric allergy, more children are seen for:
 - Peanut Allergy (PA): symptoms with exposure
 - Peanut Sensitization (PS): positive allergy test and no history of a reaction
- Epidemiologic studies have looked at the peanut allergy in the general population and in other groups of children (food allergic, asthma). There is a paucity of information from allergy practices.
- The purpose of this study was to describe a large population of children who presented with a history of PA or PS to a pediatric allergy practice at a major children's hospital.

Materials and Methods

- The parents of children with newly diagnosed PA/PS or with established PA/PS were asked to participate in a database.
- The database was approved by the Institutional Review Board of the Indiana University School of Medicine.
- Skin prick tests (SPTs)
 - Performed with the Greer probe
 - Extracts were from Hollister-Stier and Greer Laboratories
 - Histamine was 0.1 mg/ml obtained from ALK
- Scoring
 - 3+ = wheal \geq histamine control
 - 4+ = wheal + pseudopods
- Measured SPTs
 - Electronic calipers were used
 - Largest diameter of the wheal response in mm was recorded
- Specific IgE – Thermo-Fisher ImmunoCap
- SPSS version 22 was used for statistical evaluations

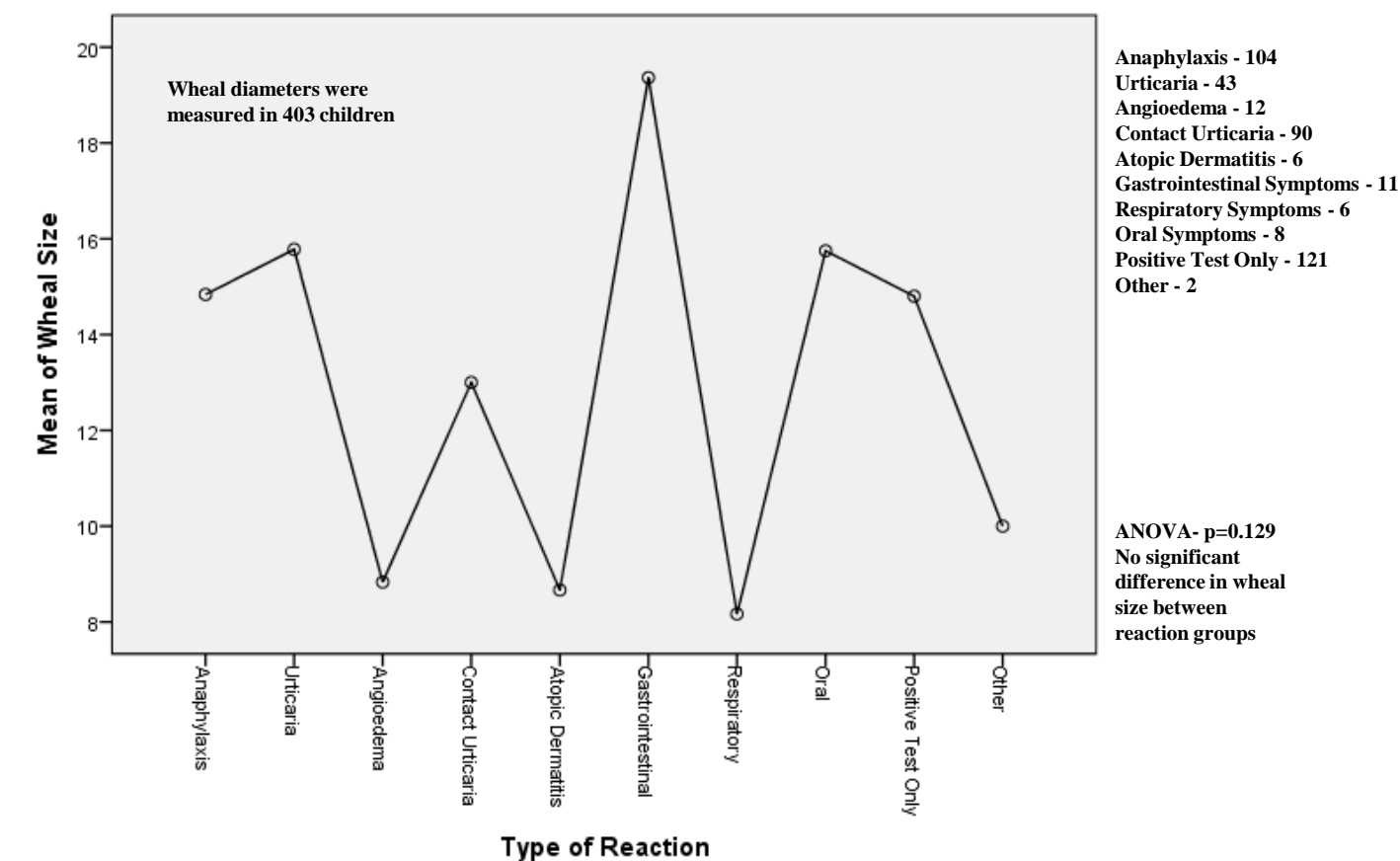
Clinical Presentations



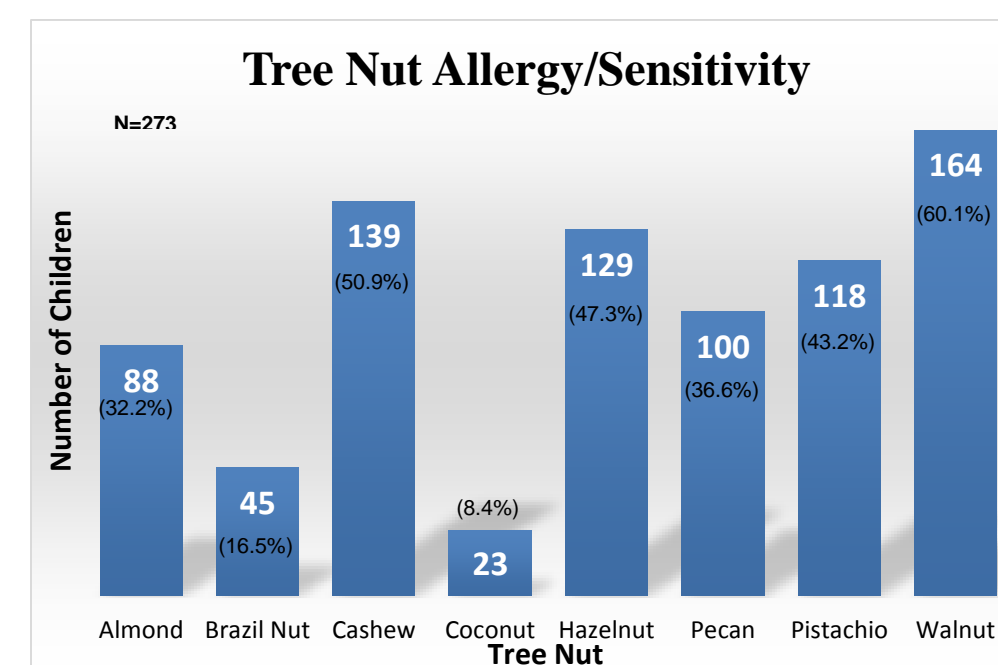
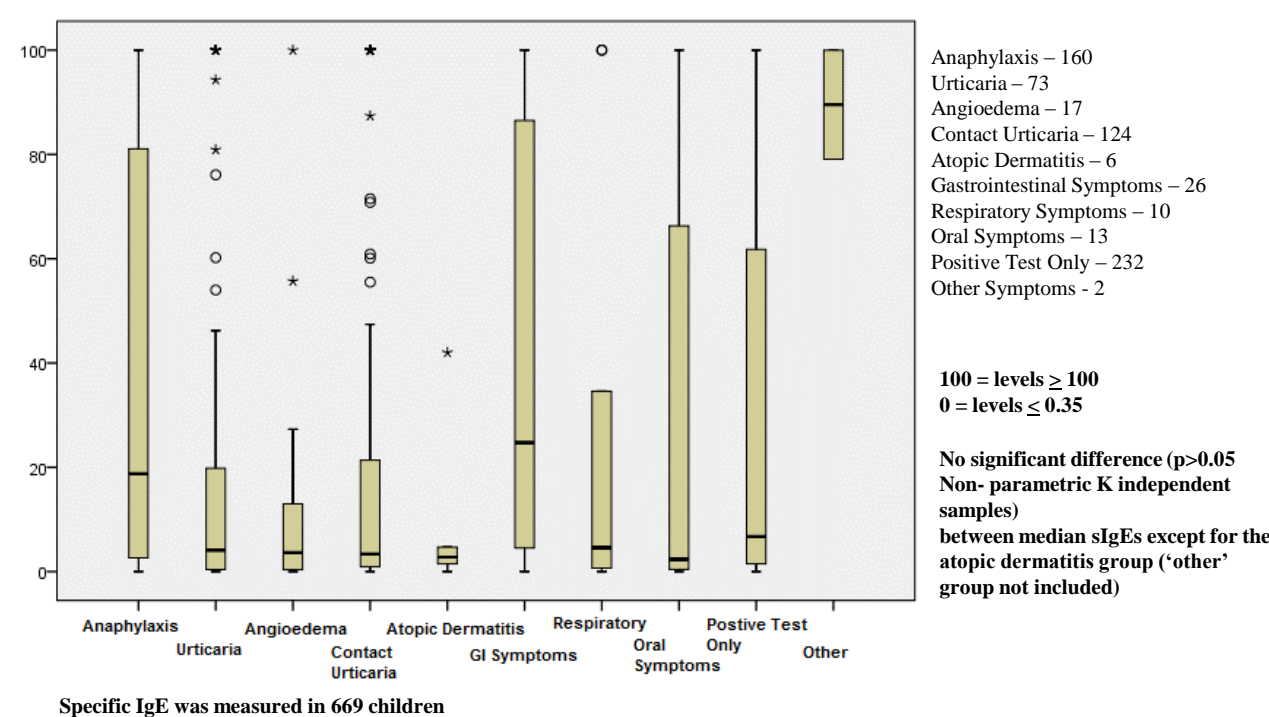
Clinical Features

N=700	
Age at the time of the first reaction	2.0 yrs (SD =1.8 yrs, range 1-12 yrs)
Allergy History	
Atopic Dermatitis	427 (61%)
Asthma	313 (44.7%)
Sibling Positive for Peanut	95 (13.6%)
Other Food Allergies/Sensitivities	
Any Additional Food	501 (71.6%)
Egg	299 (42.7%)
Milk	141 (20.1%)
Tree Nuts	273 (39%)

Skin Test Measurements (largest diameter of the wheal response in mm)



Clinical Presentation of Peanut Allergy and Specific IgE to Peanut (median values kU/L)



Second Reactions to Peanut (n= 18)

Reaction	Number
Anaphylaxis	8 (44%)
Initial Reaction	2
Positive Test Only	3
Contact Urticaria	2
Urticaria	1
Respiratory Symptoms	1
Contact Urticaria	6 (33%)
Initial Reaction	3
Positive Test Only	1
Atopic Dermatitis	1
Gastrointestinal Symptoms	1
Urticaria	1
Oral Symptoms	2 (11%)
Initial Reaction	1
Positive Test Only	1
Angioedema	1 (5.5%)
Initial Reaction	1
Positive Test Only	1
Respiratory Symptoms	1 (5.5%)
Initial Reaction	1
Contact Urticaria	1

There were 237 second visits for peanut allergy. Reporting of a second peanut exposure occurred in 7.6% of the visits.

Specific IgE values for the 8 children who had "new" anaphylaxis varied between 0.68 and >100 kU/L (5 had sIgE values >80.9 kU/L).

Observations

- Our PA/PS population was 78.7% white, 64% male, and 79.7% private insurance supported.
- The average age of peanut exposure for those who reacted was 2 years.
- Atopic dermatitis was noted in 61% and asthma in 44.7%.
- A history of a sibling with PA/PS was found in 13.6%.
- Additional food allergy/sensitization was seen in 71.6% with egg affecting 42.7% and tree nuts 39% of the children.
- Measurements of the wheal skin test response did not differ between the various presentations of PA/PS.
- Specific IgE to peanut was not significantly different between the groups with the exception of those few who reported a flare of atopic dermatitis with peanut exposure.
- Reports of second reactions were infrequent and were different from the original presentation.

Summary

- There are numerous population studies on PA/PS and not many that evaluate the population of children seen in an allergist's office.
- This is a report on 700 children who had a history of a real or potential problem with peanuts.
- PA can take many forms; anaphylaxis, urticaria, angioedema, contact urticaria, atopic dermatitis, or oral/respiratory/gastrointestinal symptoms.
- In those with PS, wheal responses and specific IgE are not significantly different from those with PA.
- Second reactions are infrequent and can be seen in those with PS.

References

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