Trends in Specific IgE Antibody Levels in Food-induced Anaphylaxis

Sofianne Gabrielli MSc[1], Alexandra Langlois, MD[1], Ann Clarke MD MSc[2], Sarah De Schryver MD[1], Moshe Ben-Shoshan MD MSc[1]

BACKGROUND & OBJECTIVES

•Data on specific IgE (sIgE) levels before, during, and after food-induced anaphylaxis in children is sparse.

•We aimed to assess the differences in sIgE at three times points (pre-, during, and post-reaction) among children with food-induced anaphylaxis.

METHODS

•From 2013 to 2019, children presenting with anaphylaxis to the Emergency Department of the Montreal Children's Hospital were recruited.

• SIgE of the suspected culprit allergen and unrelated foods were drawn within two hours or presentation and at least 24 hours later.

•In addition, data on previous IgE levels was collected through chart review.

•SIgE levels were compared with the paired Wilcoxon test. Multivariable linear regression was used to estimate the difference of sIgE levels over time. All statistical analyses were done using R version 3.6.0.

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RESULTS

Table 1. Patients with food-induced anaphylaxis in which sIgE was collected during and post-reaction

Patient Demographics	
Number of patients	**47**
Age at reaction (median, IQR)	1.9 (1.2, 4.4)
Sex (% males)	25 (53.2%)
Time interval in weeks between during and post-reaction sIgE measurements (median, IQR)	4 (3.5, 8.0)

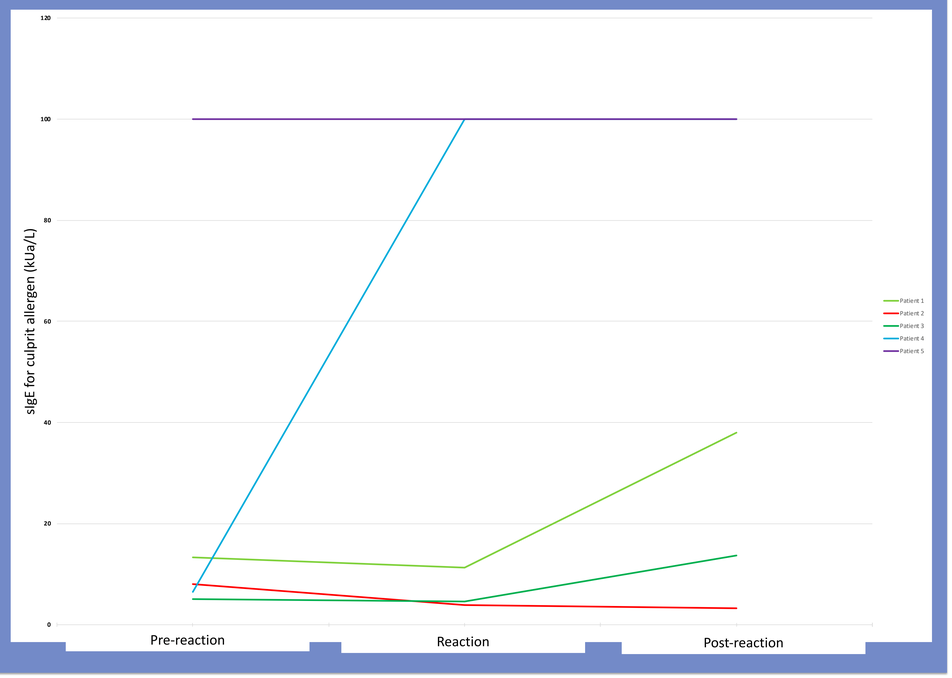
sIgE measured	Average difference (post-reaction – during)	p-value
sIgE levels for suspected culprit allergen	+ 8.14 kUa/L	2.93×10^{-5}
sIgE levels for unrelated food allergen	+0.70 kUa/L	0.391

- A greater difference in sIgE levels was associated with reactions to tree nuts [beta-coefficient 1.64 (95% CI, 0.65, 2.63)] while adjusting for tryptase levels, age, sex, reaction severity, and difference in sIgE levels.

Table 2. Subset of 5 patients with food-induced anaphylaxis in which sIgE was collected pre-, during and post-reaction

Patient Demographics	
Number of patients	**5**
Age at reaction (median, IQR)	7.7 (1.5, 12.5)
Sex (% males)	4 (80.0%)
Time interval in weeks between pre- and during reaction sIgE measurements (median, IQR)	118.0 (35.0, 281.0)
Time interval in weeks between during and post-reaction sIgE measurements (median, IQR)	3.0 (2.0, 7.0)

sIgE for culprit allergen	Average difference	p-value
sIgE levels during reaction vs. pre-reaction	- 1.30 kUa/L	0.0907
sIgE levels post-reaction vs. during reaction	+7.03 kUa/L	0.211
sIgE levels post-reaction vs. pre-reaction	+5.72 kUa/L	0.909



CONCLUSIONS

•Differences in sIgE during and post-reaction may contribute to identifying the culprit allergen of food-induced anaphylaxis in children.

•There may be a trend in culprit sIgE food levels to decrease from pre-reaction to during reaction and then increasing post-reaction.

AUTHOR AFFILIATIONS

[1]Division of Allergy and Clinical Immunology, Department of Pediatrics, Montreal Children's Hospital, McGill University Health Centre, Montreal, QC, Canada
[2]Division of Rheumatology, Department of Medicine, Cummings School of Medicine, University of Calgary, Calgary, Alberta, Canada