

POTENTIAL BIOMARKERS OF ACUTE ALLERGIC REACTIONS IN CHILDREN

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INTRODUCTION & AIM

In recent years, there has been an increase in acute allergic reactions (AAR), including anaphylaxis (AF), worldwide. AAR is based on certain clinical signs, but differential diagnosis often requires the use of additional diagnostic tests that can not only confirm the severity of the allergic reaction and its severity, but also predict its development.

Aims: the aim of our study was to examine the levels of tryptase, platelet activating factor (PAF), the enzyme acetylhydrolase of PAF (PAF-AG), as well as the content and activity of angiotensin-converting enzyme (ACE) in the blood serum of children with AAR.

METHOD

The study was conducted at pediatric hospitals in Belarus. A total of 60 children (average age 9.2 years) with AAR in the form of acute urticaria, angioedema or their combinations, as well as AF, were included in the study. The control group included 18 conditionally healthy children (average age 8.7 years). Measurements of tryptase, FAT, FAT-AG, ACE concentrations were performed using enzyme immunoassay. ACE activity was studied spectrophotometrically using the Elabscience ACE Activity Assay Kit. Differences were considered statistically significant at $p < 0.05$ and were analyzed using the Mann-Whitney U test.

RESULTS & DISCUSSION

The results of our study showed that the median values of the levels of tryptase, PAF and PAF-AG in the blood serum of children significantly increase with the development of AAR (in 2, 1.5 and 2.9 times respectively), and correlate with the severity of AAR. In addition, this rate were higher in the group of children with AF compared to children without AF. The levels and activity of ACE in children with AAR were also tended to increase relative to the control, but this increase was insignificant.

REFERENCES

- Schwartz L.B. Effector cells of anaphylaxis: mast cells and basophils. Novartis Found Symp. 2004;(257):65-74.
- Vadas P.B., Perelman G., Liss J. Platelet-activating factor, histamine, and tryptase levels in human anaphylaxis. Allergy Clin Immunol. 2013;131(1):144-149. doi: 10.1016/j.jaci.2012.08.016.

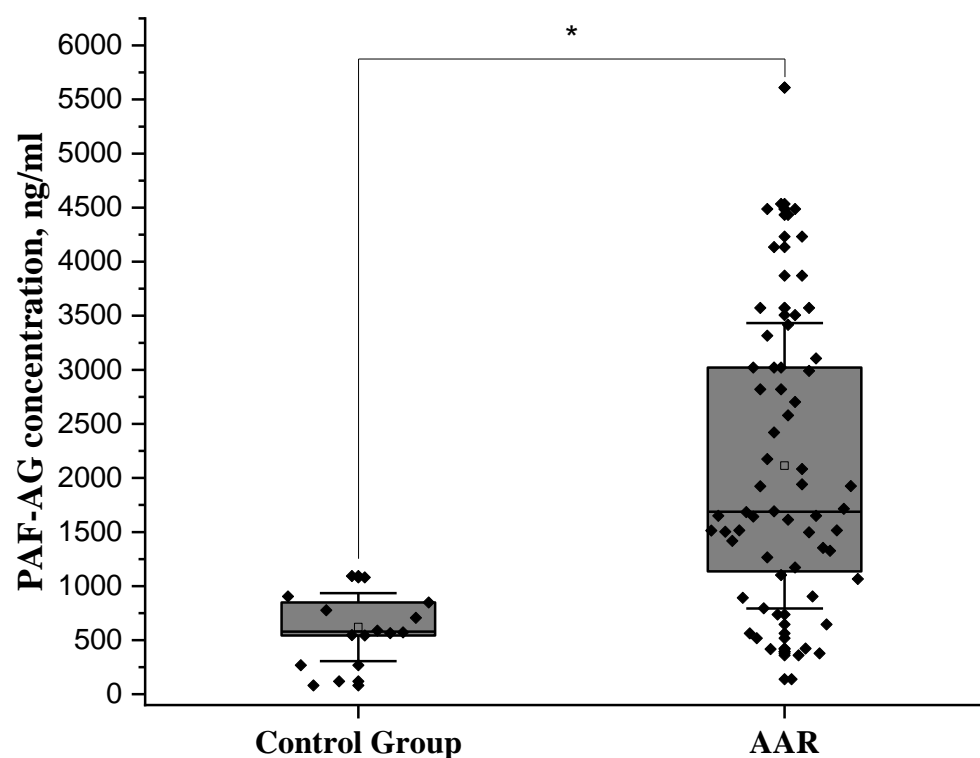
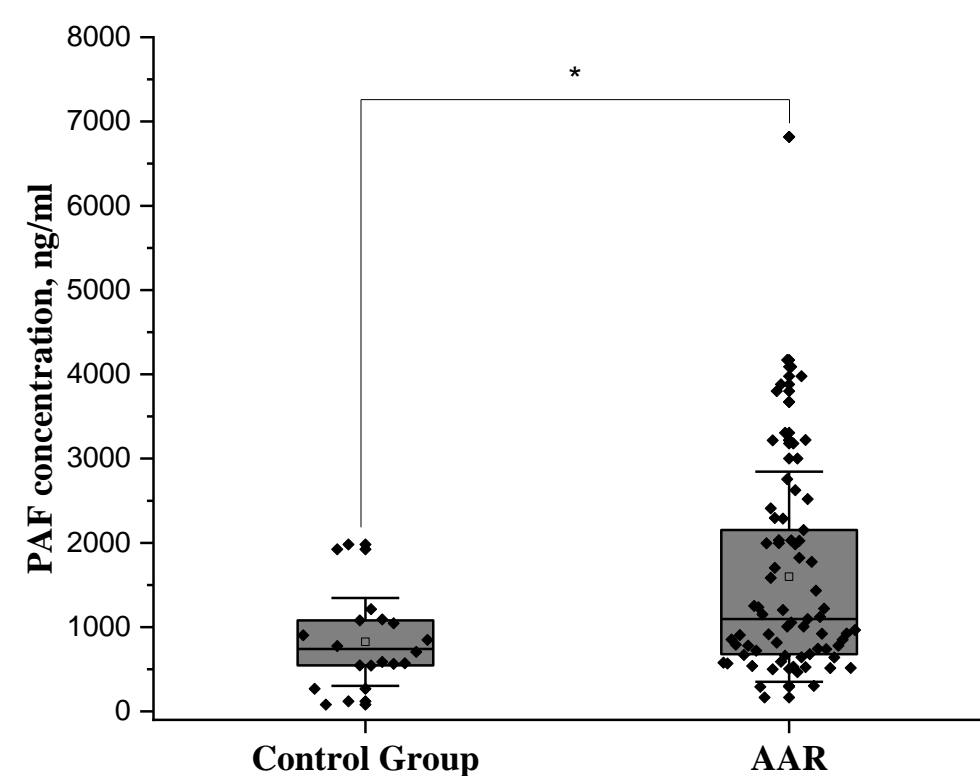
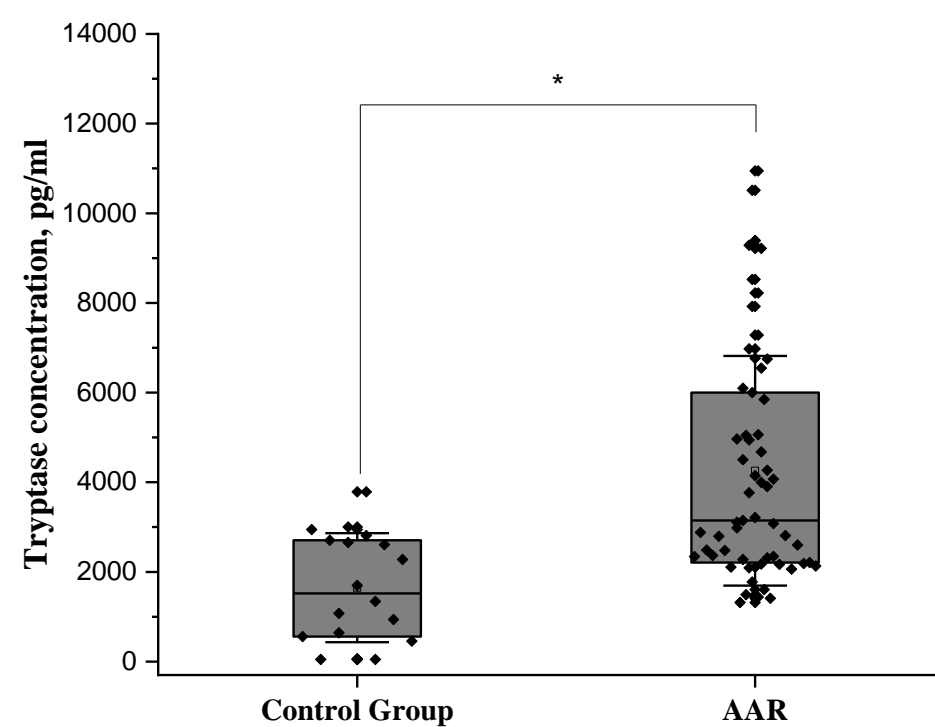


Figure. Tryptase (A), PAF (B) and PAF-AG (C) concentrations in patients with AAR and in control group. Data are presented as medians with interquartile ranges [25th percentile; 75th percentile], standard deviation. * $p < 0.05$ (Mann-Whitney test).

CONCLUSION

Thus, tryptase, PAF and PAF-AG levels may act as potential biomarkers for the development of AAR in children.