Adiponectin/immunoglobulins combination for distinction of allergic inflammation from other immunodeficiency disorders

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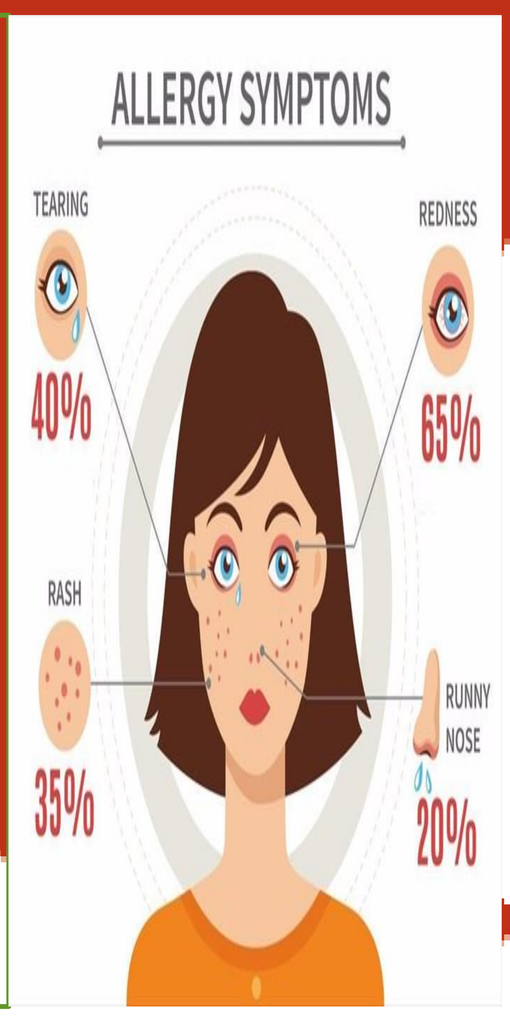
Introduction

Adiponectin and adipokine secreted by adipocytes, regulate metabolic homeostasis. Researches are focused on the role of adiponectin in development and progression of immune disorders (Song and Deng, 2020). Common variable immune deficiency is one of the most common and clinically important primary immunodeficiencies which is characterized with impaired production of specific immunoglobulin and cytokine production (Elkuch et al., 2017). In primary immunodeficiencies, serum IgE levels are elevated significantly, which can lead to allergy reactions (Burton and Oettgen, 2011).



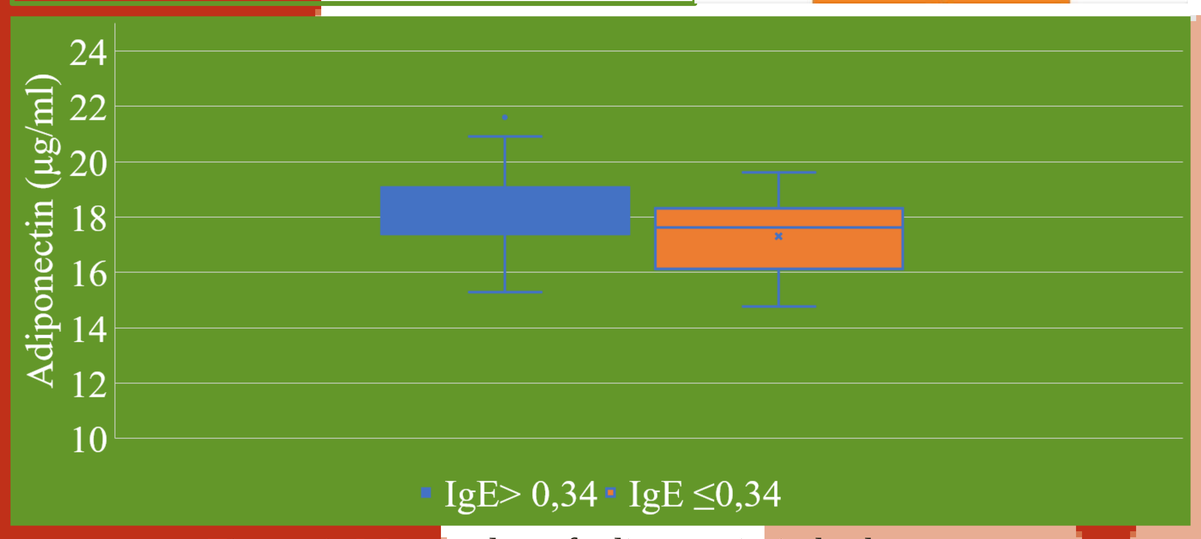


Figure 1. Mean value of adiponectin in both groups

Results and discussion

The patients were divided into two groups based on IgE levels: low IgE ≤0,34 IU/ml and IgE >0,34 IU/ml. One hundred thirty-five patients (75%) displayed an IgE concentration of ≤0,34 IU/ml. In 45 (25%) IgE >0,34 IU/ml for certain allergens were detected.

Adiponectin and IgE differ in patients with reduced antibody production compared to patients with allergy reactions. Chronic immune activation is followed by dysregulation of inflammatory cytokines and adipokines from adipose tissue (Song and Deng, 2020).

Adiponectin has anti-inflammatory effects on inflammatory disorders like allergy reactions. Presumed mechanism for this action of adiponectin is inhibition for expression of inflammation, an extracellular signal responsible for activation of protein kinases, and increased expression of anti-inflammatory genes via the IL-1 receptor antagonist (Otelea, et al., 2021).

The purpose of the study

We analyzed adiponectin/IgE combination as predictive marker for allergy diseases and adiponectin as a factor for differential diagnosis of immunodeficiency disorder.

Materials

A total of 190 patients at an age 3 to 81 years with allergy sensitization were evaluated. The protocol of the study was according to Helsinki Declaration on Medical Research on Humans.

Methods

Serum sIgE was detected with immunoblotting test on nitrocellulose membrane coated with 20 selected allergens using RIDA qline allergy kit. Measurement of adiponectin serum level was done with ELISA test. Total IgA, IgM, IgG were measured with immunoturbidimetry method on biochemical analyzer.

Table 1. Statistics of total immunoglobulins

Total Ig	Refferent vslues (g/L)	IgE >0,34 (IU/ml)	IgE≤0,34 (IU/ml)	t-test
IgA	0,70-4,0	mean ±SD (2,4±0,9) min-max (0,6-4,2)	mean ±SD (2,0±0,9) min-max (0,6-6)	p=0,01
IgG	7,0-16,0	mean ±SD (11,9±2,6) min-max (6,9-18,1)	mean ±SD (10,9±2,6) min-max (1,7-19,3)	p=0,01
IgM	0,40-2,30	mean± SD (1,0±0,5) min-max (0,4-2,2)	mean ±SD (1,1±0,5) min-max (0,35-3,11)	P=0,1

Conclusion

- **Adiponectin as an anti-inflammatory protein, reduces allergen-induced inflammation, therefore is early and sensitive biochemical marker in allergy reactions.**
- **Adiponectin/IgE combination can be used as a new approach for distinction of allergic inflammation from other immunodeficiency disorder.**
- **Further research to investigate the exact mechanism of action at the molecular level will help to fully determinate its biological activity in the immune system.**

References:

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