



IgE Responsiveness, Atopic

Alternative Names

IGER

Immunoglobulin E, Basic Level of, in Serum

IgE, Level of

IGEL

IgE Response Underlying Allergic Asthma and Rhinitis

Atopy, Susceptibility to

Atopic Hypersensitivity

IgE, Elevated Level Of

Record Category

Disease phenotype

WHO-ICD

Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism > Certain disorders involving the immune mechanism

Incidence per 100,000 Live Births

Unknown

OMIM Number

147050

Mode of Inheritance

Autosomal dominant

Gene Map Locus

16p11, 16p12.1-p11.2, 1q23-q25, 13q14.1, 11q13, 6p21.2-p12, 5q33.2, 5q32

Description

IgE antibodies are the immunoglobulins involved in allergic reactions. Producing excessive amounts of IgE antibodies is one characteristic of individuals with atopic hypersensitivity. The term “atopy” can be simply defined as “strange disease” which includes hay fever (rhinitis and conjunctivitis), asthma, eczema, and urticaria. Each allergic substance stimulates the production of a specific IgE. For example, in some individuals, bluegrass pollen (an

allergen) will trigger the formation of a specific IgE that reacts only with this pollen type. The interaction of allergens with the cell-bound allergen specific IgE stimulates these cells to release histamine, thereby initiating the allergic reaction. Total serum IgE can be measured by nephelometry, while specific IgE levels are detected by more sensitive techniques such as radioallergosorbent testing (RAST). In normal individuals, the concentration of IgE antibodies in their serum is found to be less than 0.001% of the total antibodies level. Patients with atopic hypersensitivity have elevated levels of IgE and it is noticed that the more intense the allergy exposure, the higher the total IgE level is. Therefore, the IgE level is related to the degree of immune stimulation, as well as to the number of allergens to which the patient is allergic to.

Molecular Genetics

Variants of the PHD finger protein 11 (PHF11) gene, on chromosome 13, are found to have a relationship with the amount of serum IgE level, which in turn is related to atopy. Polymorphisms in the membrane-spanning 4 domains, subfamily A, member 2 (MS4A2) gene, on chromosome 11q13, and in the selectin P (SELP) gene, on chromosome 1q23-q25, have been associated with susceptibility to atopy.

Epidemiology in the Arab World

Bahrain

Abdulla et al. (1990) measured serum IgE concentration in 942 blood donors over a period of two years in order to determine the normal serum IgE levels in adult Bahrainis by using radioimmunoassay methods. Phadiotop test was performed for 344 of those donors on random selection to detect specific antibodies against inhalants. Positive Phadiotop results indicated atopic patients, whereas negative results suggested non atopic individuals. IgE values varied from 0 to more than 1,000 KU/L. The results showed that 454 individuals had IgE levels between 0-99 KU/L which formed the highest frequency



(48.2%). Also, the majority (58.7%) of blood donors had IgE values between 0 and 150 KU/L with a mean value of 57. Additionally, 75 donors (8%) had IgE values above 1,000 KU/L. By observing the data of IgE values, Abdulla et al. (1990) suggested a reference value (16-98 KU/L) for serum IgE in Bahrainis. Phadiotop test was positive in 74 donors (21.5%) and more positive results were found at higher IgE concentration. On the other hand, negative Phadiotop test was detected in 270 individuals (78.5%). A majority of donors having high levels of serum IgE but who were not allergic to inhalants were probably allergic to other allergens such as food, fabrics, and perfumes.

References

Abdulla JS, Bhai I, Rao KV. Serum IgE levels and prevalence of atopic allergy in adult Bahrainis. J Bahrain Med Society. 1990; 2(2):56-60.

Related CTGA Records

N/A

External Links

<http://www.kold.com/Global/story.asp?S=1228768>

<http://www.labcorp.com/datasets/labcorp/html/chapter/mono/al003200.htm>

http://www.nutramed.com/Foodallergy/type1_foodallergy/fatype1.htm

Contributors

Abeer Fareed: 27.12.2006

