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Estimation of Immunoglobulin E in patient with hypersensitivity type one of Al-Forat AL- Awsat Hospital /Al-Najaf Al-Ashraf/Iraq

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Abstract

The study of immune markers and their signaling pathways has permitted the development of a new prognostic strategies to give a better identifying and diagnostic manner for type of hypersensitivity. In current study fifty-eight patients suffering from hypersensitivity disease were admitted of Al-Forat AL- Awsat Hospital /Al-Najaf Al-Ashraf during the period from August till November 2016. All hypersensitivity patients were diagnosed by specialist physician. Patients with hypersensitivity (n=58) were divided in two categories Asthma(n=42) and Eczema (n=16) compared with healthy control group (n=30). The present study was centered on estimation of Immunoglobulin E. In current study the result has shown highly significant difference increase ($p<0.05$) in serum concentration of IgE in patients with Asthma and healthy control group. Also the current study shown highly significant difference increase($p<0.05$) between serum concentration of IgE in patients with Eczema and healthy control group. Finally, the current study also shown moderate significant difference increase ($p<0.05$) between serum concentration of IgE in patients with Asthma and patients with Eczema.

Aim of the study-Estimation of Immunoglobulin E and their relation with diseases associated with hypersensitivity type I,Finding out the relationship between this marker and types of disease association with hypersensitivity type I (Asthma and Eczema).

Keywords: Immunoglobulin E, Asthma, Eczema

INTRODUCTION

In [1] classified hypersensitivity reactions into four different types (I, II, III, and IV types) that relied on latency and intensity of the reaction, hypersensitivity type I is an immediate immune reaction with the antigen [2]. Basophils and Mast cells play an important role in hypersensitivity type I reactions, degranulation a process when Antigen exposure, mast cells and basal cells lead to the release of substances that stimulate inflammation. Specifically, antigens interact with IgE molecules that bind to high-density receptors on the surface of mast cells called crystalline receptors (Fc) to induce degranulation. [3].

The degradation of mast cells can lead to the secretion of nutrients to mediators such as histamine, protease, serotonin, proteoglycans, and leukotrienes [3]. Eczema (atopic dermatitis) is characterized by dry itching of the skin with poorly demarcated areas and pigeons. In the acute stage, eczema may be vesicular and erythematous, in the chronic stage may become greener and thicker [4]. Asthma is a common inflammatory disease in the lungs [5]. Describes through the changing and frequent symptoms, reverse airflow can be reversed, bronchial spasm [6]. Symptoms include wheezing, coughing, chest tightness, and shortness of breath [7]. These episodes may occur several times a day or several times a week. Depending on the person you may become worse at night or with exercise [5]. Asthma is the result of a combination of genetic and environmental factors [8]. Pollution and allergens identified as environmental agents exposed to air [5].

MATERIALS AND METHODS

Hypersensitivity patient's groups:

This study involved fifty-eight hypersensitivity patients which divided into two groups as related type of diseases (Eczema and Asthma). All patients were examined and diagnosed by specialist physician, the samples were collected from AL-Forat AL- Awesat medical city /Al-Najaf Al-Ashraf during the period from August till November 2016. The participants are exposed to questioner about age, history of diseases, so they had no hypertension, heart diseases, Kidney disease and diabetes as well as both patients and control groups are informed about the study and approval is guaranteed.

Estimation of Human Immunoglobulin E

This test is carried out by a specific test group, provided by US Biologic, life Sciences USA-Catalog No: E-EL-H2161.

Healthy control group:

All healthy volunteers were included in the study, samples were collected from control subjects only if they were not receiving any medications, did not have a history of any chronic or acute illnesses, and had normal complete blood picture and erythrocyte sedimentation rate and gave no smoking.

Specimens

10 ml of Blood specimen were collected from patients and AHC group drawn by trained nurses or other health care professionals, at least after minimum of 12 hours of complete fasting and after minimum of 24 from onset of admission. Centrifugation of specimens at 1500 rpm for 10 minutes. The serum obtained was divided into several parts and kept at -20 C until needed to examination.

Statistical analysis

Data were analyzed using the software packages Sigma Plot for Windows version 12.0(Build 12.0.0.182, Copyright © 2011systat software Inc. Germany), The comparison between the patients and healthy groups were analyzed by one-way ANOVA and the comparison between subdivided groups were analyzed by t-test or chi-square test. A p-value < 0.05 was considered significant.

RESULTS

Subjects of study

There are cases of study involved ninety-nine sample (n=88) classified in to two groups: healthy (n=30) and hypersensitivity patient (n=58). Fifty-eight hypersensitivity patients divided into two groups depending on type of hypersensitivity type I disease Asthma and Eczema. Asthma patients (n42) and Eczema patients (n=16).

Hypersensitivity type I

Estimation of immunological parameter IgE in patients with Asthma

The results in figure (1) showed a highly significant difference increase ($p<0.05$) between mean of patients with Asthma (178) ng/mL and means of IgE in healthy control group (45) ng/mL.

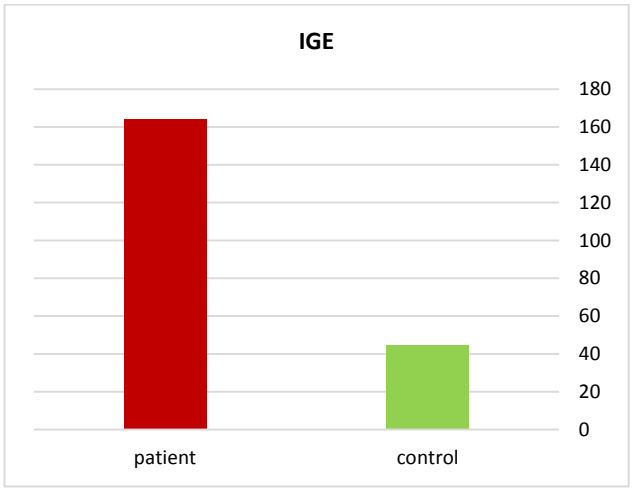

Figure (1) Estimation of immunological parameter IgE in patients with Asthma

Estimation of immunological parameter IgE in patients with Eczema

The results in figure (2) showed a highly significant difference increase ($p<0.05$) between mean of patients with Eczema (164) ng/mL and means of IgE in healthy control group (45) ng/mL.

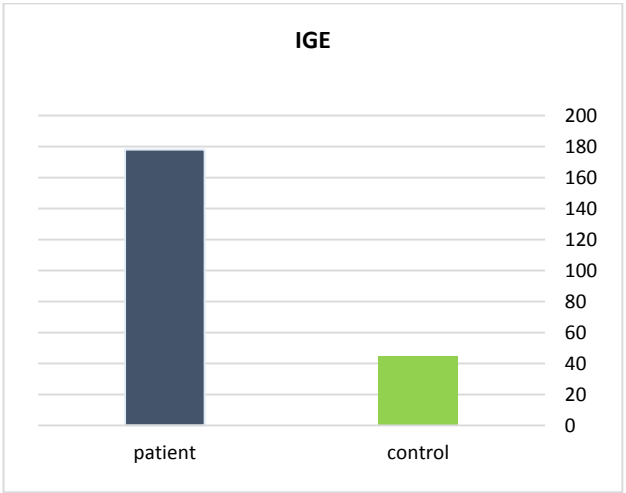

Figure (2) Estimation of immunological parameter IgE in patients with Eczema

Comparison between immunological parameter IgE in patients with Asthma and patients with Eczema

The results in figure (3) showed a moderate significant difference increase ($p<0.05$) between mean of serum concentration IgE in patients with Eczema (164) ng/mL and means of serum concentration IgE in patients with Asthma (178) ng/mL compared with healthy control group (45) ng/mL.

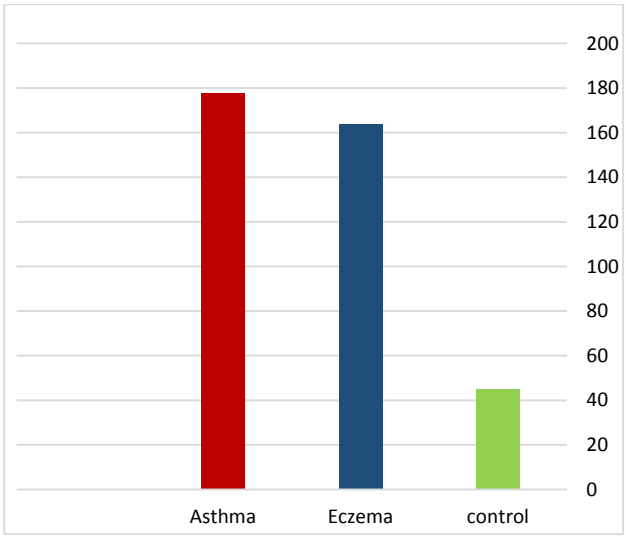

Figure (3) Comparison between immunological parameter IgE in patients with Asthma and patients with Eczema.

DISCUSSION

Estimation of immunological parameters IgE in patients with Asthma

The Result of the present study has shown that highly significant difference increase of serum concentration of IgE in patient with Asthma in comparison with healthy group Figure (1), this result agreed with [9]. The level of, immunoglobulin E (IgE) is a useful parameter used to diagnose some allergic diseases (Allergic Asthma and allergic rhinitis) This project was carried out in collaboration, has also decided that allergic asthma and allergic rhinitis are curable diseases. Immunohistochemic antibodies (IgE) were found only in mammals and related to the first type [10].

Estimation of immunological parameters IgE in patients with Eczema

The result of the present study has shown that highly significant difference increase of serum concentration of IgE in patient with Asthma in comparison with healthy group Figure (2), This outcome is agreed with Hyper-IgE and asthma. The theory of "Atopic March" favors eczema as a systemic disease and suggests that many children with AE continue to develop asthma and allergic rhinitis as their eczema improves over time. Serum IgE levels increase in atopic eczema [11] [12].

Comparison between immunological parameter IgE in patients with Asthma and patients with Eczema

The prevalence of atopic diseases among these individuals and their families is high and includes eczema, asthma or allergic rhinitis. As evidenced by the impact of laboratory

tests (such as positive skin prickly reaction to common food, levels of heterogirgene or high serum IgE levels above the laboratory reference range of childhood eczema is a chronic chronic disease [12][13]. Very high levels of IgE Occurrence in many patients with atopic dermatitis (AD), severe primary immune regulation, and increased serotonin IgE levels of recurrent infections and skin lesions [14][15].

CONCLUSIONS:

IgE is considered hypersensitivity type I prognostic factor and Patients with Asthma more than patients with Eczema in our city.

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