

## EVALUATED SERUM LEVELS FOR IgE, CYTOKINES IL-6 AND IL-10 IN PATIENTS WITH ECZEMA IN CITY OF BAQUBAH

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**ABSTRACT :** Eczema is a skin disease characterized with Pruritus', increased serum level of IgE. The aim of this study was to measure Serum levels of IgE and IL-6 and IL-10 in patient with eczema compare healthy group. The immune level was examined in 55 patients with eczema who were clinically diagnosed in dermatology consultation at Baqubah Teaching Hospital. 40 healthy people as healthy group. The study extended from July 2018 to March 2019. The study showed a higher incidence of eczema in males than females. The study present show increased in level of total IgE in serum of patient with eczema than healthy ( $p \leq 0.05$ ). The means of level of IL-6 were higher in patient with eczema than healthy ( $p \leq 0.05$ ). Serum levels of IL-10 were decreased in patient with eczema than healthy ( $p \leq 0.05$ ). The study conclude different in serum levels for IgE, IL-6 and IL-10 in patient with eczema compared healthy group.

**Key words :** Eczema, immunoglobulin, IgE, cytokines, IL-6, IL-10.

### INTRODUCTION

Eczema of chronic skin diseases associated with itching, rest disturbance and reduced type of life (Hon *et al*, 2013). The rate of Eczema has been increasing in advanced countries (Abdullaheem *et al*, 2017). Occurs in peoples from both sex and of allages, the condition affect persons, who live in civilian areas and in weathers with low humidity (Hessan *et al*, 2014). However, recent studies have shown an interaction between genetic and environmental factors (Meagher *et al*, 2002). Eczema affects 15-30% of children and 2-10% of adults. The prevalence of eczema has increased worldwide, especially in industrialized countries over the past three decades (Chan, 2008). IgE is a type of antibody that control the response of the immune system to allergies and other inflammatory processes such as asthma, allergic rhinitis and eczema (Gould *et al*, 2003). Studies have shown that IgE levels are strongly associated with eczema (Hon *et al*, 2011). IgE is not an indicator of the condition and response to type 1 hypersensitivity, but an alternative sign of severity of the disease (Possin *et al*, 2010). The immune antibody IgE stimulates mast cells and basophiles to produce inflammatory mediators that includes cytokines IL-4, IL-5, IL-6 (Stone *et al*, 2010). The eczema relative with the production of cytokines by T-helper typeII (Leonardi *et al*, 2007). IL-6 it is one of the proinflammatory protein. IL-6 action in many biological

functions, contributing to the differentiation of B cells and the production of immunoglobulins (Sand, 2013). It stimulates inflammation and is produced mainly from different cells such as mast cells, fibroblast cells, lymphocytes, monoclonal cells, T-cell active and endothelial cells (Cojocar *et al*, 2009). IL-6 levels increased in cases of eczema (Arican *et al*, 2005). IL-10 is antiphlogistic cytokine that manufacture by many of the cells such as monocytes, Th2, mast cell, dendritic cell, eosinophils, B-cell and Endothelial cell (Said *et al*, 2010). IL-10 action as anti-inflammatory through inhibition pro-inflammatory cytokines action such as IL-1, IL-6, IL2, TNF- $\alpha$  (Zambon *et al*, 2005). IL-10 levels decreased in cases of eczema (Ricci *et al*, 2008). The aim of this study was to assess serum levels of IgE, IL-6 and IL-10 in patient with eczema compare healthy group.

### MATERIALS AND METHODS

We studied 55 patients with eczema after diagnosis from dermalatogist (31 male and 24 female) and range age from (4-64) years. The study also included 40 sample of healthy people as a healthy group (17 male and 23 female).

Blood samples were taken from patient with eczema a volume of five milliliters of venous blood in a sterilized plastic tube after clotting. The separate serum was kept at -20°C until the immune analyzes were performed. We measured serum values of IgE and IL-6, IL-10 by Enzyme

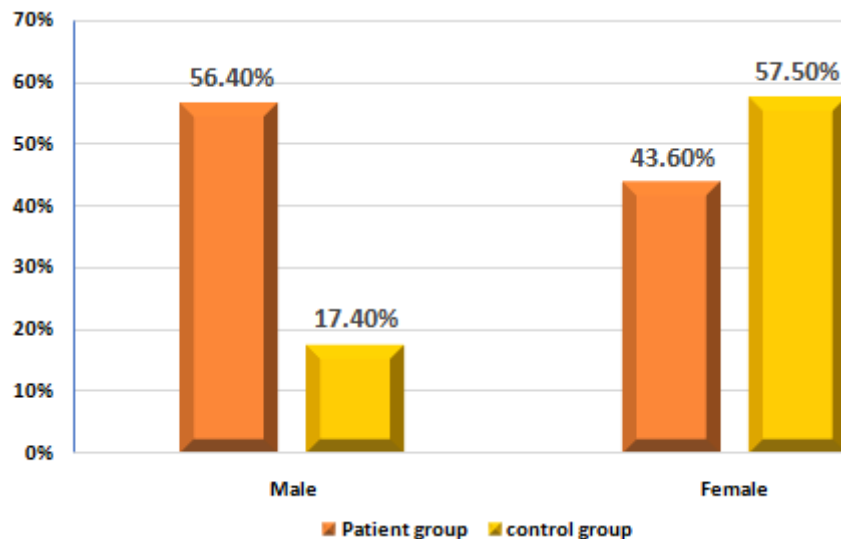


Fig. 1 : Distribution eczema between male and female.

Linked Immunosorbent assay (ELISA) in serum of patient and healthy according to an instructions of manufacturer

### Statistical analysis

Statistical analysis was performed using the statistic package for social science (SPSS) version 20p-value  $\leq 0.05$  was used as the level of considered statistical analysis and results are formulated as mean  $\pm$ SD.

## RESULTS

### Demographic characterization of eczema patient

The affected patient with eczema included 24(43.6%) female and 31(56.4%) male patient. their mean age and standard deviation were (7.89 $\pm$ 31.34) years, with a median age of 30 years.

### Immunological result

Serum IgE levels were statistically higher in eczema patient compared with healthy group ( $P \leq 0.05$ ). The average IgE levels (Mean  $\pm$  SD) in eczema patient and of healthy group were (349.458  $\pm$  170.25) and (162.211  $\pm$  142.23IU/ml), respectively. We also determined IL-6 and IL-10 levels in patient groups found that eczema patient had increased levels of IL-6 as compared to healthys groups ( $P \leq 0.05$ ). The average IL-6 levels (mean  $\pm$  SD) in patient sera and of healthy group were (28.569  $\pm$  10.245) and (2.569 $\pm$ 10.245), respectively. Also found patient with eczema had significantly decreased levels

Table 1 : Compared between serum levels IgE , IL-6 and IL-10 in patient group and healthy group.

ELISA	Patient group	Healthy group	p-value
IgE	349.458 $\pm$ 170.25	162.211 $\pm$ 142.23	0.05
IL-6	28.569 $\pm$ 10.245	2.569 $\pm$ 10.245	
IL-10	1.784 $\pm$ 0.854	14.125 $\pm$ 6.824	

of IL-10 as compared to healthy groups ( $P \leq 0.05$ ) The average IL-10 levels (mean  $\pm$  SD) in patient sera and of healthy group were (1.784  $\pm$  0.854) and (14.125  $\pm$  6.824), respectively.

## DISCUSSION

The rate and strictness of eczema were found to be higher in male (56.4%) than in female (43.6%). This study was in according with that of other study's (AL-Musawi, 2017; Sahiner *et al*, 2018). This might be because to the reality that males are more impacted by sensitive factors through different business and occupations (Hessan *et al*, 2014). The results of the study showed an increase in IgE levels in patients with eczema compared with the healthy group. The results of this study were consistent with the results of previous studies (Abdullaheem *et al*, 2017; Krause *et al*, 2016). The high level of IgE may be due to an increase in Cytokines production by Th2 that stimulate B cells to produce IgE (Akdis *et al*, 2003). Excessive production of IgE in patient with eczema may be caused by a genetic defect in response to environmental factors (Ahmed and Nasreen, 2007). Changes in the skin of patient with eczema enhance the skin-penetrating allergens that bind IgE to the Langerhans cells. These cells therefore provide the allergens to T cells that stimulate late inflammatory response T cells activate cytokines, which act on the production of IgE (Wang *et al*, 2004). This study showed a high IL-6 levels compared with healthy group. This is consistent with the researchers' study of Ozturk (2012). The role played by IL-6 in the effect of eczema is unclear, is released in the skin response to allergic diseases and excessive production by dendritic cells in patients with eczema (Navarini *et al*, 2011). The study also showed a

decrease IL-10 levels in the serum of patient with eczema compared with the high IL-10 levels in healthy people, and this study is consistent with many previous studies (Kawamoto *et al*, 2008). IL-10 is an anti-inflammatory drug that regulates and inhibits allergic response (Brandt and Sivaprasad, 2011).

### CONCLUSION

1. High ratio of eczema in males compared with females.
2. Higher IgE LEVELS in serum patient with eczema compared healthy group.
3. Increased IL-6 levels in serum patient with eczema compared healthy group.
4. Decreased IL-10 levels in serum patient with eczema compared healthy group.

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