EVALUATION OF SOME IMMUNOLOGICAL BIOMARKERS IN PATIENTS INFECTED WITH SARCOPTES SCABIEI

Salem Khteer Al-Hadraawy*, Harth Rajab Haider, Ali Hassan Abood

Department of Biology, College of Sciences, University of Kufa, Najaf, Iraq

E. mail*: saleem.alhadrawi@uokufa.edu.iq

Article received 12.10.2017, Revised 15.11.2017, Accepted 22.11.2017

ABSTRACT

The present study was conducted on 60 patients and 30 healthy persons (17 male and 13 female) to determine the effects of scabies disease in some immunological biomarkers it was IL-8, IL-5 and IgE levels.

The results of the current study showed a significantly elevated (P<0.05) in level of IL-8, in patients infected with Sarcoptes scabiei parasite in 356.047 ±0.201pg/ml in compared to the control group 240.815 ±0.081pg/ml, also serum concentration of IL-5 was significantly increased (P<0.05) in Sarcoptes scabiei infection patients which were 42.128 ±0.415pg/ml in compared to the control group 14.512 ±0.021pg/ml, whereas the level of IgE in patients was 401.654 ±0.618pg/ml in compared to the control group 179.092 ±0.109ng/ml. The current study concluded that the infection with Sarcoptes scabiei was affected in some immunological biomarkers of human represent by IL-8, IL-5 and IgE.

Key word: Scabies, IgE, IL-5, IL-8, Sarcoptes scabiei

INTRODUCTION

Scabies is one of the seven main epidermal parasitic skin diseases that common in resource poor-population as reported in WHO (Feldmeier and Heukelbach, 2009). Approximately 300x 10^6 of scabies are reported through out of prevalence the world each year (Alasaad et al., 2013). The infestation of scabies my effect by season, it found that more cases has been diagnosed in winter months than summer (Downs, 2004). Currie et al. (2010); Saleem and Haneen (2017) showed that the life cycle of a Sarcoptes scabiei mite begins when the adult female mite digging in the host skins. Four stages (egg, larvae, nymph and adult) through life cycle of S. scabiei and completed for 14 days and the adult mite remain in the patient skin for two months.

Hypersensitivity reactions in patients infested with scabies caused by the secretion of different materials by S. scabiei in the host skin (McCarthy et al.,2004; Hengge et al., 2006). During 4 weeks from infestation of scabies the immunity developed and appears of first symptom (Walton et al., 2008). The human body is facing numerous pathogens every day, but only few of them causing diseases that because we have natural defense system that called innate immune system. It is the first line of host defense (Judith et al., 2013).

MATERIALS AND METHODS

Mites was extracted by two methods from the burrow first one by gently pricking open scraping are best performed at the end of the burrows is non-excoriated and non-inflamed areas by using a sterile blade containing a drop of mineral oil to get the mites, eggs and scybala we used a blade that has a sharp border to open the burrow longitudinally and scrap the skin here, or focus on the end of the burrow and hand the scrap material. Mineral oil used to the increases the devotion of the mites to the blade and can then transfer to glass slide to be examined under light microscope 10X (Beugnet et al., 2016).

Blood Specimens collection: From October 2016 till March 2017, 60 positive samples (which diagnostic by (name of physician) and 30 healthy were collected (vary on 17% male and 13 % female) who attended the clinics in AL-sadder hospital in AL-Najaf province, blood samples were processing according (Saleem, 2017) for the determination of IL-8, IL-5 and IgE.

Kits: The immunological biomarkers in the current Study were estimated by Eliza Kits it was Human Interleukin8 (IL-8) ELISA Kit/Kono Biotech/ Bulgaria (catalogue number KN0923Hu), immunoglobulin E (IgE) ELISA Kit/ Kono Biotech/ Bulgaria (catalogue number T1244A (69 Tests) and Human Inter-leukin 5 (IL-5) ELISA Kit/Kono Biotech/ Bulgaria (catalogue number EN0853HA)

Statistical analysis: The statically analysis implemented using Graph pad prism program (5.04, Graph pad software Inc. USA), the results show as mean ± standard error (SE). t- test. used for significant at p-value < 0.05 was considered significant.

RESULTS

Results of this study revealed that concentration of (IL-8) in patients infected with S. scabiei were significant increase P <0.05 (356.047 ±0.201pg/ml) in comparison to the control group (240.815 ±0.081pg/ml) as seen in Fig. 1.
Result of study revealed that concentration of (IL-5) in patients infected with S. scabiei were significant increase P< 0.05 (42.128 ±0.415pg /ml) in compared to the control group (14.512 ± 0.021pg /ml) as seen in Fig. 2.

Fig. 2: Comparison between Concentration of IL-5 (pg /ml) in Patients Infection with Sarcoptes scabiei and healthy group.

IgE concentration: Result of study revealed that concentration of IgE in patients infected with S. scabiei were significant increase P< 0.05 (401.654 ±0.618pg /ml) in comparison to the control group (179.092 ± 0.109ng /ml) as seen in fig. 3.

Fig. 3: Comparison between Concentration of IgE (ng /ml) in Patients Infection with Sarcoptes scabiei and healthy group.

DISCUSSION
The results showed that the serum concentrations of IL-8, IL-5 and IgE were significantly elevated in the serum of patients infested with scabiesin comparison to healthy group. This may be due to influences of products from scabies mites that caused activated neutrophils and cells to produce interleukin-8 (Arlian, 1994, Marjorie and Larry, 2010, Samad, et al., 2017, Fatima and Anjum, 2016, Al-Hakak, 2017; Abbas, 2017).

Cheng et al., (2010) reported that the macrophage migration inhibitory factor can induce secretion of TNFα Tumor Necrosis Factor-α (TNF-α), INFγ Interferon gamma (IFNγ), IL-1b, IL-12, IL-6, IL-8 (CXCL), MCP-1 and others from mammalian cells and expression of the cell adhesion molecules ICAM-1 and VCAM-1. The results of the current study shown that the serum concentration levels of interleukin-5 was a significantly elevated in patient infested with scabiesin comparisons to healthy groups. The present study was corresponding with study of Elmaraghy and El Meghawry (2011) who found that the serum levels of interleukin-5 was a significant increase in the patients with scabies group as compared to the healthy control group. Walton et al., (2010) reported that no significant differences in levels of interleukin-5 in ordinary infested of scabies when it compared with healthy group, while there was significant difference in levels of inter-leukin-5 in crusted infested of scabies in compared with healthy group.

Many studies have shown that there was a close relationship between the level of IgE and the concentrations of IL-5, IL-4, where it increased, while on the contrary, causes a decrease in the concentration of IL-10 in the case of scabies (Roberts et al., 2005, Walton et al., 2008, Walton et al., 2010; Liu et al., 2014), Al-Dabbag and Al-Dabbag (2006) showed that no significant correlation in levels of IgE with the period of scabies infestation. Levels of IgE in each of the patients infested with scabies showed a significant increase in comparison with healthy group. This explains the hypersensitivity reaction of type 1 in patients infested with scabies who is responsible for expelling parasites and products from the borrowing of severe itching and scratching, which in turn leads to a sudden reduction in the density of parasites at the time it began to itch (Al-Rawi, 2000, Ibrahim et al., 2012).

CONCLUSION
Current study concluded that the infestation with Sarcoptes scabiei effect in some immunological biomarkers of human represent by IL-8, IL-5 and IgE.
REFERENCES