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GENE EXPRESSION OF TLR2 AND TLR4 RECEPTORS AND LEVEL OF IL-10 AND IL-23 IN PATIENTS WITH CYSTIC ECHINOCOCCOSIS

Shaimaa Raheem Hussein* and Jameel Jerri Yousif

Faculty of Education for Girls, University of Kufa, Iraq.
*e-mail: shaimaraheem80@gmail.com

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ABSTRACT : The current study was conducted for the period from May 2018 to April 2019 in the Department of Biology, Faculty of Education for Girls, University of Kufa, which aims to detect the amount of genetic expression of the mRNA for the receptors TLR2 and TLR4 in peripheral blood and levels of IL-10 and IL-23 in serum of patients before and after the removal of hydatid cysts. The results of the gene expression test for TLR2 and TLR4 in peripheral blood cells of patients with hydatidosis using flow cytometry techniqueshowed a significant increase ($P \leq 0.05$) in the amount of the gene expression of receptorsbefore removing the hydatid cysts,which amounted20.84 ± 1.38 and 13.55 ± 0.88, respectively, compared to the quantification of gene expression after the removing of the hydatid cysts, which was 15.56±1.41 and 8.53 ± 0.73 respectively and healthy 15.21±1.18 and 8.11 ± 0.72, respectively. The results of the ELISA test showed a significant increase ($P \leq 0.05$)in the levels of IL-10 and IL-23 in patients with hydatidosis prior to removal of the cysts, which reached 22.84 ± 1.14 and 125.52 ± 5.58 pg / ml respectively compared with the group of patients after removal of hydatid cysts was 11.02 ± 0.24 and 92.72 ± 1.29 pg / ml respectively and healthy group of 14.59 ± 0.65 and 74.17 ± 1.93 pg/ml, respectively. The conclusion from this study, the presence of TLR2 and 4 TLR receptor genes in most blood samples and occurrence the cellular immune response by increasing the levels of IL-10 and IL-23 in people with hydatidosis.

Key words : Cystic echinococcosis, hydatidosis, TLR2, TLR4, IL-10, IL-23.

INTRODUCTION

Hydatidosis is a widespread disease in all parts of the world. It is a common disease between humans and animals (Zoonotic disease) (Wahlers *et al*, 2012). The disease is one of the parasitic pathogens transmitted from carnivorous to humans and herbivorous animals and there are two types are the most medicalimportant and most widespread are the *Echinococcus granulosus*, its larval stage is called the unilocular hydatid cyst and *E. multilocularis*, the causative agent of alveolar echinococcosis (Nourbakhsh *et al*, 2012). The life cycle of *E. granulosus*, includes two types of hosts, namely, final hosts represented by dogs and other members of the Canidae. The second host is known as the intermediate host in which the parasite proliferates in organs and tissues of animals such as sheep, cows, goats, pigs and camels. The human is an accidental intermediate host (Filippou *et al*, 2007). The hydatidosisis a danger to public health as the cysts develop in most organs of the body (Koseand Sevimli, 2008; Kaplan *et al*, 2001). Particularly in areas where sheep and cattle are raised, causing significant economic losses (Eddi *et al*, 2006). Toll-like receptors (TLRs) are cellular receptors that are recognize pathogens - associated molecular patterns (PAMPs) and these receptors contribute to innate immunity of the pathogens (Kaye and Aebischer, 2011), 13 of these receptors were described in the Mammals. 9-1 is functional receptors between humans and mice. The TLR10 is functional only in human and TLR11 is only used in mice. TLRs are divided into extracellular receptors (TLR1, TLR2, TLR4, TLR6, TLR11) (Pifer *et al*, 2011) and intracellular receptors (TLR3, TLR9, TLR7, TLR3) (Blasius and Beutler, 2010). The innate response begins with TLRs expressed by macrophages, monocytes, and various types of dendritic cells (DCs) (Kawai and Akira, 2011). Neutrophils also express these receptors but lack receptors within the cell, (TLR3 and TLR7). This response results in the production of inflammatory cytokines (Prince *et al*, 2011).Adaptive immunity is influenced by the two helper T cells (Th2 and Th1). This results in the production of cytokines by these cells. The naive (non-activated T cell), which are stimulated by antigens presented by antigen-presenting cells (APCs), as a result, naive T cells differentiate to Th1 and Th2. Th1 cells produce IFNγ, which mainly promote cellular immunity while Th2 cells produceIL-4, IL-5, IL-10 and IL-13, which in turn enhances humoral immunity (Aderem and Ulevitch, 2000). The IL-12 produced by APCs has a