Some Cytokines Levels (IL-6 and IL-10) in Sera Patients with Cutaneous Leismanasis in Nassiriya Province

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Abstract—The present study was carried out in the Labs of collage of education for pure science, during period from January 2017 to end December of the same year. The immune status investigates for CL patients by measuring the levels of cytokines (IL6 and IL10) in sera using a technique enzyme-linked immune Sorbent adsorptive (ELISA). The study included 120 subjects with (60 CL patients L.majar and 60 CL patients L.tropica with and (30) were healthy control. Increased mean Serum level of IL6 was in the observed in the total patients as compared to control Subjects (224.53pg/ml,70.70pg/ml), the result indicate there was significant difference at (p<0.05) such observation was consistent in the patient infected with L.majar and L. tropica (104.90 pg/ml and 112.78 pg/ml) respectively. The results of the IL10 showed significant difference at (p<0.05)increased of mean Serum level in the total CL patients as compared to control Subjects  (226.90 pg/ml and 46.77pg/ml). A highly significant difference at (p<0.05) increased observed in patients group infected with L.majar and followed by patients group infected L. tropica (112.78pg/ml and 114.12pg/ml) respectively. These results revealed that the excessive presence of cytokines might play a role in CL patients.

Keywords—Cutaneous Leismanasis, L.majar, L. tropica

I. INTRODUCTION

Leishmaniasis is a significant zoonotic disease caused by species of the genus Leishmania, it is a protozoan disease that affects approximately 12 million people worldwide, particularly in tropical and sub-tropical regions and endemic in near 100 countries worldwide. The protozoa Leishmania have digenetic lifecycles and can exist in two morphological forms; either as amastigotes inside the immune cells (macrophages) of mammals, or as flagellated promastigotes within the gut of a phlebotomine sand fly (Chappuis et al., 2007; Gradoni, 2015). In CL, the infection is usually limited to the skin and lymphatic system, but it may influence on deeper tissues in diffuse CL or penetrate into the mucous membranes in MCL. The life cycle is completed when sand flies feed near the skin lesions and the amastigotes enter the midgut of the sand fly where they subsequently develop into promastigote forms (Bailey and Lockwood, 2007; Kaye and Scott, 2011). There are many complexities in immunity against leishmaniasis. Interleukins are small protein molecules that signal specific cells to regulate the immune systems of organisms, they are primarily synthesized by T cells, monocytes, macrophages and endothelial cells (Gomes, 2017). The functions of IL include the facilitation of communication among immune system cells, regulation of transcription factors, and control of inflammation, cell differentiation, proliferation and antibody secretion (Salazar-Onfray et al., 2007). Several cytokines, such as interleukin-10 (IL-10), have during the early immune response indeed, the function of a given cytokine is determined by its tissue levels, the nature of the target cell and activating signal, the timing and sequence of cytokine exposure and more generally (Cavaillon, 2001). IL-6 is a pleiotropic cytokine that acts as both a pro-inflammatory and anti-inflammatory cytokine, IL-6 is produced by several cell types, including macrophages DCs and T cells. Also, this cytokine acts as a B-cell growth factor. In this study, we investigated the immune status of CL patients infected with two species L.major and L. tropicaby studying the following immunological parameters by (IL-6 and IL-17) (Scheller et al., 2011).

II. MATERIAL AND METHODS

This study was performed on 120 patients with cutaneous leishmaniasis, who attended Imam Hussein Teaching Hospital, Shatira general hospital, Rifaya general hospital, Suq Al-Shayokh general hospital and Al-Chibayish general hospital the in Thi-Qar province in the period from the beginning of (October 2017 to end in May 2017 in the same year).

1- Collection blood samples:
Samples were collected by venipuncture from 120 CL patients (60 patients infected with L. major, 60 patients infected with L. tropica and 30 controls). All patients were placed in a sterile plane tube and allowed to clot, then serum was separated by centrifugation at 4000 rpm for 15 minutes. The serum was stored at -20°C freezing. These sera (120 patients and 30 controls) were used for estimating the concentration of interleukin (IL-6 and IL-10).

The Nested PCR technique was performed for detection cutaneous leishmaniasis based on the kinetoplast DNA (kDNA) for detection L. major and L. tropica. This method was carried out according to the method described by Noyes et al., (1998).

ELISA (technique enzyme-linked immune Sorbent adsorptive) kit were employing the quantitative sandwich, were based on similar principle according to the Elabscience company (China,E–EL-H0101).

2- Statistical analysis:
Data were expressed as mean ± standard deviation (SD) or median (interquartile range). Differences between groups were tested with the Student’s t-test. The values of P < 0.05 were considered significant.

### Table 1. Serum interleukin levels among CL patients and control subjects

<table>
<thead>
<tr>
<th>Interleukin</th>
<th>Subjects</th>
<th>Sample</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>t value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>IL-6</td>
<td>L. major</td>
<td>patients</td>
<td>60</td>
<td>104.90</td>
<td>70.70</td>
<td>3.758</td>
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<tr>
<td></td>
<td>control</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td>21.56</td>
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<tr>
<td>IL-6</td>
<td>L. tropica</td>
<td>patients</td>
<td>60</td>
<td>119.63</td>
<td>57.27</td>
<td>4.017</td>
</tr>
<tr>
<td></td>
<td>control</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td>70.70</td>
</tr>
<tr>
<td>IL-10</td>
<td>L. major</td>
<td>patients</td>
<td>60</td>
<td>112.50</td>
<td>31.33</td>
<td>0.0000</td>
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<tr>
<td></td>
<td>control</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td>46.77</td>
</tr>
<tr>
<td>IL-10</td>
<td>L. tropica</td>
<td>patients</td>
<td>60</td>
<td>114.12</td>
<td>40.69</td>
<td>7.849</td>
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<tr>
<td></td>
<td>control</td>
<td>30</td>
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<td></td>
<td></td>
<td>46.77</td>
</tr>
<tr>
<td>Total mean patients</td>
<td></td>
<td></td>
<td>221.83</td>
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</tr>
</tbody>
</table>

During early invasion of Leishmania, T-cell and cytokines that they release play a critical role in determining the nature of the immune response and the outcome of the infection. (Mahmoodi et al., 2005). These results were agreed with other studies.

### V. Reference


