Iraq JMS

Published by Al-Nahrain College of Medicine
ISSN 1681-6579
Email: Iraqi_jms_alnahrain@yahoo.com
http://www.colmed-alnahrain.edu.iq/

Serum Cytokine Production in Patients with Cutaneous Leishmaniasis Before and After Treatment

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Abstract

Background Cutaneous leishmaniasis (CL) is caused by a protozoan from the genus *Leishmania* that infect macrophages of many mammals including humans, their infection induces both humoral and cellular immune responses, but the balance of their expression varies with the type of the disease.

Objective The aim of the present study is to understand the effect of antimonial compounds on some serum cytokines levels that include (IFN-γ, TNF-α, TGF-β, IL-1β, IL-6, IL-8) before, during and after treatment from CL infection.

Methods Eighty people were included in the present study, 60 patients with CL lesions and 20 healthy individuals (control). Patients were diagnosed on the basis of clinical and parasitological criteria. All patients treated with pentostam by intralesional injection. Serum (IFN-γ, TNF-α, TGF-β, IL-1β, IL-6, IL-8) levels were determined by ELISA using a quantitative sandwich enzyme immunoassay technique.

Results Serum levels of (TNF-α, IL-1β, IL-6, and IL-8) were significantly higher in patients group than healthy subjects ($p < 0.05$). INF-γ and TGF-β levels were decreased significantly during infection with CL. During therapy with pentostam, cytokines levels (IFN-γ, TNF-α, TGF-β, IL-1β, IL-6, IL-8) were significantly increased ($p < 0.05$). All cytokines levels returned to the normal values after three months of healing from CL lesions.

Conclusions Cytokines plays an important role in the resolution of CL infection. Pentavalent antimonials compounds may have immuno-stimulating effects which may be responsible for its antimicrobial activities.

Key words Cutaneous leishmaniasis, cytokines, treatment, pentostam.

Introduction

Human leishmaniasis includes a spectrum of diseases with variable severity ranging from cutaneous to visceral diseases, all of them caused by protozoan parasites of the genus *Leishmania* [1,2]. The cutaneous forms are the commonest (1.0 to 1.5 million cases each year), representing 50-75% of all new cases all over the world [2, 3]. In Iraq *L. major* and *L. tropica* are the causes of cutaneous leishmaniasis [4].

Leishmania species are intra-cellular parasites invading monocytes, macrophages, and langerhans cell [5]. Their infection in man induces both humoral and cellular immune responses, but the balance of their expression varies with the type of the disease [6]. A variety of inflammatory mediators are produced by monocytes/macrophages during the course of infection [7], the importance of cytokines during leishmanial infection comes from the demonstration (on experimental murine leishmaniasis) of the existence of two distinct CD4+ Th1 and Th2 subsets [8].