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Determination concentration of interleukine-12 in pulmonary tuberculosis patients in Qadisiyah Province

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Abstract
The study included the collection of 87 serum samples (72 samples from patients infected with Pulmonary tuberculosis and 15 samples from healthy persons as a control group) the concentration of IL-12 in the control samples was 16.000 pg/ml while it increased significantly in the experimental group to reach 23.328 pg/ml.

INTRODUCTION

Pulmonary Tuberculosis is one of the diseases that hit humans and animals alike (1). It is estimated that one person gets Pulmonary Tuberculosis every minute worldwide and it causes 15 human mortalities every minute worldwide. The negligence of the affected patient is the cause of 10-15 other infection every year (2). About 75% of the infections take place between 15-45 age group (3).

The immune system is organized by internal means produced by the cells of the natural and acquired immune system. These means are known as cellular kinetics which are protein sugar of relatively low particle weight that are produced in small amounts by the immune system, especially pharynx and lymph cells as well as other types of malignant cells (4).

IL-12 is a protein produced by active pharynx cells after consuming Pulmonary Tuberculosis bacillus and it plays an important role in protecting the body from being infected by Pulmonary Tuberculosis (5). IL-12 is one of the cellular kinetics that perform proactive production for the immune system (6). It induces the response of Th1 cells and the production of IFN-γ.

It was found that the decrease of IL-12 in lab rats makes them more vulnerable to be infected with Pulmonary Tuberculosis bacillus and to the disturbance of the bacterial growth in the lungs. Also, such decrease causes the decrease in producing IFN-γ (5).

METHODOLOGY

This study included the collection of 72 serum samples from recently infected patients with Pulmonary Tuberculosis who attended the Consultant Clinic for Chest and Respiratory Diseases Center in Diwaniyah Province and 15 serum samples from healthy individuals for the purpose of comparison. The IL-12 concentration was measured and the work was performed according to the instructions of the manufacturing company.

RESULTS AND DISCUSSION

IL-12 P70 average concentration in the serum samples of the control group was 16.000 pg/ml. IL-12 P70 average concentration in the serum samples of the experimental group was as high as 23.328 pg/ml. the statistical analysis showed significant differences upon the comparison with the control group results under 0.05 likelihood as shown in Table 1.

This study used ELISA method to measure the concentration of IL-12(P70). Such concentration was found significantly high in the experimental group compared to the control group under $P<0.05$ likelihood as in Table 1.

The results of this study are consistent with the findings of (7) about the high level of IL-12 in Pulmonary Tuberculosis patients which may be due to the occurrence of other infections and the increase/decrease in other kinetics (8).

The results of this study are also consistent with the findings of (9) about the high concentration of IL-12 in the patient group compared with the control group. This may be due to the important role of IL-112 in the protection against intercellular infections (10) as it induces the assisting cells as other cellular kinetics do like IL-4 and INF-γ (7).

Additionally, (11) mentioned that the increase in IL-12 concentration may be due to the increase in its β1,β2 receptors. Also, (12) found that the decrease in IL-12 increases the vulnerability of being infected with Pulmonary Tuberculosis. This is further confirmed by (10) in a study performed on rats and found that the decrease in IL-12 makes rats more vulnerable to be infected with Pulmonary Tuberculosis bacillus.

The study of (14) pointed out that IL-12 plays an important role in inducing the production of INF-γ which in turn plays an important role in inducing the response of the assisting Th1 cells, which become less active with the use of the treatment. This explains the role of the treatment in lowering the concentration of IL-12 in the blood serum (15).

Table 1: IL-12 P70 concentrations in both groups

Group	#	IL-12 P70 concentration pg/ml				
		Lowest value	Highest value	Average	SD	Correlation
Experimental	72	9	65	23.328	1.763	■
Control	15	7	22	16.000	1.466	

■significant difference

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