IMMUNOREGULATORY CHANGES IN INTERLEUKIN 1 IN PATIENTS WITH SCHISTOSOMIASIS AND BRONCHIAL ASTHMA BEFORE AND AFTER TREATMENT

THESIS
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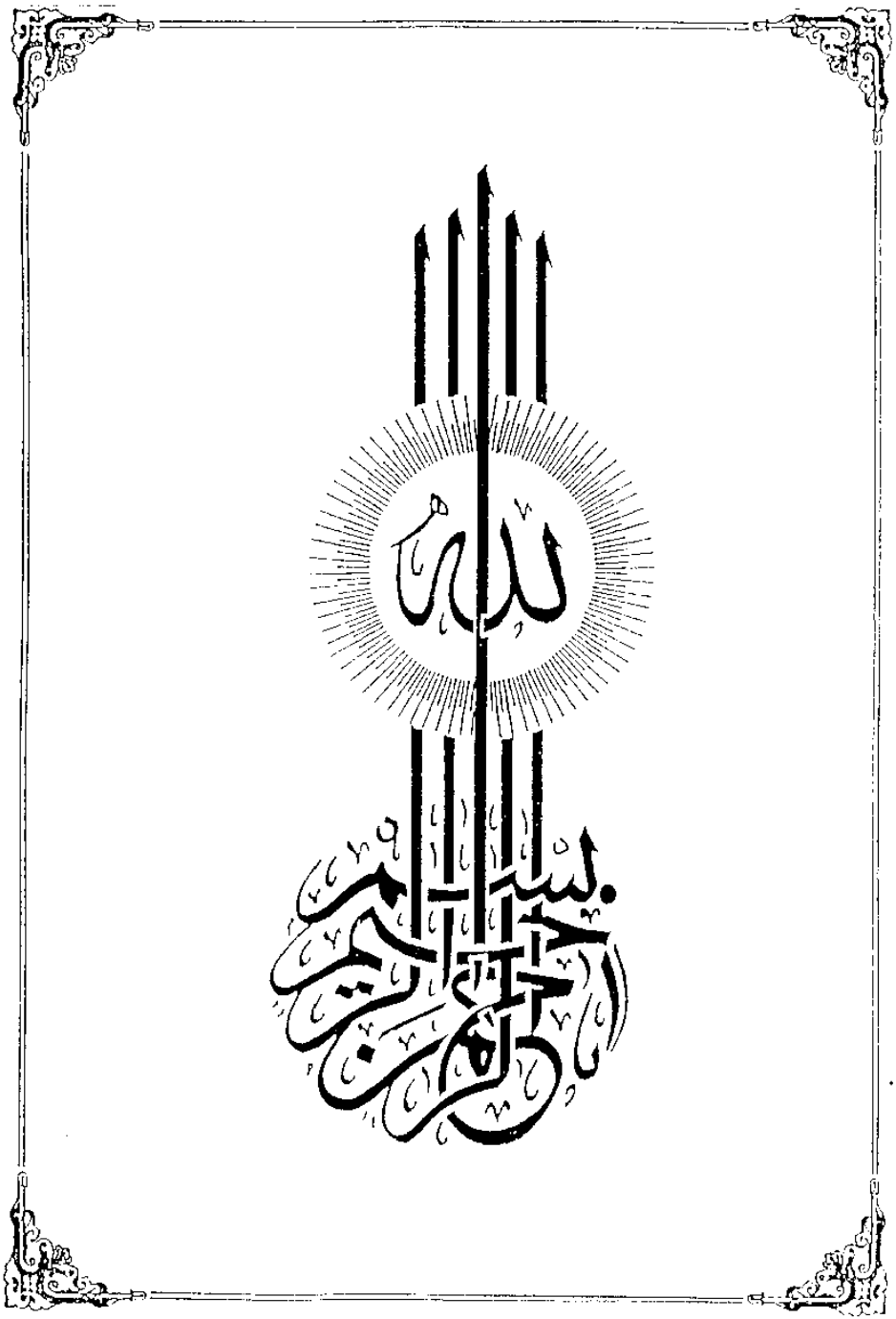

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Introduction & Aim of the work

INTRODUCTION

Schistosomiasis is the second major parasitic disease in the orld after malaria affects at least 200 to 300 millions people in ne world, 500 millions being exposed to risk of infection, chistosomiasis responsible for 300,000 to 500,000 deaths per year Woolhouse, 1994).

It is an endemic disease in Egypt affecting a large percentage f population living on the border of the Nile river (El-Alamy and line, 1977 and Abdel Wahab et al., 1980).

Bronchial asthma is a chronic inflammatory disease of the irway in which inflammatory and immunological cells of many types ay be involved (Djukanovic et al.,1990).

In acute phase response in parasitic infection, tissue acrophages and peripheral blood monocytes are the most likely to nitiate the response after they become activated by a foreign rganism such as a parasite. These cells are potent sources of arly-acting (alarm) cytokines including interleukin -1 (IL-1) (Le nd Vilcek, 1987).

In pathophysiology of asthma, the IL-1 primes mast cells and

ctivates eosinophils and prolongs their survival (Berman et al., 990). Macrophages are stimulated by antigens (parasite or llergen) to produce IL-1 which in-turn initiates production of ther ILs including IL-4 that provoke eosinophilic production Bruynzeel, 1986). So, patients with suppressed immunological tate are more susceptible to develop allergies (Lakin et al., 975). Attacks of bronchial asthma are initiated by reaction etween allergens and IgE antibody on bronchial mast cells. The llergen may be from the external environment or reach the site via ne circulation (Terr, 1980). Also, the presence of schistosoma in ne body may be incriminated in evoking a process of ypersensitivity and allergy due to the following factors:

) The presence of multiple antigenic materials not only from the arasite but also from the repeated bronchopulmonary infection hich is a common clinical association with chronic chistosomiasis.

Schistosoma is a high inducer of IgE.

Cell mediated immunity is suppressed in schistosomiasis (El-ssiry, 1980).

Mainzer (1938) recorded six cases of bronchial asthma from

lexandria as being caused by generalized infection with chistosoma and stated that the asthma is due to an allergic eaction probably to the eggs of the parasite. However, Sami (1951) tated that the two diseases are associated rather than causally elated. Mousa et al.,(1957) reported that bronchial asthma can be manifestation of pulmonary schistosomiasis in Egypt.

So, IL-1 and eosinophils represent two parameters of the omplex immune response in both conditions. The IL-1 production is n early phase and eosinophil production is relatively a late phase Bruynzeel, 1989).

Carcinoembryonic antigen (CEA) is one of a class of oncofetal ntigens that are normally present during fetal life and it resents in low concentrations in adults and circulates in high oncentrations in patients with certain malignancies particularly pithelial tumors. CEA is produced mostly by endodermally derived intestinal mucosa, lung and pancreas) and also by non endodermally lerived incompletely differentiated fetal cells. Since the first lescription of CEA in 1965 by Gold and Freedman, it was recognized hat the concentration of the antigen in body fluids, particularly lood, might serve as a useful guide in the care of patients with ancer.

AIM OF THE WORK

Our objective is to study the immunoregulatory changes in patients complaining of schistosomiasis, bronchial asthma alone and patients with combined schistosomiasis and bronchial asthma as regarding IL-1 level, eosinophilic count and CEA level. Effect of the specific treatment of both conditions on the levels of IL-1 and eosinophilic count is also going to be assessed.

Review of Literature

LITERATURE REVIEW

Schistosomiasis is a parasitic disease of global importance, ıore than 200 million people in Africa, Asia, South America and the :aribbean are believed to have schistosomiasis. It is the most ierious endemic parasitic infection in Egypt (Khalil et al.,1977). :t affects a large percentage of population living on the border of he Nile river (El-Alamy and Cline, 1977 and Abdel Wahab et al., 980) and it constitutes one of the major health problem of our :ountry (Abdel Wahab and Mahmoud.1987).

Schistosomiasis is one of the major debilitating infections Warren, 1987) as it is complicated by anaemia (Wilkins et al., 979), stunted growth, significant loss of body weight, general ındernutrition and delayed skeletal and sexual development (Jordan ınd Webbe, 1982). Intestinal bilharziasis is the commonest cause ıf liver diseases in Egypt (Mousa, 1976). Also, schistosomiasis .eads to a reduction of about 30% of the agricultural economy Mousa and Atta, 1967).

Schistosomiasis rarely exists as the sole infection or disease

n many areas in Egypt. Malnutrition and viral hepatitis more often oexist in schistosomiasis infected individuals than non infected nes (Abdel Wahab and Mahmoud, 1987).

The pathogenesis of schistosomiasis is a dynamic process elated to host responses to the parasite products. So, it can ssentially be considered as an immunological disease (Warren, 976).

Numerous genetic and environmental factors may modify the host esistance or susceptibility to disease, this was evident in the tudies carried out in Egypt by Abdel-Salam et al., (1979 and 1986) ho demonstrated that the individuals with Human leukocyte antigen HLA) types A_1 and B_5 appear to be more susceptible to hepatosplenic isease.

The dynamic aspects of the pathogenesis of schistosomal isease were summarized by Warren (1987) as an intense localized nflammatory and immunological response of the delayed hyper- ensitivity type. It occurs around the eggs that lodge in the host issues, this reaction overtime undergoes spontaneous decrease in he amount of inflammation around new eggs entering the liver. elated to the inflammation is the induction of collagen synthesis

and the subsequent appearance of fibrosis and scarring. A dynamic aspect of this crucial pathogenic reaction is the concomitant development of collagen degradation with the total amount of fibrosis related to the imbalance between the two reactions. Fibrosis of the liver is the final determinant.

Farid et al.(1986), stated that the initial primary exposure of non-immune persons to water infected with S. mansoni cercaria may lead to the development of acute schistosomiasis (Katayama syndrome), a form of immune complex disease or serum sickness. Hepatomegaly , eosinophilia and elevated immunoglobulins are the main clinical signs.

The host tissue reactions to the eggs give rise to pathological lesions that produce the principal manifestations of schistosomiasis (Jordan and Webbe,1982).

The pathology of chronic schistosomiasis is essentially a series of chronic inflammatory lesions produced in and around blood vessels by eggs or their products. Few lesions may be caused by dead adult worms.

Schistosomiasis is characterized by granulomatous pathophysiology (Warren et al., 1967). Parasite eggs disseminate in the tissues and secrete soluble antigens that sensitize the host and evoke a granulomatous inflammatory response (Boros et al., 1970). The granulomas consist of lymphocytes, macrophages, giant cells, epithelioid cells, and eosinophils (Moore et al., 1976).

Effect of treatment on dynamics of immune pathology:

Interruption of the complex process that occurs after schistosoma infection by treatment had been studied by different authors. Mahmoud et al.(1983), studied the effect of mass treatment of all heavily infected individuals in an entire community in Machakos, kenya, where they demonstrated that lycanthon treatment induced a pronounced reduction in liver size and disappearance of the previously palpable spleen in 10 patients followed up for 2 years following treatment. Furthermore, 118 individuals with high intensity infections were treated and followed up for one year. Egg counts done one year later, were markedly diminished in the entire community.