IgE LEVEL IN PARASITIC DISEASES BEFORE & AFTER SPECIFIC THERAPY

Thesis

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بسم الله الرحمن الرحيم

سبحانك لا علم لنا إلا ما علمتنا

إنك أنت العليم الحكيم

صدق الله العظيم

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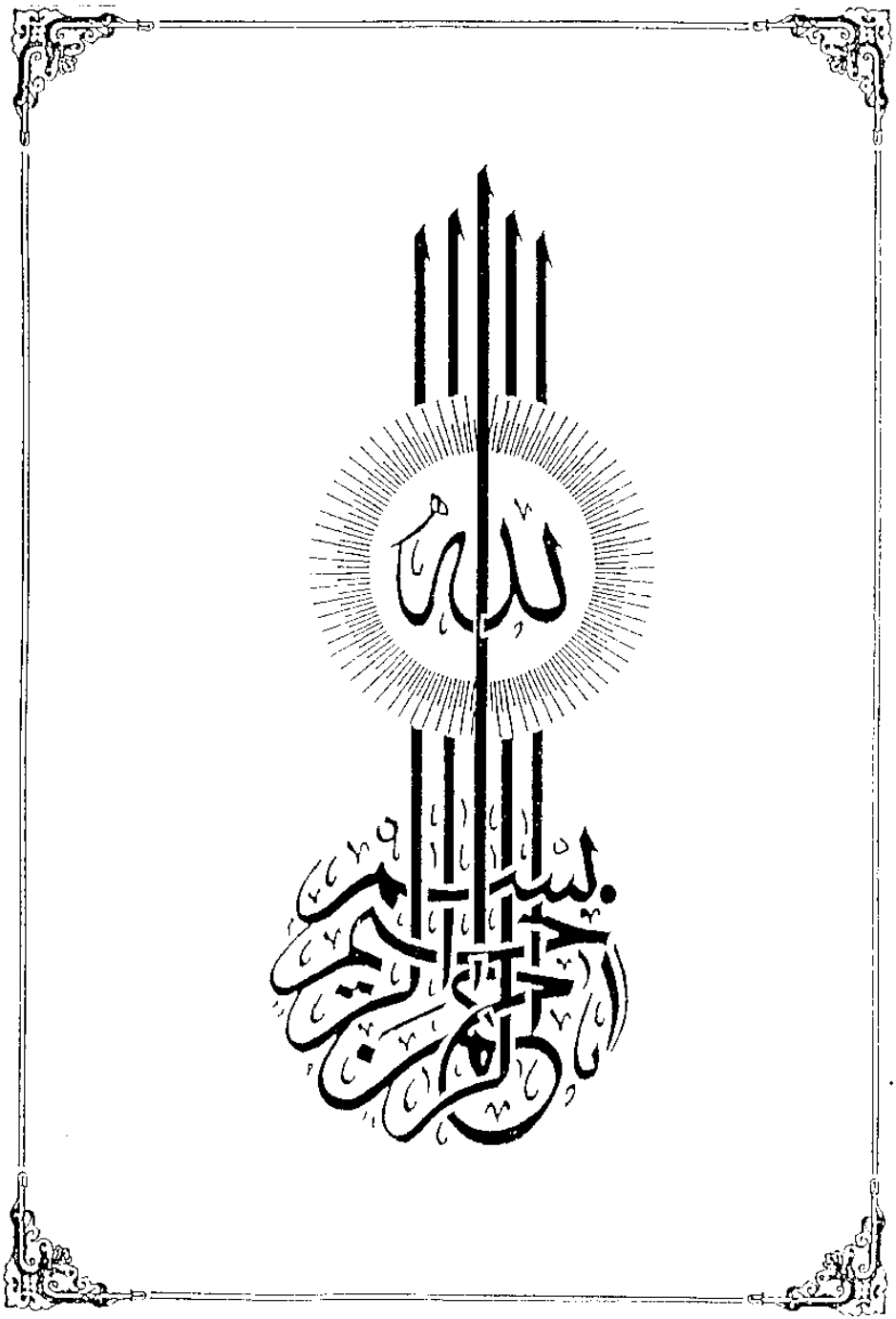

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List Of Figures

List Of Tables

CONTENTS

Continued

INTRODUCTION

AND

AIM OF WORK

More humans are infested with parasites than with any other group of pathogens. Yet, little is known of the immune responses to the numerous protozoa or helminths that infect man.

A parasite whether unicellular or multicellular is complex with multiple antigenic components permitting a spectrum of possible immunologic responses.

Both cellular and humoral mechanisms are known to share in the defense mechanisms against parasites. Certain cellular responses particularly eosinophilia, are characteristic of helminthic infections e.g. Ascariasis, Shistosomal infection and Ancylostomiasis [David & Butterworth, 1977].

Most protozoa and helminths stimulate antibody production, while useful diagnostically, antibodies were known to play only little role in host defense. Serum IgE has been known to be elevated in the tissue phase of many parasitic infestations and is associated with an immediate hypersensitivity skin reaction in amoebiasis, trichinosis, ascariasis, filariasis and visceral larval migrans [Radermecker et al, 1974].

After that, IgE has been demonstrated by Capron et al,[1977], to have not only allergic reflection to parasitic infestation, but also a protective role against these parasites. More recently, Capron [1984], has demonstrated an antibody-dependent eosinophil cytotoxicity against parasites in which IgE plays the major role. In addition, there is evidence that IgE antibodies interact with membrane receptors on macrophages to increase their binding to parasites and enhance IgG antibody dependent macrophage mediated cytotoxicity.

With these points in mind, we aim to study changes of serum IgE level in some intestinal parasitic diseases as Ascaris lumbricoides, Enterobius vermicularis, Hymenolepis nana and Entamoeba histolytica during infestation and after therapy with specific antiparasitic drugs to deligneate the definite role of IgE in host defense mechanisms.

HISTORICAL BACKGROUND

The first demonstration of specific humoral factors responsible for immediate hypersensitivity reactions was by Prausnitz and Kustner in 1920. A major breakthrough in the study of allergic diseases occured in the late 1960 when Ishizaka and co workers, as a result of their intensive studies on skin sensitizing antibodies, presented data which indicate the presence of a unique immunoglobulin as a carrier of reaginic activity in allergic serum. The specific activity was found in the gamma 1 region by radio-immuno-electrophoresis and was called gamma E globulin [Ishizaka & Ishizaka, 1969].

At the same time, and independent of Ishizaka, Bennich and Johansson reported in the 1967 the isolation of an atypical myeloma protein and its counterpart in normal serum. It represented a new immunoglobulin class which was designated IgND. In many aspects, physico-chemical properties of gamma E globulin were similar to those of IgND and the two proteins shared the major antigenic determinants. The findings were varified and it was agreed that both represent the same immunoglobulin class which was designated IgE [Bennich et al, 1968].

IMMUNE SYSTEM

IMMUNOCHEMISTRY

The immune system is comprised of two components, exhibited as cellular immunity or as humoral immunity.

The lymphocyte is the primary cell involved in both components. The cells destined to become lymphocytes arise as multipotential precursors from which derivatives of the hematopoietic and lymphoid systems will ultimately develop. In early intrauterine life, the fetal liver serves as the repository for the cells. Subsequently, the bone marrow is populated and in extrauterine life serves as the major source of the precursor cells. The detection of various immunologic markers on the lymphocyte membrane as well as the functional characteristics of lymphocytes have permitted identification of 2 distinct populations of lymphocytes called T_cells and B_cells. [Reinherz & Schlossman, 1980]. Figure "1".

The T_lymphocytes [T_cells] are thymus derived or thymus influenced during their development. T_cells are responsible for cellular immunity [i.e. delayed skin reactivity, allo graft rejection, antitumour immunity, and cellular defense against fungi, intracellular pathogens, and poxviruses].

The B_lymphocytes [B_cells] develop in the bursa of Fabricius in birds but are believed to be derived from bone marrow in mammals. Recent evidence suggests that the fetal liver assumes the bursal function in humans [Reinherz & Schlossman,1980]. The B_cells are responsible for humoral immunity, which is expressed by the production of specific circulating plasma proteins termed antibodies or immunoglobulins. They are present in the blood_stream, tissues, and exocrine secretions [Harper, 1979]. Table "1".

Immunoglobulins are also termed gammaglobulins which was introduced by Tisellias in 1937 to designate the serum protein which moves most slowly on free electrophoresis [Soloman, 1976], but significant amount are also found in B globulin zone [WHO,1972].