بسم الله الرحمن الرحيم

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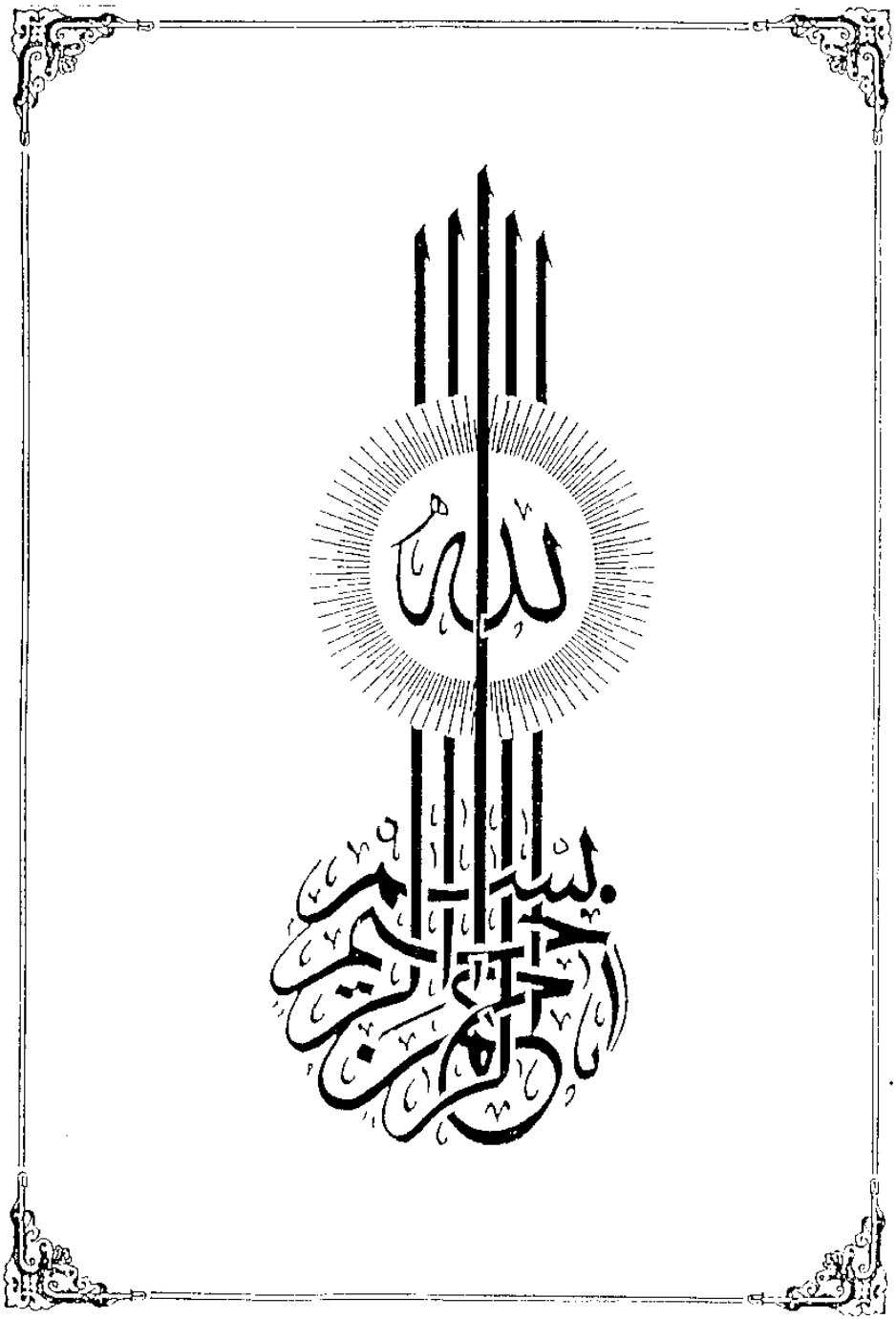

STUDY OF BRONCHIAL AND SERUM IMMUNOGLOBULINS IN BILHARZIAL PATIENTS WITH OR WITHOUT GENERALIZED AIRWAYS OBSTRUCTION

THESIS

Submitted in partial fulfilment for
Master Degree in CHEST DISEASES

BY

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CONTENTS

INTRODUCTION

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In one third of schistosoma infection in Egypt, the lungs are involved as evidenced by finding schistosoma ova in histopathological examination. (Shaw & Ghareeb,1938).

Generalized obstructive airways disease (GOAD) had been reported in cases of bilharziasis especially cases of cardiopulmonary bilharziasis. (Madkour,1969).

Since pathology has never demonstrated bilharzial lesions in the bronchi or the bronchioles, the mechanisms of this GOAD are speculative.

However, the immunological reaction of the lung as a part of the picture of the disease or as an end result of the involvement is not fully elucidated.

AIM OF THE WORK

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In this thesis, it is aimed to study and estimate the serum and bronchial immunoglobulins in lung lavage in patients having GOAD, and in bilharzial patients with or without GOAD.

A trial to find any correlation between changes in different groups of patients studied will be done.

REVIEW OF LITERATURE

PULMONARY IMMUNOLOGY

Basic Concepts:

The lungs had received attention more than half a century ago when Cooke and Vander Veer (1916) published their now classic observations on "human protein sensitization" to common environ mental agents and its association with asthma, thus initiating interest in the rapidly expanding subspeciality of clinical allergy in lung disease.

More than 40 years ago, the science of immunology received renewed impetus with the development of methods to separate serum proteins electrophoretically (Tiselius and Kabat, 1938). The subsequent development of new techniques, allowed improved identification of the components of immune system, thus a simple precipitation test was developed to identify specific antibody in serum by double diffusion in agar plates. (Ouchterlony,1948). The name "immunoglobulins" was given by Heremans in 1959 to describe a family of structurally and functionally related molecules which bind firmly to a wide spectrum of foreign antigens. Understanding of immunoglobulin structure was provided by porter in 1963.

The heterogenicity of circulating lymphocytes was recognized and the basic concept of different populations of thymus dependent T cells and Bursa-equivalent dependent B cells (Miller,1972) was over taken by further identification of many functionally different

lymphocyte Subpopulations within these two major groups.

A major stimulus to interest in local immunity of the respiratory tract stemmed from the characterization of secretory immuno globulin A (S IgA) antibody and its identification as the main local source of immunoglobulin (Chodirker and Tomasi, 1963).

More recently, the macrophage has begun to receive focused attention and the importance of macrophage activation in processing antigen for appropriate presentation to immunologically responsive cells (Both T and B cell types) and in amplifying its capacity to ingest and kill noxious agents and eliminate immune complexes has further been elucidated (Turner-Warwick ,1978).

The lung as a target organ

The lung is the only organ to receive the entire cardiac output and there is therefore maximum opportunity for circulating agents, whether antigen or immune complexes, to reach the pulmonary capillary bed. (Turner-warwick,1978).

Immunological responses of the lung:

The nature of an immunological response in the lung depends upon the extent to which the major components of the immune system are involved. (i.e. antibody,lymphocyte and macrophage).

Antibodies (Immunoglobulins)

Five immunoglobulin classes occur in most higher mammals (IgG, IgA, IgM, IgE and IgD). (Turner-W.1978). The normal range of serum immunoglobulin levels in serum in the adult is tabulated in table 1.1.

Four subclasses of IgG have been defined and the biological properties of these subclasses in man may be of considerable importance.

Parish (1974) has shown that short-term sensitizing IgG (StS.IgG) responsible for some immediate type skin reactions, relates to IgG4. IgG2 has also recently been identified as cytophilic antibody on the surface of leucocytes in bronchopulmonary aspergillosis. IgG2 and IgG3 fix complement and may be especially important in immune complex disease of the lung. (Turner-Warwick,1978).

Name	Normal range mg/100 ml	iu/ml	Properties
IgG	500 - 1500	57 - 172	Complement fixing: precipitating;4 subclasses.
IgA	150 - 450	74 - 268	2 subclasses;secreted as dimer-SIGA.
IgM	50 - 150	58 - 197	appears early in infection
IgE	150 - 500	200	Increased in atopic individuals; cytophilic.
IgD	-	-	Incompletely defined.

Serum immunoglobulins in normal European adults (Turner-Warwick, 1978).(Table 1.1).

Immunoglobulins in the respiratory tract

Respiratory tract secretions contain immunoglobulins of all classes but in the upper respiratory Tract (URT) that is the nasopharynx, trachea and main bronchi ,SIgA appears to be the most abundant Ig. In the lower respiratory tract (LRT), that is the respiratory bronchioles and lung parenchyma, the concentration of IgG increases so much, that it may exceed that of IgA. (Kaltreider & chan 1976; Groin & Gould,1979;Morgan et al,1980), and may be functionally more important (Reynolds et al, 1975). Cooper & Rawley,1979).

The distribution of plasma cells in respiratory tissues reflects these findings, IgA plasma cells being most abundant in the URT (Bradley et al.1976; Soutar,1976).

The origin of immunoglobulins in the lung is not well documented, and in particular it is uncertain to what extent immunoglobulins sensitized by mucosal plasma cells contribute to the local immune response in the lung compared with plasma derived immunoglobulins (Scicchitano et al,1984).

Morgan et al (1980) have demonstrated that the bulk of IgA found in secretions at all levels of the respiratory tract of the pig is synthesized locally by plasma cells in the respiratory mucosa.

With the increasing use of diagnostic fiberoptic bronchoscopy, analysis of protein contents including immunoglobulins and functional assessment of respiratory cells recovered from bronchial fluid