SOME ANTIPROTEASES IN GENERALISED OBSTRUCTIVE AIRWAYS DISEASE

THESIS

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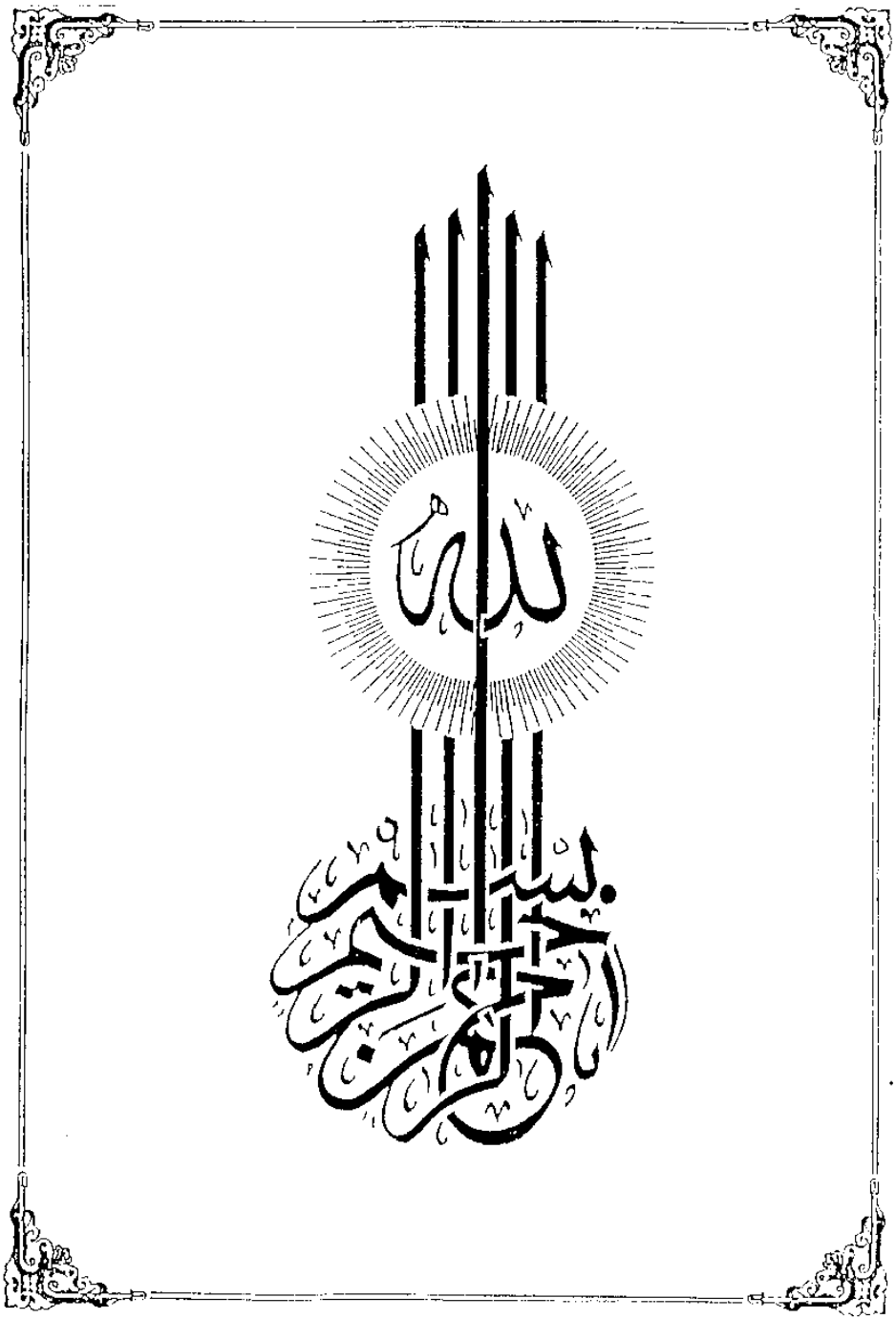
TO EVERGIVING MY PARENTS



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C O N T E N T S

INTRODUCTION
and
AIM OF WORK

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The prevalence of generalised obstructive airways disease in our country is not available. In an attempt at throwing some lights on prevalence of various chronic respiratory ailment in a small vollage in Assiuy Governorate, Seoudi et al. (1972) reported that the prevalence rate of generalised obstructive airways disease among sample group was 11.91% and the prevalence of chronic bronchitis was 10.97%. Emphysema was evident in 2.67% out of patients with chronic bronchitis. Bronchial asthma features were reported in 1.44% of this group.

Deficiency of alpha-1-antitrypsin and its association with emphysema was first described by Laurell and Eriksson in 1963. It was later shown to be inherited defect carried by an autosomal recessive gene (Eriksson, 1964).

Alpha-1-antitrypsin is the major antielastase in the normal human respiratory tract. Alpha-2-macroglobulin is a large serum antielastase and does not contribute to antielastase protection of human alveolar structures (Gadek et al., 1981).

The aim of the present work is to investigate if there is an association of generalised obstructive airways disease with changes in alpha-1-antitrypsin and alpha-2-macroglobulin and try to find their correlation to ventilatory function.

REVIEW OF LITERATURE

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GENERALISED OBSTRUCTIVE AIRWAYS DISEASE (GOAD)

The terms chronic obstructive airways disease (COAD), chronic obstructive pulmonary disease (GOPD), chronic generalised obstructive airways disease (CGOAD) are used synonymously and have been introduced to include all patients who have reversible and usually progressive air flow limitation.

There are a wide geographical distribution of the disease. The mortality rate are highest in United Kingdom and number of deaths from chronic bronchitis and emphysema was 27000 per anum in the mid 1970, which represents 4.5 per cent of all deaths. Rates are much lower in countries such as Japan, whilst in the developing countries of the third world, the magnitude of the disease is undefined although with the rapid increase in tobacco consumption mortality rates are likely to increase (Benson, 1984).

CHRONIC BRONCHITIS

Ciba Guest Symposium (1959) defined it clinically, as a disorder characterised by excessive mucous secretion in bronchial tree manifested by chronic or recurrent productive cough. These manifestations occur on most days for at least three months in year during at least two years.

The Committee of American Thoracic Society (1962) agreed to the same definition of chronic bronchitis adapted by Ciba Guest Symposium.

The essential clinical abnormality common to all persons with chronic bronchitis is bronchial hypersecretion which is usually manifested as a productive cough, there are two other manifestations which frequently occur, bacterial infection which may result in mucopurulent sputum and generalised airways obstruction. Thus it is possible to recognise simple, mucopurulent and obstructive form of chronic bronchitis separately or combined with each other (Medical Research Council & Committee, 1965).

Simple chronic bronchitis defined as chronic or recurrent increase in the volume of mucoid bronchial

secretion sufficient to cause expectoration with excluding localised disease of the lung of any kind e.g. tuberculosis, pneumonia, cystic disease, bronchiectasis, generalised specific lung disease such as pulmonary granulomata or pneumoconiosis and primary cardiovascular diseases or renal diseases.

Chronic or recurrent mucopurulent bronchitis in which the sputum is persistantly or intermittently mucopurulent when this is not due to tracheo pulmonary disease. The word persistantly means the sputum will be mucopurulent for at least part of every day for a period, at least one year.

The word intermittent means sputum mucopurulent for at least two periods each lasting not less than one week during period of three consecutive years. Chronic obstructive bronchitis in which there is persistant, wide spread narrowing of intrapulmonary airways at least on expiration causing increase resistance to airflow.

Etiology:

Karlish and Tarnoky (1960) has found that mucoviscidosis may be a factor in development of the lung disease.

Mieur and his associates (1962) concluded that mucoviscidosis in homozygous state can not be implicated as a cause of chronic bronchitis. Several causes are known to be incriminated in the production of this disease such as respiratory infection, climate, town or country environment, exposure to cold damp, atmospheric pollution, occupational exposure to irritant dusts, fumes and smoking (Kemich et al., 1963).

Higgines (1959) claimed that chronic bronchitis is common in smokers and cigarette smoking was an important causative factor in the development of chronic bronchitis and emphysema.

Salem et al. (1973) found that the degree of airways obstruction was more in Goza smokers which is common in Egyptian villages than cigarette smokers.

Burrow et al. (1969) found that immunoglobulin A appears to be an important defence mechanisms against airborne invaders and IgA increased in sputum of patients with chronic bronchitis.

BRONCHIAL ASTHMA

In Ciba Guest Symposium (1959) asthma refers to a widespread narrowing of bronchial airways, which changes in severity over short period of time either spontaneously or under treatment and is not due to cardiovascular disease. The clinical characteristics are abnormal breathlessness which may be paroxymal or persistant wheezing and in most cases relief occurs with the use of bronchodilator drug including corticosteroids.

In the American Thoracic Society Committee on Diagnostic Standard of Non Tuberculous Respiratory Disease (1962), asthma was defined as a disease characterised by an increase responsiveness of trachea and bronchi to various stimuli and manifested by a widespread narrowing of the airways that changes in severity either spontaneously or as a result of therapy. They stressed that the term asthma is not appropriate for bronchial narrowing which results solely from widespread bronchial infection e.g. acute or chronic bronchitis, from destructive diseases.

The World Health Organization on Chronic Cor Pulmonale(1961) accepted the definition of Ciba Guest Symposium.

Mc Fadden and his associates (1983) defined asthma as a disease of airways that characterised by increased bronchial responsiveness to many stimuli and manifested physiologically by a wide spread reversible narrowing of air passages.

Etiology and pathogenesis:

One of the character of the patients with asthma their airways are exquisitely sensitive to a variety of inhaled stimuli,for example, their airways regularly become obstructive after inhalation of bronchoconstriction substance at 1/100 to 1/300 of concentration required to produce a similar response in normal persons (Griffein et al., 1983).

The bronchial asthma is generally considered as a disease of allergy (Weismann, 1983).

The pathological feature of asthma are bronchial smooth muscle contraction and hypertrophy, vasodilation (oedema), increased mucous secretion with plugging of the distal bronchioles and the presence of eosinophil and neutrophils (Daniel, 1978).

Apart from allergic asthma due to inhalant or less commonly ingested allergen, asthma may be caused