PROVOCATION CHALLENGE TEST FOR DISCOVER OF LATENT BRONCHIAL ASTHMA

THESIS

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Master Degree of **Chest Diseases**

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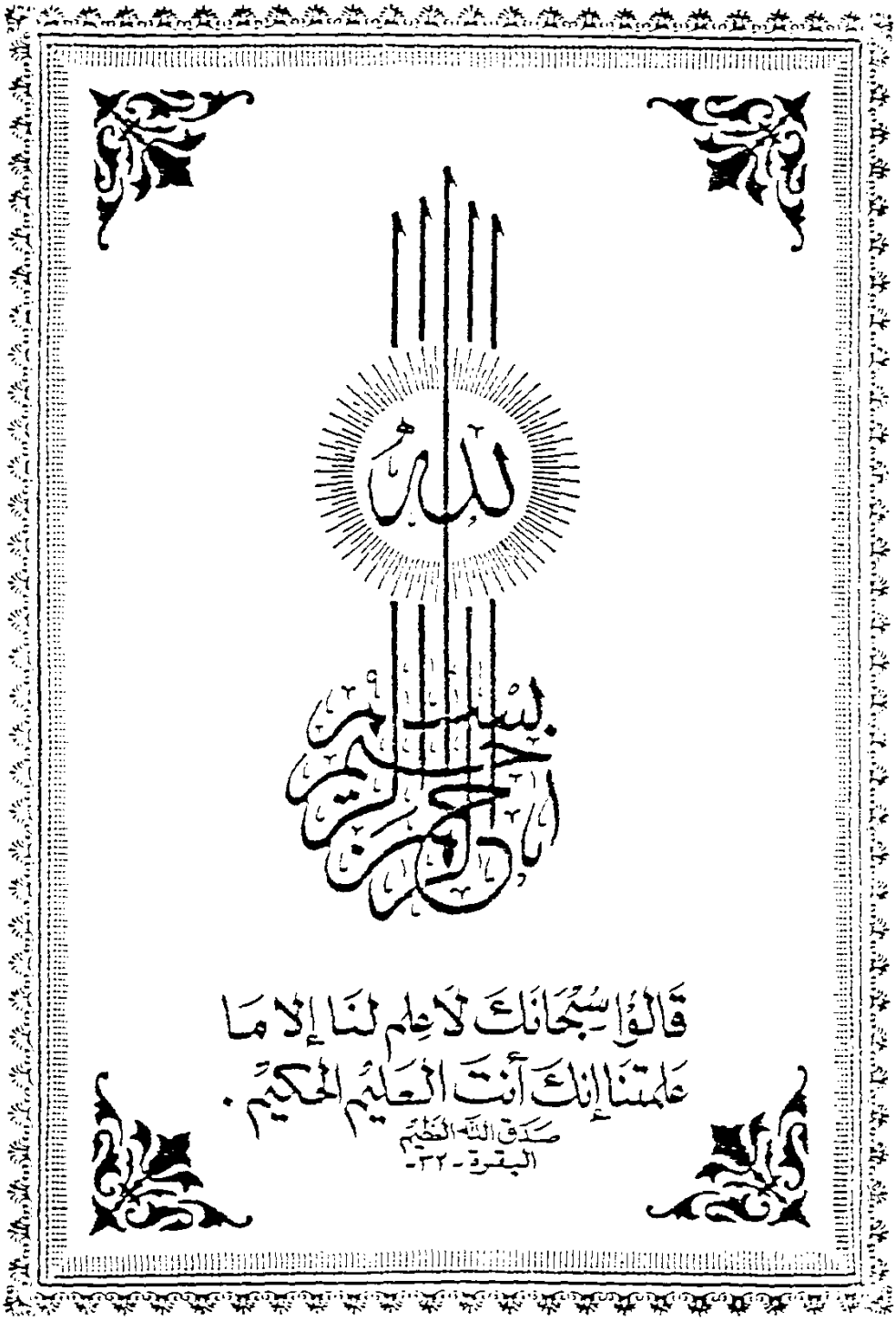

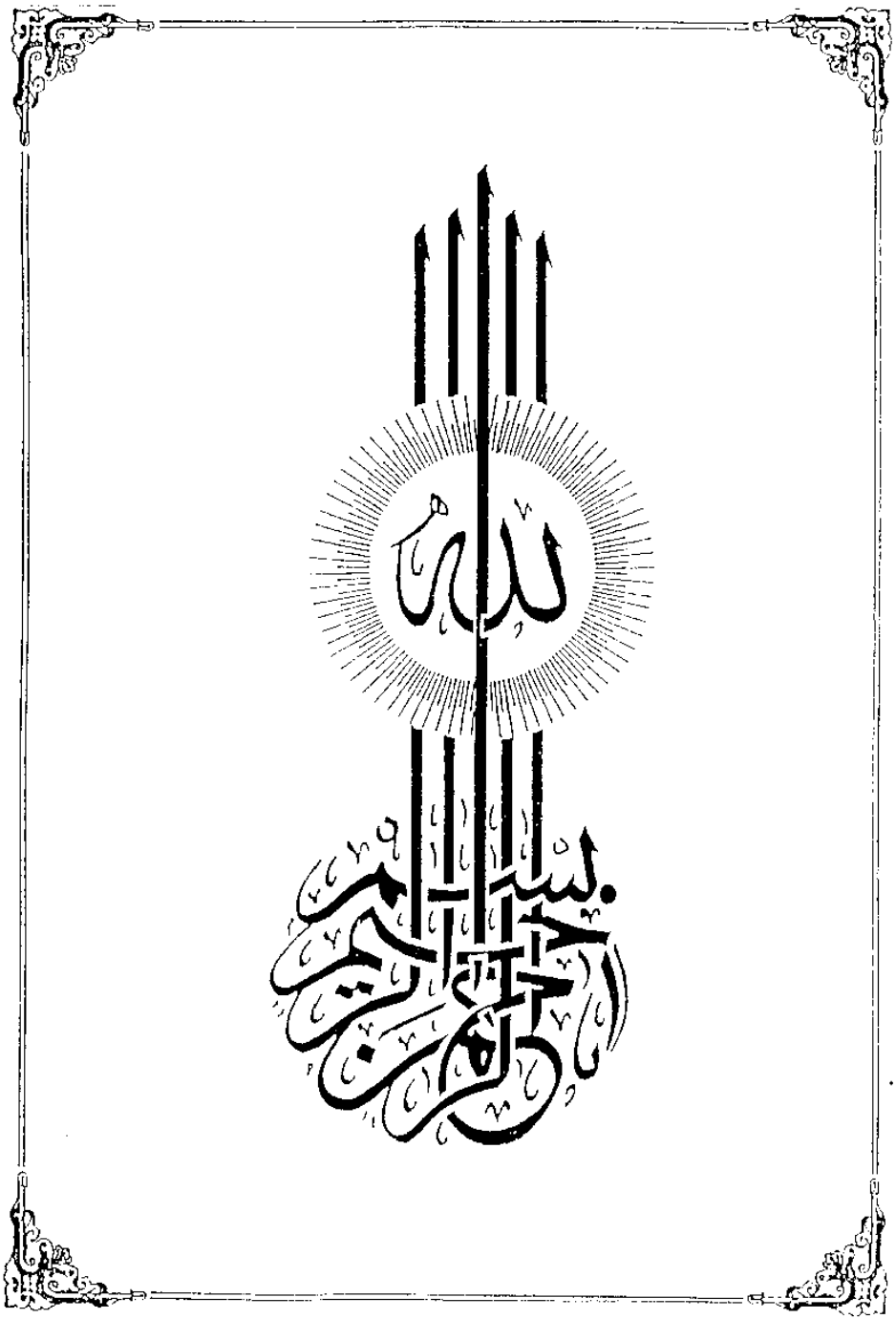

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INTRODUCTION AND AIM OF THE WORK

INTRODUCTION

The main goal of bronchial provocation testing in the clinical pulmonary physiology laboratory is the identification of airways hyperreactivity in patients with symptoms suggestive of asthma but no evidence of airways obstruction on routine pulmonary function testing. For this purpose methacholine or histamine are routinely used. Testing with antigen or other substances (especially work - related material) may also allow the identification of specific factors which precipitate bronchospasm in individuals with bronchial hyperreactivity. This technique can serve as a useful research tool permitting the study of a model of spontaneous asthma in human in a controlled environment. Studies of non specific bronchial responsiveness have provided major insights into the pathogenesis of asthma and have curved a place in the clinical documentation of asthma. Patients presenting to outpatient clinic with history of intermittent cough, chest tightness or dyspnea these symptoms often occur with exercise, exposure to cold air, upper respiratory infections or at night. The patient's baseline spirometry is normal and without a significant response to an inhaled bronchodilator those patients determine latent asthma or hidden asthma Bronchial provocation has been proposed as a mean of diagnosing latent asthma *(Chai et al, 1975).*

Aim of The Work :

The aim of this work is to discover latent asthma or hidden asthma by using provocation challenge test.

REVIEW OF LITERATURE

BRONCHIAL ASTHMA

It is now becoming clear that asthma is a chronic inflammatory disease involving many interacting cells which release a whole variety of inflammatory mediators that activate several target cells in the airways resulting in bronchoconstriction microvascular leakage and oedema, mucus hypersecretion and stimulation of neural reflexes *(Barnes, 1989a)*. Although there may be several ways of initiating this inflammatory response, the type of inflammation which is characteristic of bronchial asthma is typified by infiltration with eosinophils and T.Lymphocytes and by shedding of airway epithelial cells. These inflammatory changes may be seen even in the mildest of asthmatic patients.

Definition:

The term asthma is derived from the greek word that means panting (breathing quickly) or gasping for breath of severe nature *(Alexander, 1928)*.

Ciba guest symposium in 1958 suggested that asthma refers to the condition of subjects with wide spread narrowing of the bronchial airways, which changes in severity over short periods of time either spontaneously or under treatment, and is not due to cardiovascular disease. The clinical characteristics are abnormal breathlessness which may be paroxysmal or persistant, wheezing and in most cases relieved by bronchodilator drugs (including corticosteroid). The American Thoracic Society 1962 defined bronchial asthma as a disease characterized by an increased responsiveness of the trachea and bronchi to a variety of stimuli and manifested by widespread narrowing of the airways that changes in severity either spontaneously or as a result of therapy. *Herxheimer, 1975* defined asthma as follows, attacks of dyspnea caused by bronchial obstruction occuring at any time of the day or night and early morning. The bronchial obstruction may be brought by spasm of the bronchial muscle eodema of the mucosa, mucus secreted into the bronchial lumen or by a combination of these factors.

Scadding, 1979 defined asthma as a disease characterized by wide variation over short periods of time in resistance to flow in intrapulmonary airways. Although the attacks of asthma are characteristically intermittent and reversible, it may become persistant with only minor variation. The diagnosis in this case will be made by indirect evidence that wide variability has been

present in the past and confirmed by later observation of the clinical course including the response to treatment. *Farr, 1985* tried to find a definition of bronchial asthma and said, it is a reversible obstructive airway disease of unknown etiology untill proved otherwise, the common denominator among the patient population with asthma is hyperreactive airways. He found that asthmatic patients could tolerate an average of only 3 breaths of 10 mg/ml of methacholine before the induction of bronchospasm as measured by Timed vital capacity whom compared with normal subjects who could breath 150 or more breaths of the same solution. Clinicians have tended to prefer definitions based on variability of symptoms over short periods of time in resistance of flow in intrapulmonary airways *(Parther-Birch, 1971),* Fishman, 1980 stated that the bronchial asthma is a disease characterized by increased responsiveness of the trachea and bronchial tree to a multiplicity of stimuli. Clinically the disorder is manifested by paroxysm of cough dyspnea physiologically the hall mark is widespread narrowing of the airways that can change in severity spontaneously or as a rsult of therapy. The clinical manifestations generally occur together but occasionally patients may present with only cough or dyspnea.

Seaton et al., (1989) stated that asthma can be qualified by more quantitative definition in terms of for example, sputum histology, spontaneous change in flow rates or response to

bronchodilators, steroids, exercise or bronchoconstrictors.

Prevalence of bronchial asthma:

Figures for asthma are very crude and comparisons between different surveys are subjected to wide margin of error. This can be explained by the fact that doctors do not define asthma in the same way and it is often difficult for the physician to differentiate between asthma, asthmatic bronchitis, bronchiolitis and chronic bronchites with bronchospasm *(Clark and Godfrey, 1977).* There is very low prevalence among Eskimos and North American Indians *(Herxheimer and Schaefer, 1974).*

The prevalence ratios which are usually "cumulative prevalence" have varied in children in different surveys, between 0.5 - 2% in Scandinavia 1.5 -5.1% in Britain and 4.5 - 7.4% in Australia for Adults ratios have varied from 1.1 - 2.3% in scandinavia 2-5.4% in Britain and 4.1 - 9.9% in *USA (Greyg, 1977; Scmiet all, 1965)* found that asthmatics comprised 5.2% of patients attending outpatient clinics of outpatient clinics of Cairo University Hospitals .

Seoudi et al., 1972, found that the prevalence rate of bronchial asthma was 1.93%.

Age of onset:

Most surveys in Britain North America and Australia have found that in at least 30% of patients, asthma begins before the age of 10 ys. In Scandinavia, India and Nigeria a childhood onset has been much less common *(Clark and Godfrey, 1977).*

Derrick, 1971 detected that 90% of cases start before the age of 40 ys.

Sex incidence:

The great majority of survey have found male excess of asthma in childhood 1.5: 1 and tendency to decrease as adolescence is approached. This may be due to a greater susceptibility to viral infection in boys *(Bleur, 1977).* In adults there is little difference between the sexes *(Derrick, 1971)* though in some an onset after the age of 35 was much common in women *Seoudi, et al., 1972* in his study found sex ratio in bronchial asthma to be 1.64: 1 in favour of males.

Classification and clinical types:

It has been long recognised that asthmatic population could be separated into two main categories namely extrinsic in which a recognizable external allergen in the environment initiates the attack, and intrinsic; in which no external allergens are recognized *(Rackemann, 1997).*

Rackemann, 1947 suggested that this classification (extrinsic and intrinsic) is not absolute because both types may be present in the same patients. Frequently they may start as extrinsic and becomes intrinsic and accasionally the reverse. Extrinsic asthma can be subdivided according to whether the subject is atopic (i.e manifesting type I skin reaction to a standard range of common allergens) or not.

Extrinsic atopic asthma:

This represents the largest group of asthmatics *(Scadding, 1976)* patients belonging to this group usually develop symptoms early in life. In many of them the advent of asthma is frequently preceeded by allergic rhinitis or eczema *(Rose et al., 1978).* The majority give a positive family history of allergy and the immediate Wheal and Flare response to skin tests is predominant and of diagnostic significance *(Herbert et al., 1982).*