PILOT STUDY ON THE EFFECT OF PHARMACOLOGICAL ZINC THERAPY IN INTRACTABLE INTRINSIC ASTHMA

THESIS

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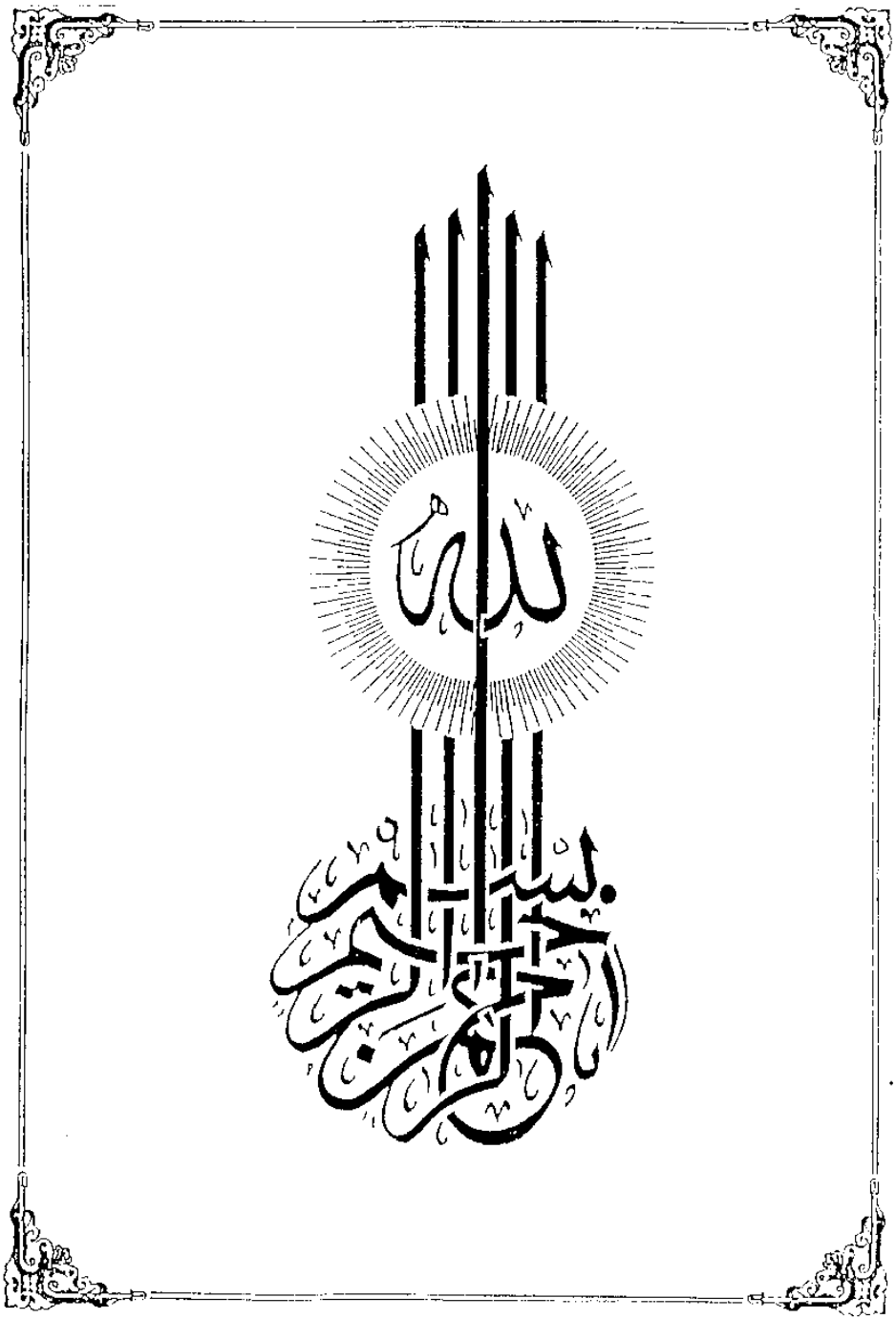

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INTRODUCTION

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INTRODUCTION AND AIM OF WORK

Intrinsic asthma till the present time is of undetermined aetiology. The underling mechanism of increased bronchial reactivity is vaguely postulated to be due to autonomic, endocrinal or immunological drainged mechanisms.

Considerable evidence now suggests that zinc increases the stability of various membranes. Zinc prevents induced histamine release from mast cells. This effect of zinc may be due to action on the cell membranes (Chvapil, 1976). Also it inhibits phosphodiestrase enzyme, thus increasing the level of C-AMP. (W.Y.Cheung, 1967). Zinc is mitogenic for T lymphocytes similar to phytohemaglutinin P.H.A. (T. Saldeen et al., 1969).

Considerable number of patients suffering from a variety of illnesses have subnormal plasma Zinc, according to Sullvian and Heaney, (1970), patients with lymphoma, carcinoma, diabetes mellitus, acute alcoholism and psychologic disturbances.

The aim of the present thesis is to investigate possible abnormalities in Serum Zinc level in patients with intrinsic asthma to detect possible role of this trace element in immune regulation.

REVIEW OF LITERATURE

HISTORICAL REVIEW

Bronchial asthma has been known since 2000 years (Rosenblat, 1976).

Asthma is among the diseases identified with certainty according to Eblell in the paypyrus of Ebers.

In 1554 Aretaios (Aretaeus of Cappadocia) described rhogmoi (râles) of the chest in asthma.

In 1552 Cardan (Garolamo Cardano) diagnosed the asthma and described the following therapeutic measures: diet, exercise, cold bathes, rest. Because of the patient's rank, Cardan also ordered that he should sleep on a bed of unspun silk, instead of one of feathers. The patient improved rapidly, possibly he was allergic to feather.

In 1577 Van Helmo himself was a sufferer of asthma and described asthma quite vividly, correctly placed the seat of the trouble in the bronchi, and described attacks produced by inhaling house dust and eating fish.

In 1621-1675 Thomas Willis noted the constriction of the bronchioles in asthma.

In 1910 Meltzer pointed out that, asthma was an allergic process and the role of allergy as a cause of asthma, hay fever, certain skin diseases was clearly demonstrated (Major, R.H., 1954).

BRONCHIAL ASTHMA

In 1967 the United States, National Tuberculosis Association produced the definition: Asthma is a disease characterized by an increased responsiveness of trachea and bronchi to various stimuli and made manifest by difficulty in breathing and generalised narrowing of airways. The basic defect appears to be an altered state of the host (Pepys, 1973).

Asthma has also been defined as a disease characterized by wide spread variation over a short period of time in resistance to flow in the airways. It may be related to exposure to environmental factors specially inhaled substances or they may occur without apparent external cause (Scadding, et al., 1976).

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

Among the detectable factors producing asthma, are specific antigen-antibody reactions to inhaled allergen and hyper reactivity of the airways to various chemical

and physical stimuli and to exercise. The resistance to flow in the airways will decrease by bronchodilator drugs and corticosteroids (Scadding, et al., 1976).

BRONCHIAL HYPER-REACTIVITY

Bronchial hyper reactivity is a condition in which the airways show much greater bronchoconstricor response to provocation stimuli than normal. The stimuli may be specific as house dust allergens, or non specific such as exercise, inhalation of cold air, or a variety of irritants and pharmacological agents.

Non specific bronchial hyper reactivity is a feature of asthmatic patients both allergic and non allergic (Nadel and Pauwels, 1982).

ETIOLOGY AND PATHOGENESIS OF BRONCHIAL ASTHMA

The bronchial asthma is generally considered as a disease of allergy (Weismann, 1983). The pathological features of asthma are bronchial smooth muscle contraction and hypertrophy, vasodilation (oedema), increased mucous secretion with plugging of the distal bronchioles and the presence of oesinophils and neutrophils, (Daniel, 1978).

Apart from allergic asthma due to inhalants or less commonly ingested allergens, asthma may be caused by various substances via relatively ill defined mechanisms of reaction to environmental agents, various chemical drugs