RELATIONSHIP BETWEEN IRON DEFICIENCY ANEMIA AND CREST INFECTION IN SCHOOL CHILDREN

THESIS

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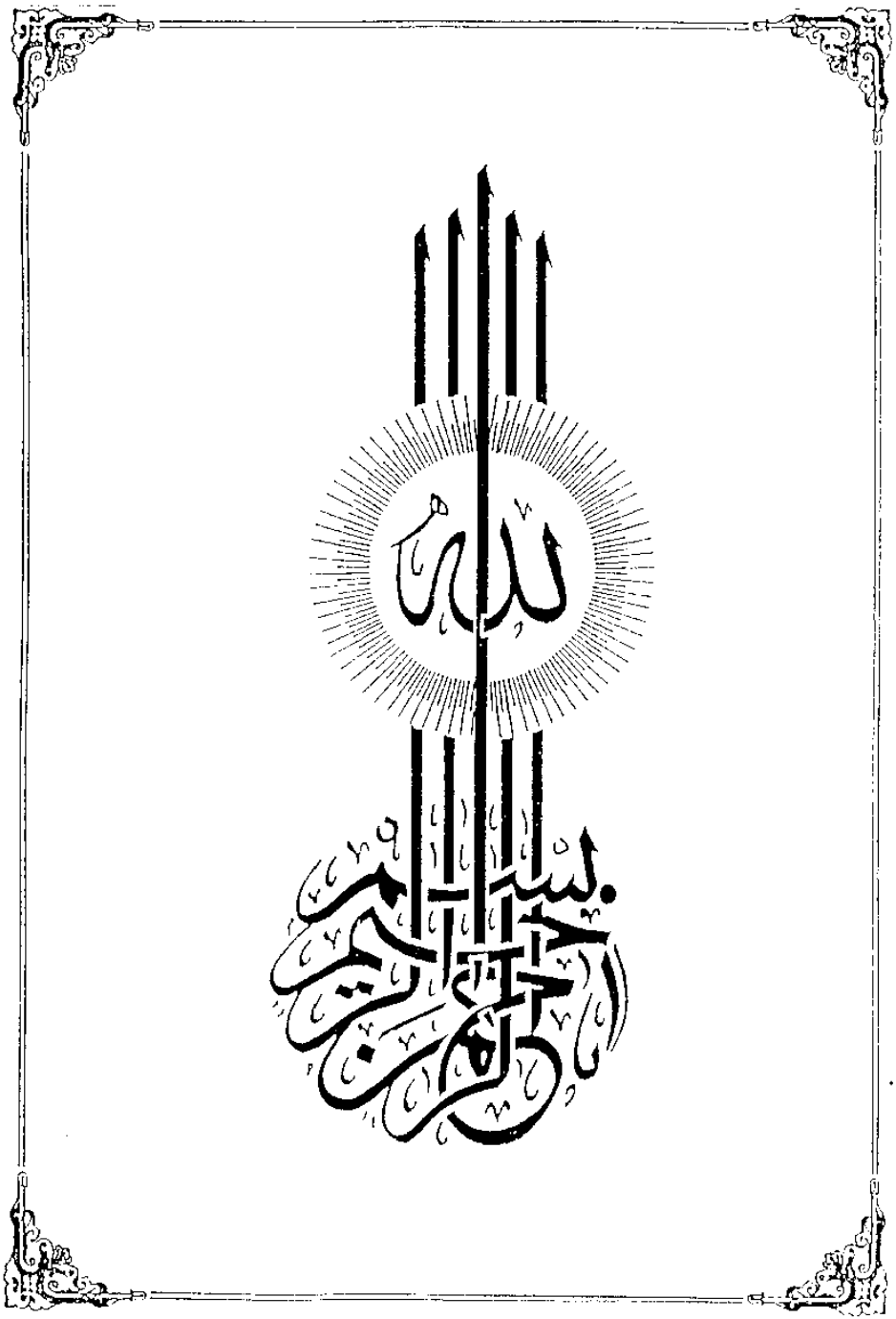

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ABBREVIATIONS

DNA: Deoxyribonucleic acid

Hb: Hemoglobin

LEM: Leukocytic endogenous mediator

MCV: Mean cell volume

PCV: Packed cell volume

RBC: Red blood cell

RDA: Recommended dietary allowances for iron

RES: Reticuloendothelial system

RSV: Respiratory Syncytical Virus

S.I.: Serum iron

S.Tr: Serum transferrin

T.B.: Tuberculosis

TIBC: Total iron binding capacity

UIBC: Unsaturated iron binding capacity

Introduction

INTRODUCTION AND AIM OF THE WORK

Iron is one of the trace elements in the body. Iron is found in the body mainly in haemoglobin. The rest is in tissue iron (myohaemoglobin) and plasma iron. Iron is transported in the blood bound to beta globulin synthesized in the liver (Finch and Huebers, 1982).

In the so-called anaemia of infection, which occurs in a wide range of active inflammatory and neoplastic conditions, the serum iron level is significantly lower than normal and iron deficiency may be suggested (Thompson, 1977).

Low serum iron associated with low total iron binding capacity is characteristic of the anaemia of chronic disorders, malignant tumours and infections (Lawrence and Amadeo, 1984).

During infections in normal humans hepatic anabolism of transferrin becomes slightly lower than catabolism, so that a decrease of as much as 15 to 20% of normal levels can ensue (Weinberg, 1978).

Anaemia may be defined as a reduction in the concentration of haemoglobin in the peripheral blood below the normal for the age and sex of the patient (Nathan and Oski, 1974).

Acute respiratory infections, diarrheal diseases and malnutrition are the most common causes of illness and death among children in the developing countries (WHO, 1980).

Between 7 and 12 years of age, 6-8% of children will have at least one episode of chest infection per year. The rate falls to about 4% having at least one episode per year at the age of 17 years (Peat et al., 1980).

Acute chest infection could be an important element in causing anaemia. Upper respiratory and other mild infections appear commonly to predispose to iron deficiency in infants and children, probably because of decreased iron absorption. When a low or low normal haemoglobin is found, both the history of infection and dietary history can help in deciding whether to begin a trial of iron therapy or not (Reeves et al., 1984).

In this study we will try to varify the relationship

between acute chest infection and iron deficiency among Egyptian school children.

REVIEW OF LITERATURE

ACUTE CHEST INFECTIONS

Acute respiratory infections are the most common illnesses in childhood comprising approximately 50% of all illnesses in children under 5 years, and 30% in children between 5 and 12 years (Williams and Phelan, 1975).

I- General Incidence:

Respiratory infections are a major cause of morbidity and a significant cause of mortality in infancy and childhood. Acute respiratory infections are the most common illnesses in childhood, comprising approximately 50% of all illness in children under 5 years, and 30% in children of 5-12 years. The average child has about 7-9 infections per year, most of them very mild, limited to the upper respiratory tract (Miller et al., 1960).

Most infections are limited to the upper respiratory tract, but about 5% involve the lower respiratory tract and consequently are potentially more serious (Williams and Phelan, 1975).

The peak rate of lower respiratory infections is in

the first year of life when there are about 240 infections per 1000 children per year (Glezen and Denny, 1973). The rate progressively falls during childhood, there being about 120 infections per 1000 children per year at 5 years and 30-50 infections per 1000 children per year in adolescence.

The true incidence of pneumonia is uncertain as many studies fail to really distinguish bronchiolitis and bronchopneumonia but probably at least 1% of infants develop pneumonia before the age of two years, 25-30% of children will have at least one episode of bronchitis before the age of 7 years (Hall et al., 1972).

II- Epidemiological Aspects:

The pattern of illness occuring in any child or in the whole population depends on the interaction of 3 factors: the host factor, the environmental factor and the organism factor (Williams and Phelan, 1975).

A- Host Factors:

1) Age:

Most serious respiratory diseases occur in the first three years of life, especially the first year (Glezen and Denny, 1973). The predominant illnesses are acute bronchiolitis in the first six months of life, pneumonia in the first two years and laryngotracheobronchitis in the second and third years.

2) Sex:

The incidence of upper respiratory tract infections due to viruses or bacteria is the same in both boys and girls. However, boys under the age of six years have a substantially higher incidence of lower respiratory tract infections. Over the age of six years the rates of lower respiratory tract infections for boys and girls approximate