MYCOBACTERIAL PULMONARY INFECTION IN CHILDHOOD LEUKEMIA & LYMPHOMA

Thesis submitted for the partial fulfillment of
Master Degree in Pediatrics

By
Dr.Hesham Mahmoud Ahmed Abou Allwaffa
M.B. B.Ch. 1989
Under Supervision of

Dr.Mona Hussein El-Samahy
Assistant Professor of Pediatrics
Ain Shams University
Faculty of Medicine

Dr.Azza Abdel Gawad Tantawi
Lecturer of Pediatrics
Ain Shams University
Faculty of Medicine

Dr.Aisha Mamdoh Hafez
Lecturer of Microbiology & Immunology
Ain Shams University
Faculty of Medicine

Ain Shams University
Faculty of Medicine
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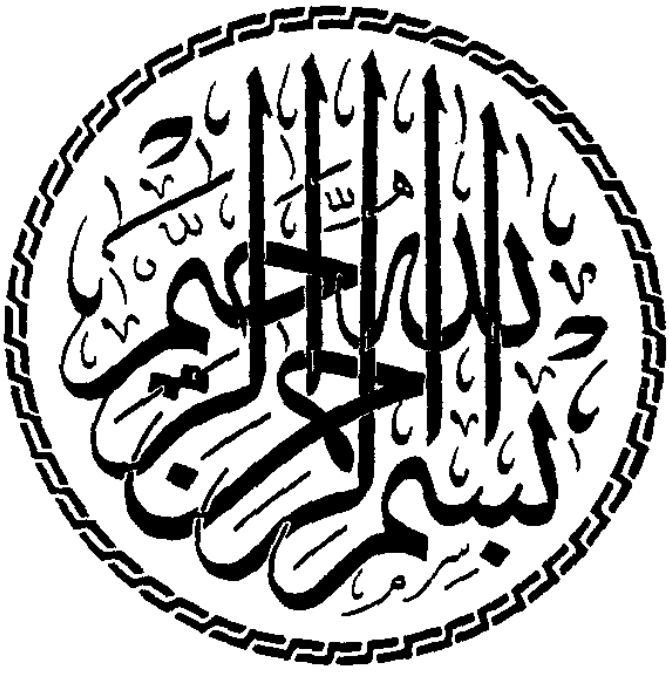

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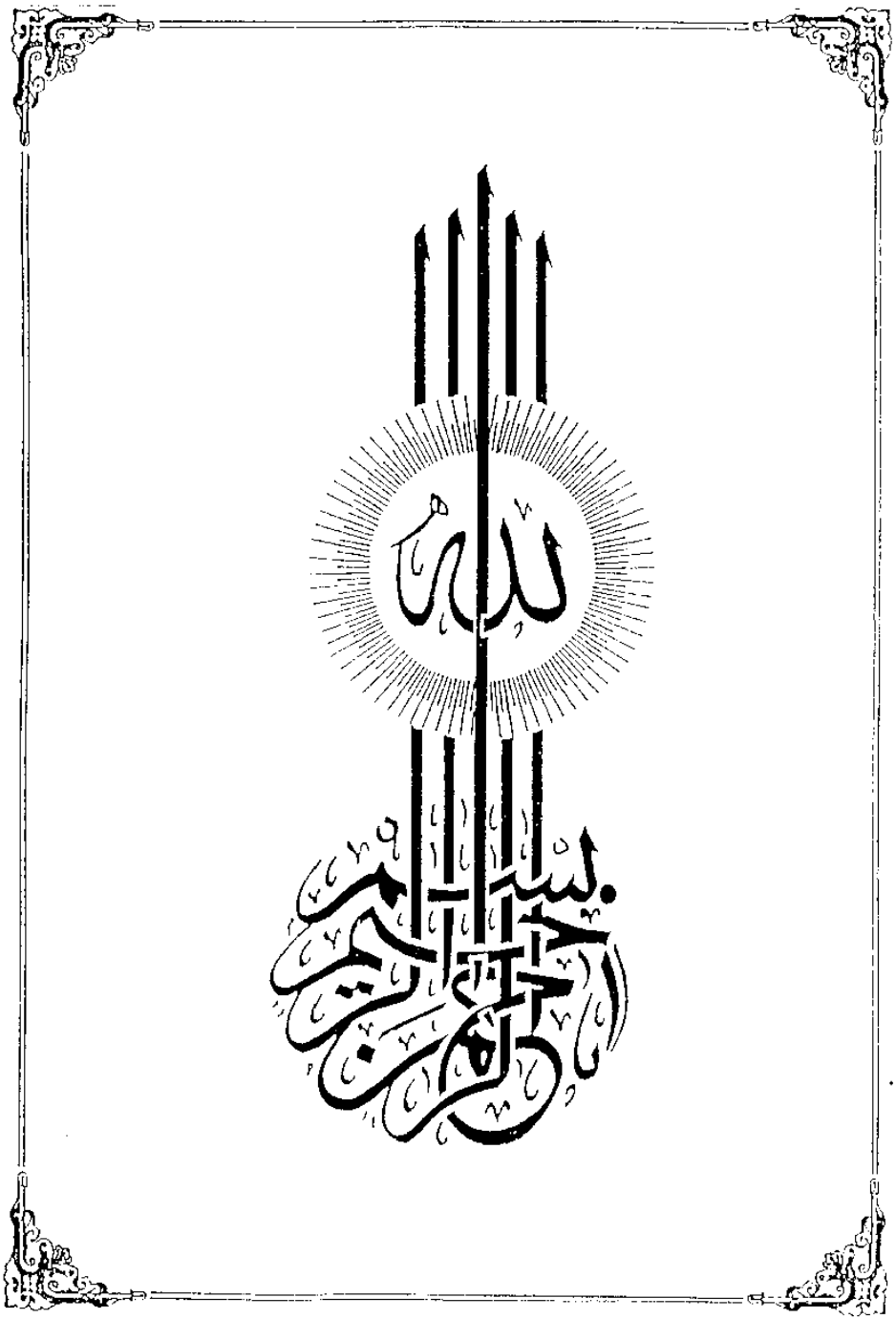

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List of Abbreviations

AIDS	Acquired immundeficiency syndrome.
ALL	Acute lymphatic leukemia.
AML	Acute myeloid leukemia
BCG	Bacillus Calmette and Guerine.
CD4	T. helper lymphocyte.
ELISA	Enzyme linked immunosorbent assay.
FAB	French-American classification of acute leukemia .
G.C.S.F.	Granulocyte -colony stimulating factor .
GM.C.S.F.	Granulocyte-Macrophage colony stimulating factor.
HTLV.1	Human-T-lymphocyte virus 1.
IL1	Interleukin 1.
LFS	Leukemia Free Survival.
MAC	Mycobacteria avium intracellular complex.
McAb	Monoclonal antibody.
NHL	Non-Hodgkin lymphoma .
MOTT	Mycobacteria other than tuberculosis.
NTM	Non- tuberculous mycobacteria.
PCR	Polymerase chain reaction.
PPD	Purified protein derivatives.
RFS	Relapse free survival.
ZN	Zeilh- Neelsen stain.

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INTRODUCTION
AIM OF THE WORK

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INTRODUCTION

With advances in the effective treatment of childhood leukemia and lymphoma using combination chemotherapy and radiotherapy ,infectious complications became a major cause of morbidity and mortality during therapy of malignancies(Albano and Pizzo,1988).

Pulmonary infections in patients with malignancies are caused by a wide variety of microorganisms involving mycobacteria. The association of mycobacteriosis with malignant diseases has been recognised for several years. In the last years ,infections caused by atypical mycobacteria have been described with increasing incidence in malignant patients (Rolston et al,1985).

Recently Stark (1992) reported a higher incidence of nontuberculous mycobacteria in patients with leukemia and lymphoma ,the infection confined to the lung in 75- 88% of cases.

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AIM OF THE WORK

The aim of the present work is to assess the role of mycobacteria whether tuberculous or nontuberculous as etiologic agents of pulmonary infection in children with leukemia and lymphoma suffering from chronic chest infection .

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REVIEW OF LITERATURE

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Childhood Acute Leukemia

Acute leukemia accounts for approximately 30% of childhood cancer in the United States (Pratt,1985). Among childhood acute leukemia patients, 82% have acute lymphocytic leukemia (ALL), while approximately 18% have acute myelocytic leukemia (Poplack,1985). In Egypt Khalifa et al (1993) reported a prevalence of leukemia of 56.3% among pediatric malignant diseases. ALL accounts for 77% of childhood acute leukemia while acute myelocytic leukemia (AML) accounts for the remaining 23% (Khalifa et al,1982).

Age and sex distribution:

Acute leukemia is a disease of both children and adults. Childhood ALL has a peak incidence between the age of 3 and 5 years (Fernbach,1984) .This peak does not occur uniformly throughout the World, being absent in Africa and many developing nations,which has prompted speculation that this peak may reflect environmental exposure associated with modernization. However, there is no specific age distribution in AML (Ramot & Magrath,1982 ; Poplack 1985).

Childhood acute leukemias occur more often in males than females. The male to female ratio among Egyptian childhood acute leukemias is 2.6:1 and 2.7:1 in ALL and AML respectively (Fayez ,1987).

Seasonal Variations:

Seasonal variations in the incidence of childhood leukemia have been reported in some studies, however, it has not been observed among Egyptian patients (Greenberg & Shuster1985 ; Fayez , 1987).

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Geographical distribution:

International data show a marked disparity in the incidence of childhood acute leukemia which is worldwide with a lower disease incidence in Africa and Middle East and higher rate in China, Japan, United States, England and Europe (Greenberg and Shuster,1985). The occurrence of acute leukemia was demonstrated to be increased in immigrate populations, supporting the possible role of environmental factors in determining the potential expression of malignancy (Ramot & Magrath,1982).

Etiology Of Acute Leukemia:

The exact etiology of acute leukemia is unknown,however, certain risk factors are recognized (Mc Credit,1983).

It has been suggested that ALL is predominantly a disease of middle and upper *socioeconomic classes* .However, the socioeconomic status may reflect many exposures and other influences, including maternal age, parent education and occupational exposures and therefore it is difficult to be considered directly as single risk factor (Mc Whuter,1982).

The *race* has also a contributing role, as occurrence of ALL in the white race is about 20-30 percent greater than in the black race. However, this may reflect social class difference rather than the race itself (Neglia and Robison,1988).

The role of *environmental agents* have been widely studied. The detection of the critical time of exposure is of a great value. The preconception and the prenatal periods may be of particular interest because of the natural differentiation of primitive cells (Neglia and Robison,1988).

Prenatal exposure to diagnostic ionizing radiation was shown to be associated with childhood ALL. The risk is estimated to be 1.5 to 2 times that of non-exposed population (Stewart and Kneale,1970). Adult AML has a relation with exposure to ionizing radiation, paint solvent, petroleum products and cancer chemotherapeutic agents. Studies show a positive correlation between the nature of the agent of exposure and the frequency of specific

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