STUDY OF CHILDHOOD TUBERCULOSIS WITH PARTCULAR REFERENCE TO THE EPIDEMIOLOGY OF TUBERCULOSIS IN EGYPT

THESIS

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(Chest Diseases and Tuberculosis)

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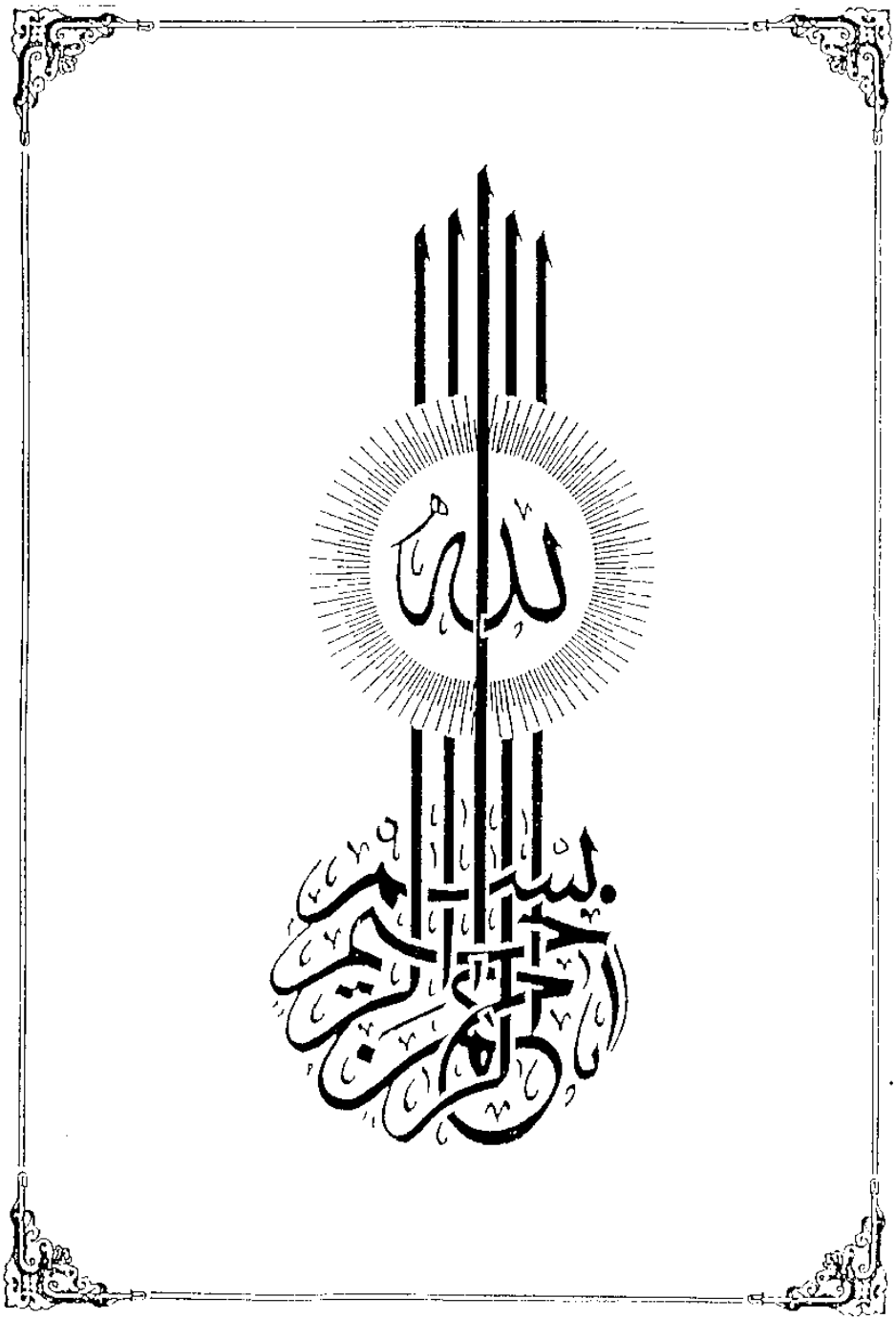

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INTRODUCTION

INTRODUCTION AND HISTORICAL REVIEW

Inspite of the marked decrement in the incidence of tuberculosis in most developed countries, as a result of improved socioeconomic and hygenic level as well as a consequence to advances in anti-tuberculous therapy , tuberculosis is still one of the principle causes of death and suffering in developing countries including Egypt.

The Egyptians of antiquity made statuettes, engravings and paintings on stone and recorded some descriptions of consumptive their mumified bodies have revealed definite evidence of tuberculosis of bones and joints, tuberculosis as was evident in mumies indicated that as early as 5000 BC, man suffered from it.

Tuberculosis eventually aquired aspecific meaning with the discovery of tubercle bacillus by Robert Koch 1882.

X-rayes was discovered in 1845 by Professor Roentgen and were put to clinical use by 1904. The findings of radiology and bacteriology helped in developing further knowledge of the disease and correlation between them.

In 1907 Von Pirquet discovered the tuberculin test soon after the first world war, the B.C.G. Vaccine was evolved by French Scientists Calmett and Guerin, and was tested in 1921. In 1933 Calmette showed that the immunity conferred by B.C.G. lasts for more than five years and that revaccination were harmless.

The dramatic improvements intuberculosis problem have occured in the last thirty years. Many achievements have been gained in the battle against tuberculosis. This is attributed to improved socioeconomic conditions and discovery of antituberculous drugs, streptomycine (1944) paraaminosalicylic acid (1946) and isoniazid (1951). New drugs rifampicin and ethambutol (1968) have greatly improved the case rate of tuberculosis.

Many indices (such as the prevelance rate, incidnece rate, the infection rate and mortality rate)can be used for estimating the disease in the community, defferent regions and areas and also for comparison in the same area in defferent periods so such information will be of national significance.

Dr. M.G. Candau ,
stressed the fact that tuberculosis still kills over 3

million people each year. The situation, he added is particularly serious in developing countries where surveys show that one person in a hundred people has active tuberculosis, and worse - still 70% of children may be infected before reaching the age of 14[10].

Tuberculosis affects all age groups especially infants and children. In infancy it has high fatality because of tendency to occurance of acutehaematogenous forms of the disease, miliary tuberculosis and tuberculous meningitis. All types of tuberculosis are detected in the pediatric age group including pulmonary tuberculosis and extra-pulmonary tuberculosis which affects many organs as lymph nodes, bones and joints, genitourinary tract , serous membranes (Pleura, Peritoneum and Pericardium) meninges and intestine. Congenital tuberculosis (with the primary in the liver followed by lymph nodes of the porta hepatis and spleen) also do occur.

Tuberculosis was proved to be one of the main causes of marasmus and kowashiorkor . The fatality rate among the tuberculous cases is very high 83.3% of the cases of marasmus and kowashiorkor beyond the third year of life was due to tuberculosis. This call for urgent and active measures to be taken for the control of this preventable disease.[17]

AIM OF STUDY

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The aim of this study is to discuss and review childhood tuberculosis with particular reference to the epidemiology of tuberculosis in Egypt.

REVIEW OF LITERATURE

BACTERIAL PROPERTIES

The tubercle bacillus, mycobacterium tuberculosis,was discovered by Koch in 1882 . There are five strains of tubercle bacillus.

Human type : The strain most commonly encountered in human infection especially the lungs.

Bovine type : primarly affecting cattle. It is pathogenic for man causing non pulmonary tuberculosis and occasionally a minority of pulmonary cases.

Avian type : naturally found in birds . It has been reported in very rare causes of human infection, possibly through the ingestion of infected eggs[23].

Murine type and Reptilian type : which are not pathogenic to man.

Habitate : M. tuberculosis gives rise to tuberculosis in man and is occasionally found to infect other animals. Multiplication outside the host tissue does not occur naturally[45].

Morphology and Staining : In films of sputum the human strains may be selender and straight a slightly curved

rods 2 um x 0.3 um, and the beive strains are straight and stabby. They may occur singly or in pairs often forming an obtuse angle or in small bundles of parallel bacilli. The organism is non motile, non sporing-owing to the high wax content of cell wall, it is difficult to stain. In the Ziehl - Neelson stain, it resist decolorization with 20-40% H_2SO_4 or with alcohol so it is alcohol fast-acid fast. The organism is strictly aerobe. Media enriched with egg proteins e.g. Dorsets egg media or Lowenstein Jensen medium, are most appropriate for its cultivation.(14) The bacillus may remain viable in dried sputum or dust for months if in a dark place, but is destroyed by heat (boiling and pasteurization and phenol.(23)

Mode of infection : By the inhalation of organisms present in fresh droplet or the dust of dried sputum expectorated from an open case of pulmonary tuberculosis. These are the possible methods of acquiring infection : inhalation, ingestion, and inoculation of the skin from post mortem material is little more than a curiosity. Congenital tuberculosis has been described in a few cases as a result of transplacental spread.(61)

A typical mycobacteria :

Occasionally cases of human tuberculosis are encountred in which atypical bacilli are isolated. They differ from mycotuberculosis in being nonpathogenic to guinea-pigs and resistant to antituberculous drugs, especially isoniazid. In the past such organisms have often been described as non pathogenes but it is naw accepted that they cause disease generally milder than classical tuberculosis. The atypical bacilli have been subdivided provisionally into four groups.

Group I, Photochromogen ———— Myco - Kanasii.

Group II, Scotochromogen.

Group III, Non chromogen, the organism in this group is closly related to avian bacillus.

Group IV, fast growing organisms. It includes Myco. Phelei Myco . Smegmatis. Organisms in this group are the least pathogenic, but occasionally cause adenitis in children[61].

Aetio-Pathogenesis of Tuberculosis

These are different factors influence the susceptibility of an individual to tuberculosis :

A) Constitutional factors.

B) Hormonal factors

C) Environmental factors.