STUDY ON THE INCREASING CLINICAL IMPORTANCE OF THE ATYPICAL MYCOBACTERIA " TUBERCULOID BACILLI " WITH SPECIAL EMPHASIS ON ITS LABORATORY DIAGNOSIS AND TREATMENT

Essay

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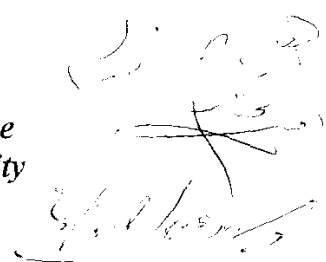

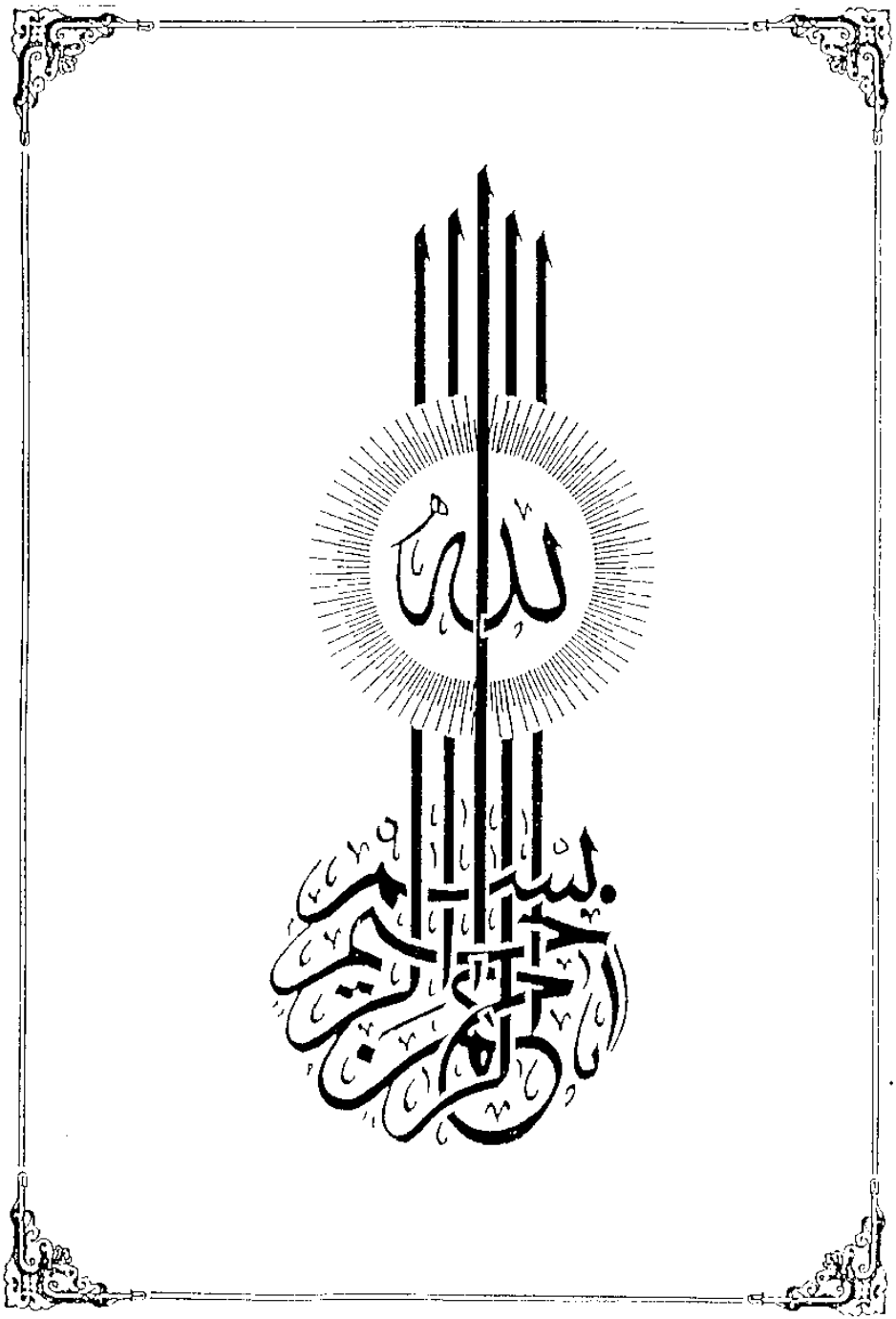

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LIST OF ABBREVIATIONS

AE-DNA	:	Acridinium ester-labelled-DNA
AFB	:	Acid fast bacilli
AIDS	:	Acquired immunodeficiency syndrome
BAL	:	Bronchoalveolar lavage
BCG	:	Bacille calmette Guerin
CFU	:	Colony-forming unit
CIP	:	Ciprofloxacin
CLA	:	Clarithromycin
CPC	:	Celylpyridinium chloride
CSF	:	Cerebrospinal fluid
ELISA	:	Enzyme linked immunosorbent assay
GI	:	Growth index
GLC	:	Gas-liquid chromatography
HIV	:	Human immunodeficiency virus
HPA	:	Hybridization protection assay
HPLC	:	High performance liquid chromatography
IFN	:	Interferon
L-J	:	Lowenstein-Jensen
M.	:	Mycobacterium
MAC	:	Mycobacterium avium complex
MAI	:	Mycobacterium avium-intracellulare
MAIS	:	Mycobacterium avium-intracellulare-schrofulaceum
MB	:	Middlebrook
MOTT	:	Mycobacterium other than tubecle bacilli
M.TB	:	Mycobacterium tuberculosis
NALC	:	N-acetyl-L-cysteine
NAP	:	p-nitro-α-acetylamino-β-hydroxypropiophene
PBL	:	Prepheral blood lymphocyte
PCR	:	Polymerase chain reaction
PPD	:	Purified protein drivative
Py-MS	:	Pyrolysis mass spectrometry
RIF	:	Rifambin
T.B.	:	Tuberculosis
TCH	:	Thiophene-2-carboxylic acid hydrazide
TLC	:	Thin-layer chromatography
TSA	:	Tuberculostearic acid

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INTRODUCTION

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INTRODUCTION

Genus Mycobacterium is one of the most widely distributed bacterial genera in nature. The generic name *Mycobacterium* was given to a group of bacteria which grow as mould-like pellicles on liquid media *(Grange, 1994)*. Genus *Mycobacterium* comprises, a large group of acid-fast, alcohol-fast, aerobic or microaerophilic, non-motile, non-sporforming bacilli, 0.2 to 0.6 x 1 to 10 μm in size. They occasionally form branched filaments, but these can be readily disrupted *(Murray et al., 1994)*.

The lipid content of mycobacterial cell wall is very high, the most characteristic components are genus-specific, alpha-hydroxy branched chain fatty acids of high molecular weight " **mycolic acid** ". The mycobacterial cells are difficult to stain, but once stained resist decolourization with acid and alcohol. They are Gram-positive, but some species are poorly colored even after prolonged staining. They are straight or slightly curved rods, but coccobacillary, filamentous and branched forms also may occur *(Laidlaw, 1989)*.

This bacteria have a generation time of approximately 20 hours, and thus their isolation and identification may take up to 6 weeks. Catalase, niacin production, reduction of nitrate to nitrite and many other tests used to diagnose mycobacterial species *(Hall and Howard, 1994)*. The genus *Mycobacterium* includes numerous pathogens and saprophytic organisms. They includes over 30 species, most of which are well defined. The commoner species are classified into:

1. The typical tubercle bacilli, *M.tuberculosis* and *M.bovis*.
2. The atypical mycobacteria, including commensal,

saprophytic, and opportunistically pathogenic species.

3. The Mycobacterium leprae.
4. The strict animal pathogens *(Baron et al., 1994).*

The atypical mycobacteria have many other names, including pseudotubercle bacilli, unclassified mycobacteria, non-tuberculous mycobacteria, tuberculoid bacilli, opportunistic mycobacteria, environmental mycobacteria, anonymous mycobacteria, and mycobacteria other than tubercle bacilli " MOTT " which is the preferred term *(Yeager and Jr, 1994).* Many tuberculoid bacilli occasionally cause opportunistic infections in man indistinguishable clinically, radiologically and histologically from that caused by the human tubercle bacilli *(Lillo et al., 1990).* And may present diagnostic and therapeutic difficulties *(Hopkin, 1995).*

The rate of isolation of MOTT had increased over the past several years; in some areas, the isolation rate for Mycobacterium avium- intracellulare has risen than that for M.tuberculosis. Simultaneously, the spectrum of clinical manifestations associated with the various species has widened. Mycobacteria other than tubercle bacilli differ from M.tuberculosis in several respects. They are widely spread in nature, and their pathogenic potential for humans varies; they may colonize on individual without causing invasive disease *(Hoover, 1995).* Thus in contrast to M.tuberculosis which is always considered a pathogen when isolated, but MOTT, when isolated are not necessarily equated with disease *(Shafer and Sierra, 1992).* The isolation of a tuberculoid bacillus on a single occasion is not a sufficient evidence that it is the cause of the patient's illness; it may be a secondary invader or a contaminant. Three to six isolations of the organism are