

Screening for Pulmonary Tuberculosis among Elderly Patients in Sohag Chest Hospital

Thesis

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قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْحَكِيمُ

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List of Abbreviations

Abbrev.	Full term
APCs	AntigenPresenting Cells
ADA	Adenosine De Aminase
AFB	Acid Fast Bacilli
AIDS	Acquired Immunodeficiency Syndrome
ATT	Anti Tuberculous Therapy
BCG	Bacille Calmette Guerin
CD	Cluster of differentiation
CDC	Centers for Disease Control and prevention
CR	Complement receptors
CT/PET	ComputedTomography/PositronEmission Tomography
DCs	Dendritic Cells
DOTs	Directly Observed Treatment Short Course
DTH	Delayed type hypersensitivity reaction
HCWs	Health Care Workers
HEPA	High Efficiency Particulate Air
HIV	Human Immunodeficiency Virus
IFN-γ	Interferon Gamma
IGRAs	Interferon Gamma Release Assays
IL	InterLeukin
LAM	lipoglycan lipoarabinoMannan
LFTs	liver Function Tests
LTBI	latent Tuberculosis Infection
M. TB	Myobacterial Tuberculosis
MDR-TB	MultiDrug-Resistant TB

List of Abbreviations *(Cont...)*

Abbrev.	Full term
MHC	Major Histocompatibility Complex Class
MOHP	Ministry of Health and Population
NAA	Nucleic acid amplification
NK CELLS	Natural Killer Cells
NPIR	negative pressure isolation rooms
NTM	NonTuberculous Mycobacteria
NTP	National Tuberculosis Control Programme
OT	Old tuberculin
PBMCs	Peripheral Blood Mononuclear Cells
PPD	Purified Protein Derivative
QFT-GIT	QuantiFERON-TB Gold In-Tube
SCC	Standardized short- Course Chemotherapy
TH1	T helper 1 cell
TH2	T helper 2 cell
TLR-2	Toll-Like Receptor-2
TNF α	Tumor necrosis factor α
TST	Tuberculin Skin Testing

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Introduction

Tuberculosis (TB) remains a major global health problem. It causes ill-health among millions of people each year and ranks as the second leading cause of death from an infectious disease worldwide, after the human immunodeficiency virus (HIV). In 2011, there were an estimated 8.7 million incident cases of TB (range, 8.3 million-9.0 million) globally, equivalent to 125 cases per 100,000 population. Of the 8.7 million incident cases, an estimated 0.5 million were children and 2.9 million (range, 2.6-3.2 million) occurred among women (*WHO, 2012*).

Tuberculin skin testing (TST) is a broth culture filtrate of tubercle bacilli, was first prepared by Robert Koch in 1880 and wrongly promoted as a cure for tuberculosis. Subcutaneous injection of tuberculin into patients with tuberculosis resulted in severe systemic upset whereas non-tuberculous individuals showed few or no symptoms (*Koch, 1890*).

Tuberculin skin testing (TST) has a more limited role to play in the diagnosis of active tuberculosis than it does in identifying patients with latent tuberculosis infection, and this is particularly true in older individuals. In tuberculosis patients in general, TST can be negative about 20% of the time in the setting of active disease, and the skin test will be negative even more often in older patients. The higher frequency of negative TST in older patients probably reflects a higher prevalence of energy in this population due to impaired T-cell function (*Leduc, et al., 1997*).

That is can be explained by, in elderly individuals several changes occur in the immune system for example, the number of circulating lymphocytes decreases by approximately 15%, primarily due to decreased number of T cells. Fewer interleukin-2 receptors in the lymphocyte cell membrane and decreased levels of adenosine triphosphate in the lymphocyte cytoplasm result in decreased lymphocyte proliferation in response to antigen stimulation. The absence of a reaction to TST in any individual does not rule out TB disease or infection; this is particularly true among the elderly so negative results cannot rule out the diagnosis of active tuberculosis in elderly patients (***Gelato, 1996***).

Older patients with pulmonary tuberculosis may have relatively few symptoms, so clinicians need to have a high index of suspicion in order to make a diagnosis. So after a history and physical examination are completed, the first diagnostic examination-to be performed will usually be a chest radiograph. The radiology of tuberculosis in older persons has been well-described. Certainly, upper lobe, cavitary disease is often seen in this age group Thus, a negative TST should not be taken as strong evidence against the diagnosis of active tuberculosis in an older patient if epidemiologic, clinical and radiographic features support the diagnosis (***Perez Guzman et al., 1999***).

Aim of the Work

To screen for pulmonary tuberculosis among elderly patients above 65 years in Sohag chest Hospital

Tuberculosis

Historical Overview

Consumption, phthisis, Scrofula, Pott's disease, and the White Plague are all terms used to refer to tuberculosis throughout history.

Signs of the disease have been found in Egyptian mummies dated between 3000 and 2400 BC. It appears likely that Akhenaton and his wife Nefertiti both died from tuberculosis, and evidence indicates that hospitals for tuberculosis existed in Egypt as early as 1500 BCE.

In 460 BC, Hippocrates identified phthisis (Greek word) meaning "consumption" as the most widespread disease of the times and notes that is almost always fatal.

In 1854 AC, Brehmer built the first sanatorium in Gorbersdorf, Poland, to provide two main functions: guarantee isolation of the sick from the general population and assist the healing process through enforced rest and proper diet.

In 1882, Koch identified the tubercle bacillus and convicts it of causing tuberculosis.

In 1900, Calmette and Guérin discover the vaccine (BCG) that is obtained from attenuation of a strain of *Mycobacterium bovis*.