

بسم الله الرحمن الرحيم



-Call 4000





شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم





جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأقراص المدمجة يعبدا عن الغبار





Pattern of Tuberculosis in El Maamora Chest Hospital, Alexanderia, Egypt, During the Period (2014-2018)

Thesis

Submitted for Partial Fulfillment of Master Degree In Chest Diseases

${f B} {f y}$ Tamer Mohamed Salem

M.B.B.Ch, Faculty Medicine - Alexanderia University

Under supervision of

Prof. Tarek Mohamed Aziz Safwat

Professor of Chest Diseases Faculty of Medicine – Ain Shams University

Prof. Tamer Mohamed Ali

Professor of Chest Diseases Faculty of Medicine – Ain Shams University

> Faculty of Medicine Ain Shams University 2021



سورة البقرة الآية: ٣٢

Acknowledgment

First and foremost, I feel always indebted to **ALLAH**, the Most Kind and Most Merciful.

I'd like to express my respectful thanks and profound gratitude to **Prof. Tarek Mohamed Aziz Safwat,**Professor of Chest Diseases - Faculty of Medicine- Ain Shams University for his keen guidance, kind supervision, valuable advice and continuous encouragement, which made possible the completion of this work.

I am also delighted to express my deepest gratitude and thanks to **Prof. Tamer Mohamed Alli,** Professor of Chest Diseases, Faculty of Medicine, Ain Shams University, for his kind care, continuous supervision, valuable instructions, constant help and great assistance throughout this work.

I present my deepest gratitude to my dear colleagues in **El maamora** Chest Hospital who supported me, supplyed me with many important and up to date scientific materials and encouraged me for more and more hard and accurate work.

Finally, my great thanks extended also to My Family especially My Wife who beared a lot of hard times and encouraged me to finish this work successfully.

Eamer Salem

List of Contents

Title	Page No.
List of Abbreviations	i
List of Tables	iii
List of Figures	v
Abstract	vii
Introduction	1
Aim of the Work	3
Review of Literature	
Tuberculosis	4
Epidemiology of Tuberculosis in Egypt	18
Complications of Tuberculosis	21
Diagnosis of Tuberculosis	37
Treatment of Tuberculosis	64
Patients and Methods	87
Results	92
Discussion	119
Summary	134
Conclusion	139
Recommendations	140
References	142
Arabic Summar	

List of Abbreviations

Full term Abb. ADA Adenosine deaminase AFB...... Acid-fast bacilli APCs..... Antigen-presenting cells ART..... Antiretroviral therapy BCG Bacillus-Calmette Guerin BLT..... Bone marrow, liver, thymic CDC Centers for Disease Control and Prevention CNS Central nervous system DOTS...... Directly Observed Treatment Short-Course DST...... Drug susceptibility testing EPTB Extrapulmonary tuberculosis FDA Food and Drug Administration FNA Fine needle aspiration HIV Human immunodeficiency IFN-γ..... Interferon-gamma IGRA..... IFN-γ releasing assay IGRAs..... Interferon-gamma release assays IRIS Immune reconstitution inflammatory syndrome LED Light-emitting diodes LPA..... Line probe assay LTBI Latent tuberculosis infection MDR Multidrug-resistant MHC Major histocompatibility complex MLN Mediastinal lymph node MTB...... Mycobacterium tuberculosis

List of Abbreviations Cont...

Full term Abb. NAA Nucleic acid amplification NAAT...... Nucleic acid amplification test NAT2 N-acetyltransferase NTM Nontuberculous mycobacterial PAMPS Pathogen-associated molecular patterns PCR..... Polymerase chain reaction PRRs..... Pattern recognition receptors PTB..... Pulmonary TB Rpf Resuscitation-promoting factor SIV..... Simian immunodeficiency virus TA Toxin-antitoxin TB Tuberculosis TB-LAM..... TB lipoarabinomannan TDM...... Therapeutic drug monitoring TLRs Toll-like receptors TST...... Tuberculin skin test WHO...... World Health Organization

List of Tables

Table No.	Title Page	No.
Table (1):	Selected acute and chronic TB related complications, by site	
Table (2):	Tuberculosis Drugs, Recommended Dosages, and Common Adverse Events	
Table (3):	Socio-demographic data among 1413 TB patients:	
Table (4):	Clinical data among 1413 TB patients:	93
Table (5):	Clinical presentations and comorbidities among 1413 TB patients:	
Table (6):	Investigations data among 1413 TB patients.	
Table (7):	Treatment data among 1413 TB patients:	100
Table (8):	Outcome data among 1413 TB patients:	101
Table (9):	Comparison between the 3 groups as regards socio-demographic data using	•
Table (10):	Kruskal-Wallis and Chi square tests: Comparison between the 3 groups as regards clinical data using Chi square test:.	
Table (11):	Comparison between the 3 groups as regards clinical presentations and comorbidities using Chi square test:	
Table (12):	Comparison between the 3 groups as regards investigations data using Chi square test:	
Table (13):	Comparison between the 3 groups as regards treatment data using Chi square test:	
Table (14):	Comparison between the 3 groups as regards outcome data using Kruskal-Wallis	
	and Chi square tests:	112

List of Tables Cont...

Table No.	Title	Page No.
Table (15):	Logistic regression model for the I affecting successful seroconvoccurrence using Forward method:	version
Table (16):	Logistic regression model for the I affecting improvement occurrence Forward method:	Factors using
Table (17):	Logistic regression model for the I affecting deterioration occurrence Forward method:	using

List of Figures

Fig. No.	Title Page N	10.
Figure (1):	A 52-year-old man with severe pulmonary tuberculosis causing total fibrocavitary destruction of the left lung	35
Figure (2):	Biphasic Decline in Viable Bacteria during Treatment for Tuberculosis	66
Figure (3):	CT Scans of the Lung in a Patient with Pulmonary Tuberculosis	69
Figure (4):	Sites and Mechanisms of Action of Antimycobacterial Agents	85
Figure (5):	Year of admission among 1413 TB patients	94
Figure (6):	Patient category among 1413 TB patients	94
Figure (7):	Localization of TB among 1413 TB patients	95
Figure (8):	Clinical presentations among 1413 TB patients.	97
Figure (9):	Comorbidities among 1413 TB patients	97
Figure (10):	CXR affection side among 1413 TB patients	99
Figure (11):	CXR affection severity among 1413 TB patients.	99
Figure (12):	Treatment regimen among 1413 TB patients.	100
Figure (13):	Patient outcomes among 1413 TB patients	102
Figure (14):	Comparison between the 3 groups as regards clinical data.	105
Figure (15):	Comparison between the 3 groups as regards sputum results (before ttt)	109
Figure (16):	Comparison between the 3 groups as regards CXR affection severity.	

List of Figures Cont...

Fig. No.	Title	Page N	lo.
Figure (17):	Comparison between the 3 regards treatment regimen		111
Figure (18):	Comparison between the 3 regards patient compliance	-	111
Figure (19):	Comparison between the 3 regards time of sputum convert (after ttt)	rsion to -ve	113
Figure (20):	Comparison between the 3 regards sputum conversion	-	114
Figure (21):	Comparison between the 3 regards patient outcomes	· -	115
Figure (22):	Comparison between the 3 group deterioration rate	•	115

Abstract

Background: Tuberculosis is a major health problem, tuberculosis affects most of age groups, and this necessitates more attention in the tuberculosis (TB) control program targeting those age group. This study was carried out in El Maamora's chest hospital which is considered as the biggest chest hospital in Alexandria governorates, with a higher rate of outpatient clinic and admission so this study will give us a good analysis of the pattern of tuberculosis in Alexandria.

Objective: This study conducted to assess the TB pattern and to provide an insight into the type of TB infection in El Maamora's chest hospital.

Subjects: A total of 1413 TB patients were included in the study. We included patients diagnosed and treated as pulmonary tuberculosis (PTB), extrapulmonary tuberculosis (EPTB), patients with multidrug-resistant tuberculosis (MDR).

Methods: Data collected about patients included; full history taking, clinical and demographic characteristics, types of TB infection, affected organs, clinical presentations, methods of diagnosis, treatments, and outcomes were recorded.

Results: In the studied population, it was found that, the mean age of all patients was (39.5 ± 14.7) years, with the majority (79.3%) of patients were males; while (20.7%) were females. The average time of sputum conversion of all patients was (2.3 ± 0.8) months; with (51.2%) of patients had sputum conversion to -ve (after treatment). It was found that, (92.1%) improved or cured, (2.2%) had lost follow up, (0.4%) had ICU admission, (1.5%) suffered mortality, (0.8%) refused treatment. The improvement rate was (92.1%), and the deterioration rate (ICU admission and mortality) was (1.9%). There was a highly significant increase in time of sputum conversion in extra-pulmonary TB group; compared to other groups (p < 0.01). Comparative study between the 3 groups revealed a highly significant decrease in sputum conversion after treatment. extrapulmonary TB group; compared to other groups (p < 0.01), and a highly significant increase in improvement rate in pulmonary and extrapulmonary TB groups; compared to MDR TB group (p < 0.01).

Conclusion: Tuberculosis (TB) is a global emergency posing a significant threat to people of all nations. Despite the advance of the DOTS program (Directly Observed Therapy Short Course), TB is still one of the leading causes of death worldwide particularly in developing countries, which have many patterns of infection as pulmonary, extrapulmonary, and MDRS.

Key words: Tuberculosis, prevalence, outcomes

Introduction

Tuberculosis is a contagious bacterial disease, that is a major health problem worldwide (WHO, 2020).

Despite being a potentially curable disease, tuberculosis is the second leading infectious cause of death worldwide (after AIDS), killing around 2 million people per year. Tuberculosis can attack people of any sex, age, or socioeconomic class (Organization, 2005).

In reality, tuberculosis is likely to claim its greatest toll from strata of the population, and it is important to identify these for planning and implementing TB control (Chapman et al., 2014).

In 2014, there were an estimated 9.6 million new TB cases, more than 90% of the new cases and deaths occurs in developing countries.

Egypt has massively engaged in early case detection, provision of adequate chemotherapy, and prevention of transmission to new cases (WHO, 2013).

The prevalence of TB in Egypt was 26 per 100.000 people according to the world health organization estimate in 2014, while the incidence rate of 15 per 100.000 people (WHO, 2015).