



بسم الله الرحمن الرحيم

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**A Retrospective Analysis of Epidemiological
features and Clinical Outcomes of Patients with
Malignant Pleural Mesothelioma Treated in Ain
Shams Clinical Oncology Department in the
Period from 2017 to 2020**

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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List of Contents

Title	Page No.
List of Abbreviations.....	i
List of Tables	v
List of Figures	vii
Introduction	1
Aim of the Study	6
Review of Literature	
Etiology and Risk Factors.....	7
Epidemiology of Mesothelioma.....	26
Diagnosis and Staging.....	30
Management.....	52
Survival and Prognostic Factors	70
Patients and Methods.....	74
Results	77
Discussion	101
Summary	117
Conclusion	119
Limitations.....	120
Recommendations	121
References	122
Arabic Summary	—

List of Abbreviations

Abb.	Full term
AKT	Serine/threonine protein kinase
ARD	Asbestos Related Disease
BAP 1.....	BRCA1 associated protein 1
BAP1-TPDS.....	BAP1 Tumor Predisposition Syndrome
BCL2.....	B-cell lymphoma 2
CDK4	Cyclin dependent kinase 4
CDKN2A.....	Cyclin dependent kinase inhibitor 2A
CDX2	Caudal-type homeobox 2
CEA	Carcinogenic embryonic antigen
CGH.....	Comparative Genomic Hybridization
CK.....	Cytokeratin
CT	Computed tomography
CTGF	Connective tissue growth factor
CTLA-4	Cytotoxic T-lymphocyte protein 4
DMM.....	Diffuse malignant mesothelioma
E(B)US-FNA	Endobronchial ultrasound- fine needle aspiration
ECOG	Eastern Cooperative Oncology Group
EGFR.....	Epidermal growth factor protein
EMA.....	Epithelial membrane antigen
EMT.....	Epithelioid mesenchymal transition
EPP	Extrapleural Pneumonectomy
FAK	Focal Adhesion Kinase
FDA	Food and Drug administration
FDG PET.....	18 Fluor-2-deoxy-glucose positron emission tomography
FEV1.....	Forced expiratory volume in 1s
FGF.....	Fibroblastic growth factor

List of Abbreviations Cont...

Abb.	Full term
FISH	Fluorescence in situ hybridization
FNA	Fine needle aspiration
FVC.....	Forced vital capacity
GLUT 1.....	Glucose transporter1 (GLUT 1)
HEG1.....	Heart Development Protein With EGF Like Domains 1
IHC	Immunohistochemistry
IMIG	International mesothelioma interest group
IMP3.....	Insulin like growth factor m-RNA binding protein 3
IMRT	Intensity-modulated radiation therapy
IPV.....	Inactivated Polio vaccine
LAT.....	Local anesthesia thoracoscopy
LCSS.....	Lung cancer symptom scale
LMM	Localized malignant mesothelioma
MDM2.....	Mouse double minute 2
MDSCs	Myeloid-derived suppressor cells
MM	Malignant mesothelioma
MPM.....	Malignant pleural mesothelioma
MRI.....	Magnetic resonance imaging
MTAP	Methyl-thio-adenosine phosphorylase
NF.....	Neurofibromin
NF-KB	Nuclear factor-kB
NK	Natural killer
ORR	Overall response rate
OS	Overall survival
PD-1	Programmed death -1
PDGF	Platelet derived growth factor

List of Abbreviations Cont...

Abb.	Full term
PDGFR	Platelet derived growth factor receptor
PET	Positron emission tomography
PFS	Progression free survival
PSA	Prostatic specific antigen
RAS	Rat sarcoma virus
RASSF1A	RAS association domain family 1 isoform A
pRB	Retinoblastoma protein
RECISTs	Response evaluation criteria in solid tumors
RHR	Radical Hemithoracic Radiotherapy
RNS	Reactive nitrogen species
ROS	Releasing reactive oxygen species
SMART	Surgery for mesothelioma after radiation therapy
SOX10	SRF-Box Transcription Factor 10
STAT6	Signal Transducer And Activator Of Transcription 6
STROBE	Strengthening the reporting of observational studies in epidemiology statements
SV	Simian virus
TAMS	Tumor associated macrophages
TKI	Tyrosine Kinase inhibitors
TNFA	Tumor necrosis factor- α
TNFA	Tumor necrosis factor- α receptor
mTOR	Mammalian Target of Rapamycin
Treg	Regulatory lymphocytes
TTF-1	Thyroid transcription factor 1
WHO	World Health Organization
WDPM	Well differentiated papillary mesothelioma

List of Abbreviations Cont...

Abb.	Full term
WT1	Wilm's tumor antigen1
VATS	Video-assisted thoracic surgery
VEGF.....	Vascular endothelial growth factor
VEGF.....	Vascular endothelial growth factor receptor

List of Tables

Table No.	Title	Page No.
Table (1):	Current incidence and projected future case load for malignant mesothelioma.....	27
Table (2):	Morphological subclassification of epithelioid and sarcomatoid mesotheliomas.	33
Table (3):	IHC markers for diagnosis and differentiation of MM.....	38
Table (4):	Immunohistochemistry for separating sarcomatoid mesothelioma from squamous and transitional cell carcinoma	41
Table (5):	Immunohistochemistry to separate epithelioid mesothelioma from adenocarcinoma.....	42
Table (6):	Investigations to be considered in patients who are candidates for surgery or multimodal treatment.....	48
Table (7):	AJCC prognostic groups.....	50
Table (8):	International mesothelioma interest group (IMIG) staging system for malignant pleural mesothelioma	51
Table (9):	Demographic data.....	78
Table (10):	Medical history: Risk factors.....	79
Table (11):	Comorbidities in patients with mesothelioma.....	80
Table (12):	Clinical data	81
Table (13):	Tissue biopsy.....	83
Table (14):	Immunohistochemistry.....	84
Table (15):	Clinico-pathological criteria of tumor.....	85
Table (16):	Treatment details.....	89
Table (17):	Treatment details continued	91

List of Tables Cont...

Table No.	Title	Page No.
Table (18):	PFS after 1st line chemotherapy	92
Table (19):	Log rank test and correlation of PFS after 1st line with Pathological subtype	93
Table (20):	Log rank test and correlation of PFS after first line with stage of tumor.....	93
Table (21):	Log rank test and correlation of PFS after first line with ECOG of patient at presentation	95
Table (22):	PFS after 2nd line chemotherapy.....	96
Table (23):	Overall survival.....	97
Table (24):	Log rank test for correlation of OS with different variables.....	98

List of Figures

Fig. No.	Title	Page No.
Figure (1):	Bucket shape pottery from Telemark, also found in several other areas in Norway, from the Bronze age to the roman period	8
Figure (2):	New Cases of Mesothelioma classified as occupational disease according to Regulation concerning occupational diseases obtained from the database of the German Mesothelioma Register.....	9
Figure (3):	Molecular mechanisms associated with MM pathogenesis. Inhaled asbestos fibers transverse terminal airways and lodge themselves in the pleural space.	13
Figure (4):	BAP1 Controls Distinct Cellular Activities by Modulating DNA Repair and Ca ²⁺ Intracellular Levels.....	20
Figure (5):	Epidemiological Patterns of Mesothelioma Incidence in 195 Countries and Territories	28
Figure (6):	Representation of the normal parietal pleura, the visceral pleura and pleural mesothelioma with the most abundant cell types.....	31
Figure (7):	Demonstration of 18-fluorodeoxyglucose position emission computed tomography scanning (18-FDG PET CT) in a patient with prior asbestos exposure who was diagnosed with a locally advanced epithelioid malignant pleural mesothelioma of the right hemithorax.....	48
Figure (8):	Current treatment for MPM. DP: disease progression.	53
Figure (9):	Survival according to type of treatment.....	55

List of Figures Cont...

Fig. No.	Title	Page No.
Figure (10):	Chemotherapy regimens used in first, second and third line (% of cycles)	57
Figure (11):	View through a left thoracotomy.	63
Figure (12):	Kaplan-Meier survival curve for all patients surviving surgery	64
Figure (13):	Overall survival as an intention to treat analysis of all patients undergoing surgery for mesothelioma after radiation therapy	66
Figure (14):	Structure definition and dose distribution for one MPM patient (Step & Shoot IMRT)	67
Figure (15):	Pie chart showing history of mesothelioma among study group	79
Figure (16):	Bar chart showing percentage of each presenting symptom among the study group	82
Figure (17):	Pie chart showing ECOG at presentation of patients among study group	82
Figure (18):	Pie Chart showing the pathological subtypes of MPM.	87
Figure (19):	Pie chart showing the T stage of cases.	88
Figure (20):	Pie Chart showing the N stage of MPM.	88
Figure (21):	PFS after 1st line chemotherapy.	92
Figure (22):	PFS after 1st line chemotherapy with stage of tumor	94
Figure (23):	PFS after 1st line chemotherapy with ECOG of patient at presentation	95
Figure (24):	PFS after 2nd line chemotherapy.	96
Figure (25):	Overall survival (months)	97

List of Figures Cont...

Fig. No.	Title	Page No.
Figure (26):	Correlation of OS with stage of tumor.....	99
Figure (27):	Correlation of OS with ECOG at presentation.....	100

INTRODUCTION

Malignant mesothelioma (MM) is a rare tumor that originates from the inner lining of the body's serous cavities (pleura, peritoneum, pericardium, and vaginal tunic of the testicle). Malignant pleural mesothelioma (MPM) is a rare but deadly form of cancer originating from mesothelial cells lining the pleural cavity. Diffuse malignant mesothelioma (DMM) needs to be distinguished from other mesotheliomas that have a much better prognosis, including localized malignant mesotheliomas (LMMs) and well differentiated papillary mesotheliomas (WDPMs) (*Travis et al., 2013*).

According to 2015 WHO classification, DMM is divided to three morphological subtypes, namely, epithelioid which accounts for 50-60% of MPMs, sarcomatoid 10-20% and biphasic 25-35% when there is a combination of more than 10% of epithelioid and sarcomatoid pattern (*Galateau Salle et al., 2018*).

Within the category of pleural epithelioid DMMs, variety of morphologic subtypes are recognized—including tubulopapillary, papillary, micropapillary, trabecular, solid, and pleomorphic, which reveal an aggressive behavior. Tumors with anaplastic or prominent giant cells, often multinucleated, are designated pleomorphic (*Brčić et al., 2014*).

The World Health Organization (WHO) estimates that asbestos-related disease (ARD) accounts for 92 250 deaths per year globally from mesothelioma (*Delgermaa et al., 2011*).