A Retrospective Study of Epidemiology and Prognostic Factors of Small Cell Lung Cancer

Thesis

Submitted for Partial Fulfillment of the Master Degree in Clinical Oncology and Nuclear Medicine

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2018

سورة البقرة الآية: ٣٢

First of all, thanks to Allah whose magnificent help was the main factor in completing this work.

No words could express my deepest thanks and appreciation to Prof. Hesham Mahmoud El Wakiel, Professor of Clinical Oncology and Nuclear Medicine, Faculty of Medicine, Ain Shams University, for inspiring me with the idea of this work. His patience, precious advice and guidance enlightened my way throughout this work.

I want also to express my profound gratitude to Assist. Prof. Mahmoud El Lithy, Assistant Professor of Clinical Oncology and Nuclear Medicine, Faculty of Medicine, Ain Shams University, for his patience, valuable advice and continuous help in completing this work.

I am also deeply indebted to Dr. Sherif Hassanien Ahmed, Lecturer of Clinical Oncology and Nuclear Medicine, Faculty of Medicine, Ain Shams University, for his kind help, continuous encouragement and support all through my entire work.

Finally, my deepest thanks to all my family and colleagues who helped me in the production of this work.

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List of Abbreviations

ADPRT : ADP-ribosyltransferase

AJCC : American Joint Committee on Cancer

Alb : Albumin

ASCL1 : Achaete-Scute Homologue 1

CAV : Cyclophosphamide, adriamycin and vincristine

CBCT : Cone beam computed tomography

CDK5 : Cyclin dependent kinase 5

CGRP : Calcitonin gene related peptide

CHD5 : Chromodomain helicase DNA binding protein 5

CHD7 : Chromodomain helicase DNA binding protein 7

CRP : C-reactive protein

CT : Computed tomography

CTV : Clinical target volume

DDR2 : Discoidin domain receptor tyrosine kinase 2

DUSP27 : Dual specificity phosphatase 27

EBUS-TBNA: Endobronchial ultrasound-guided transbronchial needle aspiration

ECOG : Eastern Cooperative Oncology Group

ED : Extensive disease

EGFR : Epidermal growth factor receptor

ELCWP : European Lung Cancer Working Party

ENI : Elective nodal irradiation

EP : Etoposide platinol

ES : Extensive stage

ES-SCLC : Extensive-stage small cell lung cancer

FAT1 : FAT atypical cadherin 1

GISTs : Gastrointestinal stromal tumors

GTV : Gross tumour volume

HGNET : High-grade neuroendocrine tumor

IFI : Involved field irradiation

IHC : Immunohistochemistry

ILD : Interstitial lung diseases

IMRT : Intensity-modulated radiation therapy

irPFS : Immune-related PFS

LCNEC : Large cell neuroendocrine tumors

LD : Limited disease

LDH : Lactate dehydrogenase

LDH : Lactate dehydrogenase level

LS : Limited stage

LS-SCLC : Limited-stage SCLC

MGMT : Methylguanine-DNA methyl-transferase

mGPS : Modified Glasgow Prognostic Score

MLL3 : Lysine methyltransferase 2C

MRI : Magnetic resonance imaging

NBS1 : Niprin

NCAM1 : Neural cell adhesion molecule

NEUROD1 : Neuronal Differentiation 1

NKX2.1 : NK2 homeobox 1

NSE : Neuron specific enolase

OS : Overall survival

PET : Positron emission tomograph

PS : Performance status

PTEN : Phosphatase and tensin homolog

PTH : Parathyroid hormone

PTHrP : Parathyroid hormone related protein

RB1 : Retinoblastoma susceptibility gene

Rb-p53 : Tumor protein 53

RT : Radiation therapy

SCLC : Small-cell lung cancer

SUV : Standardized uptake value

TKIs : Kinase inhibitors

TNM : Tumor, Node, Metastasis

TP53 : Tumor protein p53

UICC : Union for International Cancer Control

VALSG : Veterans' Administration Lung Study Group

VATS : Video-assisted thoracoscopy

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Introduction

Lung cancer is estimated to be the second most common cancer type and the leading cause of cancer-related death in both sexes, with an estimated 116,990 new cases in males and 105,510 in females in United States **(Siegel et al., 2017).**

According to GLOBOCAN, 1.8 million cases of lung cancer where registered during 2012, 58% of which occurred in the less developed regions, making up 13% of all cancer deaths **(Torre et al., 2015).**

Small-cell lung cancer (SCLC) is accounting for approximately 15% to 17% of all diagnosed lung cancers, is characterized by a high invasiveness, short doubling time, high growth fraction and ease of metastasis upon diagnosis (**Hamilton et al., 2015; Kahnert et al., 2016).**

In 2017, an estimated 31,000 new cases of SCLC occured in the United States (**Siegel et al., 2017)**

Nearly all cases of SCLC are attributable to cigarette smoking. Although the incidence of SCLC has been decreasing, the incidence in women is increasing and the

male-to-female incidence ratio is now 1:1 (**Govindan et al., 2006; Pesch et al., 2012).**

SCLC cases represent a lower proportion of total lung cancer cases which may be explained by a change in smoking habits and/or a change in the pathological classification of lung cancer **(Ettinger et al., 2006).**

Smoking cessation not only reduces the risk of developing SCLC but also has been shown to decrease the risk of death of patients with localized SCLC by almost 50% **(Parsons et al., 2010).**

SCLC originates from neuroendocrine-cell precursors and is characterized by its rapid growth, its high response rates to both chemotherapy and radiotherapy **(Govindan et al., 2006).**

Patients with small cell lung cancer may present with symptoms and signs of paraneoplastic syndromes, including hypercalcemia, Eaton-lambert syndrome, syndrome of inappropriate diuretic hormone **(Agra et al., 2003).**

Female gender, age younger than 70 years, normal LDH, and stage I disease are associated with a more favorable prognosis in patients with limited-stage disease.