Immunohistochemical Expression of CD 133 and CD 24 for Detection of Cancer Stem Cells in Urinary Bladder Carcinoma (Pilot Study)

Thesis

Submitted for the Fulfillment of M.D Degree in Pathology

By

Tag Ibrahim Omran

Supervised by

Prof. Sanaa Abd El-Maged Sammour
Professor of Pathology
Faculty of Medicine - Ain Shams University

Prof. Zeinab Abd El-kader Shehab El-Din
Professor of Pathology
Faculty of Medicine - Ain Shams University

Prof. Manal Ibrahim Salman
Professor of Pathology
Faculty of Medicine - Ain Shams University

Dr. Rola Mohammed Farid
Assistant Professor of Pathology
Faculty of Medicine - Ain Shams University

Faculty of Medicine
Ain Shams University
2014

Acknowledgement

*First thanks to **Allah**, the most merciful, the compassionate, all praise is to you.*

*Thanks to **Prof. Sanaa AbdEl-Maged Sammour,** Prof. of pathology, Faculty of Medicine, Ain– Shams University for constant guidance, Constructive supervision and following the performance and progress of this thesis.*

*To **Prof . Zeinab AbdEl-kader ShehabEl-Din,** Prof. of pathology,Faculty of Medicine, Ain – ShamsUniversity , for her valuable support , guidance and great concern about this work.*

*To **Prof. ManalIbrahim Salman,** Prof. ofpathology,Ain-Shams University for her effective supervision and great help during the histopathological and immunohistochemical results in this thesis,support,constructive and greatly appreciated advice,great concern about the completion of this studyand for her continuous encouragement throughout the course of this work.*

*To **Dr. RolaMohammedFarid,** AssistantProfessor of pathology,Ain- Shams Universitywho was abundantly helpful and offered great support and guidance,advice, directions and revision ofstudy.*

To all the staff members of Pathology Department, for their sincere encouragement and support throughout the study.

*I'd likethank **Professor. Nahed Khamis,** the Head of the Department and all the respectful Professors as well as my beloved colleagues.*

Special thanks for technicians of Pathology Department, for their help and cooperation.

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List of Abbreviations

TCC: Transitional Cell Carcinoma
SCC: Squamous Cell Carcinoma
CIS: Carcinoma In Situ
BC: Bladder Carcinoma
IHC: Immunohistochemistry
TUR: Trans-Urothelial Resection
UCs: UrothelialCarcinomas
CSCs: Cancer Stem Cells
NCI: National Cancer Institute
EBRT:External Beam Radiation Therapy
HNPCC: Hereditary Non-Polyposis Colorectal Cancer
NOS : NotOtherwise Specified
AJCC:American Joint Committee on Cancer
ICM : Inner Cell Mass
ESC : Embryonic stem cells
HSCs: Hematopoietic Stem Cells
UCC:UrothelialCarcinoma Cells
TICs : Tumor Initiating cells
CIS : Carcinoma In Situ

CT : Computed Tomography
IARC :International Agency for Research on Cancer
HGPUC: High-grade Papillary Urothelial Carcinoma
LGPUC :Low-grade Papillary Urothelial Carcinoma **HTCs** : Highly Tumorigenic Cells
TIC: Tumorigenic Initiating Cancer
EMT: Epithelial Mesenchymal Transition
MET : Mesenchymalto-Epithelial Transition
PSGL-1:P-selectin Glycoprotein Ligand-1
PUNLMP:Papillary Urothelial Neoplasm of Low Malignant Potential
PAHs : polycyclic Aromatic Hydrocarbons

INTRODUCTION

Bladder cancer (BC) is the ninth most commonly diagnosed cancer worldwide, with more than 380,000 new cases each year and more than 150,000 deaths per year, and an estimated male-female ratio of 3.8:1.0 **(Siegel et al., 2013)** .

It is the sixth most common cancer in the United States after lung cancer, prostate cancer, breast cancer, colon cancer, and lymphoma. It is the third most common cancer in men but only the eleventh most common cancer in women. Of the roughly 70,000 new cases annually, about 53,000 are in men and about 18,000 are in women. Of the roughly 15,000 annual deaths, over 10,000 are in men and fewer than 5,000 are in women.The reasons for this disparity between the sexes are not well understood. Estimated new cases and deaths from bladder cancer in the United States in 2014: New cases: (74,690)and Deaths:(15,580) (**American Cancer Society, 2014).**

Over 90% of these bladder cancers are transitional cell carcinomas (TCC) of urothelial origin (urothelial carcinomas or UCs) . At presentation, over 70% will be non–muscle-invasive or stage Ta/T1 tumours, with the remainder being muscle-invasive or stages T2-4 **(Van Rhijn et al., 2009)**.