Evaluation of Bevacizumab (Avastin) Therapy for Diabetic Macular Edema

Thesis Submitted for Partial Fulfillment
of Medical Degree in Ophthalmology

BY

Tarek Mohamed Abdel Aziz

M.B., B.Ch., M.Sc.

Supervised By

Prof. Dr. Hassan Ez-Eldin El Sammaa

Professor of Ophthalmology
Faculty of Medicine
Ain Shams University

Prof. Dr. Sherif Zaki Mansour

Professor of Ophthalmology
Faculty of Medicine
Ain Shams University

Prof. Dr. Ahmed AbdAllah Darwish

Professor of Ophthalmology
Faculty of Medicine
Ain Shams University

Faculty of Medicine

Ain Shams University

Cairo, Egypt

2009

Acknowledgement

*At first and foremost thanks to "**Allah**" who gave me the power to finish this work*

*I would like to express my deepest gratitude and appreciation to **Prof. Dr. Hassan Ez-Eldin Elsamaa,** Professor of Ophthalmology**,** Faculty of Medicine – Ain Shams University**,** for his guidance, Valuable advice, and constructive remakes that added a lot to this work.*

*I owe my thanks to **Prof. Dr. Sherif Zaki,** Professor of Ophthalmology**,** Faculty of Medicine – Ain Shams University**,** for his great efforts, valuable guidance, and great concern that really supported the work.*

*I find no words by which I can express my deepest thanks and profound respect to my honored professor, **Prof. Dr. Ahmed Darwish,** Professor of ophthalmology, faculty of Medicine - Ain Shams University for the continuous kind encouragement, guidance and support he gave me throughout the whole work. .*

I' am greatly indebted to all my staff members in the ophthalmic department and colleagues, for the great support and help offered throughout this study.

Also I would like to thank my wife, daughter, parents, all my relatives who participated in a way or another in this work; I owe my thanks and appreciation.

Last but not least, I would like to express my endless gratitude to my dear patients who were the corner stone of this 'work, wishing them a rapid and complete recovery.

Table of Contents

List of Abbreviations

ACE	:	Angiotensin Converying Enzyme
AII	:	Angiotensin II
BCVA	:	Best Corrected Visual Acuity
BFGF	:	Basic Fibroblast Growth Factor
BRB	:	Blood-Retinal Barrier
CME	:	Cystoid Macular Edema
CSME	:	Clinically Significant Diabetic Macular Edema
DM	:	Diabetic Macular Edema
DME	:	Diabetes Mellitus
DR	:	Diabetic Retinopathy
ELM	:	External Limiting Membrane
ENOS	:	Endothelial Nitric Oxide Synthase
ETDRS	:	Early Treatment Diabetic Retinopathy Study
FA	:	Fluorescein Angiography
FAZ	:	Foveal Avascular Zone
FDA	:	Food And Drug Administration
GCL	:	Ganglion Cell Layer

HGF	:	Hepatocyte Growth Factor
ICAM	:	Intercellular Adhesion Molecule
IL	:	Interleukin
INL	:	Inner Nuclear Layer
IOP	:	Intraocular Pressure
IPL	:	Inner Plexiform Layer
MAR	:	Minimum Angle Of Resolution
ME	:	Macular Edema
MMP	:	Matrix Metalloproteinases
MRNA	:	Messenger RNA
NFL	:	Nerve Fibers Layer
NPDR	:	Non Proliferative Diabetic Retinopathy
OCT	:	Optical Coherence Tomography
ONL	:	Outer Nuclear Layer
OPL	:	Outer Plexiform Layer
PDGF	:	Platelet Derived Growth Factor
PDR	:	Proliferative Diabetic Retinopathy
PHT	:	Posterior Hyaloid Traction

PKC	:	Protein Kinase C
RPE	:	Retinal Pigmented Epithelium
RTA	:	Retinal Thickness Analyzer
SD	:	Standard of Deviation
SMDLP	:	Subthreshold Micropulse Diode Laser Photocoagulation
TA	:	Triamcinolone Acetonide
TGF-B1	:	Trasformig Growth Factor- B1
TNF-A	:	Tumour Necrosis Factor A
VA	:	Visual Acuity
VEGF	:	Vascular Endothelial Growth Factor
VEGF	:	Vascular Endothelial Growth Factor
WESDR	:	Wisconsin Epidemiologic Study Of Diabetic Retinopathy

Aim of the Work

The purpose of the study is to evaluate the use of intravitreal bevacizumab (Avastin) as an adjunctive therapy to laser photocoagulation in cases of DME as regard visual outcome, central macular thickness changes and postoperative complications.

List of Figures

List of Tables