



Benefits of ANTI-VEGF Therapy for Diabetic Macular Edema with and without Vitreomacular Adhesions

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

لَسْبَحَانَكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

صدق الله العظيم

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LIST OF ABBREVIATIONS

DME	: Diabetic macular edema
ANTI-VEGF	: Anti-vascular endothelial growth factor
VMA	: Vitreomacular adhesion
VMT	: Vitreomacular traction
ERM	: Epi-retinal membrane
GAGs	: Glycosaminoglycans
BRB	: The blood-retinal barrier
RPE	: retinal pigment epithelium
JAMs	: junctional adhesion molecules
MAGUKs	: membrane-associated guanylate kinase homologs
ZO-1	: Zonula occludens -1
DR	: Diabetic retinopathy
PDR	: Proliferative Diabetic retinopathy
HbA1C	: glycosylated hemoglobin
AGE	: advanced glycation end products
PKC	: protein kinase C
HIF-1	: hypoxia inducible factor 1
mRNA	: Messenger ribonucleic acid
IGF-I	: Insulin growth factor-I
FGF	: fibroblast growth factor
PDGF	: platelet-derived growth factor
DM	: Diabetic mellitus
PVD	: Posterior vitreous detachment
OCT	: Optical coherence tomography
SD-OCT	: Spectral domain Optical coherence tomography
TD- OCT	: time-domain OCT
PV OCT	: phase-variance OCT
PC OCT	: phase contrast OCT
SSADA	: split-spectrum amplitude decorrelation angiography
FA	: Fluorescein angiography
CSME	: Clinical significant macular edema
SRD	: serous sensory detachment DME
CME	: Cystoid macular edema
PRP	: Pan retinal photocoagulation
NPDR	: non-proliferative diabetic retinopathy

List of Abbreviations

PDR	: proliferative diabetic retinopathy
TA	: Triamcinolone acetonide
Fab fragment	: Fragment antigen- binding
Fc portion	: Fragment crystallizable portion of antibody
VEGFR-1	: vascular endothelial growth factor recptor-1
VEGFR-2	: vascular endothelial growth factor receptor-2
IgG1	: Immunoglobulin G1
PIGF	: placenta growth factor
PPV	: Pars planavitrectomy
ILM	: Internal limiting membrane
wet AMD	: wet age-related macular degeneration
CRVO	: central retinal vein occlusion
CNV	: choroidal neovascularization
VMA+	: Patient having vitreomacular adhesions
VMA-	: Patient not having vitreomacular adhesions
BCVA	: Best corrected visual acuity
CMT	: Central subfield macular thickness
FAZ	: Foveal avascular zone
ETDRS VA	: Early Treatment Diabetic Retinopathy Study visual acuity chart
SD	: standard deviation
IVR	: Intravitreal ranibizumab injection
Iop	: Intraocular pressure
NIDDM	: Non-insulin dependent diabetes mellitus
IDDM	: insulin dependent diabetes mellitus

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INTRODUCTION

Diabetic macular edema (DME) is one of the most popular causes for functional visual loss. For decades DME was treated by laser photocoagulation. However, the benefit of anti-vascular endothelial growth factor (anti-VEGF) has become a turning point for the treatment of DME.⁽¹⁾

The severity of DME has a direct relation to the level of Vascular endothelial growth factor, It increases the abnormal angiogenesis and the permeability of the blood retinal barrier leading to more swelling of the macula. So, anti-VEGF therapy can play an important role in treating DME via inhibition of VEGF.⁽²⁾

Ranibizumab, bevacizumab, and aflibercept are important anti-VEGF drugs with efficacy has been established in phase III clinical trials.⁽³⁾

Vitreomacular interface disease have been reported to occur in up to 7% to 16% of eyes with DME, with annual incidence as high as 4.5%, these anomalies include vitreomacular traction (VMT), epiretinal membrane (ERM) and vitreomacular adhesion (VMA).⁽⁴⁾

A Recent study proved that patients with DME and vitreomacular adhesions have a higher chance for improvement in visual acuity and anatomical outcomes after treatment with anti-VEGF therapy so we should not