Evaluation of Foveal Avascular Zone in Patients with Diabetic Retinopathy without Maculopathy Using Optical Coherence Tomography Angiography

Thesis

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By

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Dedication

I would like to express my hearty thanks to ***my father, my mother, my wife & my colleagues*** *for their support till this work was completed.*

Contents

List of Abbreviations

Abb.	Full term
BCVA	*Best corrected visual acuity*
BM	*Basement membrane*
DCP	*Deep Capillary Plexus*
DM	*Diabetes mellitus*
DME	*Diabetic Macular Edema*
DR	*Diabetic retinopathy*
ELM	*External limiting membrane*
ETDRS	*Early Treatment Diabetic Retinopathy Study*
FAZ	*Foveal avascular zone*
FFA	*Fundus fluorescein angiography*
GCC	*Ganglion cell complex*
GCL	*Ganglion cell layer*
HbA1c	*Glycated hemoglobin*
HR	*Horizontal radius*
ICGA	*Indocyanine green angiography*
ILM	*Internal Limiting Membrane*
INL	*Inner Nuclear Layer*
IRMA	*Intraretinal microvascular abnormalities*
IS-OS	*Photoreceptor inner segment-outer segment*
kHz	*Kilohertz*
Log MAR	*Logarithm of Minimal Angle of Resolution*
NIDDM	*Non Insulin Dependent Diabetes Mellitus*
NPDR	*Non Proliferative Diabetic Retinopathy*
NVD	*New vessels at disc*
NVE	*New vessels elsewhere*
OCT	*Optical coherence tomography*

List of Abbreviations (Cont...)

Abb.	Full term
OCTA	*Optical coherence tomography-angiography*
OMAG	*OCT-based microangiography*
ORL	*Outer retinal layer thickness*
PDR	*Proliferative Diabetic Retinopathy*
PRP	*Pan Retinal Photocoagulation*
RNFL	*Retinal nerve fiber layer*
SCP	*Superficial Capillary Plexus*
SD-OCT	*Spectral-domain optical coherence tomography*
SSADA	*Split-Spectrum Amplitude Decorrelation Angiography*
SS-OCT	*Swept-source OCT*
UKPDS	*United Kingdom Prospective Diabetes Study*
VEGF	*Vascular endothelial growth factor*
VR	*Vertical radius*

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ABSTRACT

Background: Diabetic retinopathy (DR) is the most common complication of diabetes and remains the leading cause of preventable blindness among working-age individuals in most developed countries.

Aim of the Work: To evaluate dimensions of foveal avascular zone at level of superficial and deep capillary plexuses in patients with different grades of non proliferative diabetic retinopathy without maculopathy using optical coherence tomography angiography and to correlate these changes with the best corrected visual acuity, glycemic control of the patients and retinal neuro degenerative changes.

Patients and Methods: This cross sectional study was carried out from February 2018 to August 2018 on 100 eyes of patients attending outpatient clinic of Ophthalmology Department of Research Institute of Ophthalmology in Giza. Those patients were asked to participate and were enrolled in this study. The ethical standards stated by the ethical committee of Ain Shams University hospitals, were followed.

Results: The results of the present study revealed a statistically significant enlargement of FAZ in patients with moderate NPDR group in SCP and severe NPDR group in both SCP and DCP with more accurate delineation of the edges of these zones using OCTA and there was a statistically significant positive correlation between FAZ in SCP and in DCP and BCVA (Log MAR).

Conclusion: Enlargement of foveal avascular zone in SCP and DCP in patients with moderate to severe NPDR without maculopathy was detected using OCTA with accurate delineation of the edges of these zones.

Keywords: *Foveal Avascular Zone - Diabetic Retinopathy - Optical Coherence Tomography Angiography*