EFFECT OF RANIBIZUMAB INJECTION ON DIABETIC MACULAR OEDEMA IN NON-PROLIFERATIVE DIABETIC RETINOPATHY BY OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY

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INTRODUCTION

Macular oedema arises when fluid collects in the macula. This disorder alters vision when the macula enlarges and thickens. Macular oedema results from any disease that injures the retinal blood vessels. Macular oedema is often induced by diabetic retinopathy, a disorder that can impact individuals with diabetes. Macular oedema in diabetes is characterized by retinal thickening within 2 disc diameters of the macula's center, caused by micro vascular changes that disrupt the blood-retinal barrier, resulting in the leakage of plasma components into the adjacent retina and subsequent retinal oedema.

Focal oedema is related to the presence of hard exudate rings caused by leaking from micro aneurysms. Diffuse oedema arises from the exudation of fluid from micro aneurysms, arterioles, and retinal arteries. Clinically significant macular oedema (CSME) greatly worsens the issue of diabetes, which is already the top cause of new visual impairment in the US.

Treatment of DME Anti-VEGF Drugs

- Aflibercept. - Ranibizumab. - Bevacizumab

AIM OF THE WORK

To evaluate the changes in foveal avascular zone (FAZ) and the retinal capillary density after a month of three consecutive monthly intravitreal injections of anti-VEGF for macular oedema in non-proliferative diabetic retinopathy patients.

SUBJECTS AND METHODS

Inclusion Criteria: Diabetic patient (non-proliferative diabetic retinopathy) with macular oedema with no previous history of anti-VEGF injection.

Exclusion Criteria:

- Diabetic patient with previous history of anti-VEGF injection.
- Previously lasered patients.
- Previously vitrectomized patients.
- Macular oedema with double pathology in a diabetic patient.
- Diabetic cases with DME related to epiretinal membranes.
- Diabetic individuals with diabetic macular oedema associated with vitreous hemorrhage.
- Any other macular pathology e.g.; Age related macular degenerations (AMD).

Investigations:

- Fluorescein angiography using Heidelberg retina angiograph (HRA, Heidelberg Engineering GmbH, Dossenheim, Germany).
- Acquisition of SD-OCT scans using spectral domain Heidelberg High-Definition OCT (HRA, Heidelberg Engineering GmbH, Dossenheim, Germany).
- OCT is applied for the purpose of detecting increased retinal thickness as well as high-resolution retinal imaging.
- Heidelberg Engineering OCTA (Spec-KIT-08521) for all cases after a month of three consecutive monthly injections of ranibizumab.

RESULTS

Table 1: Descriptive analysis of the examined cases consistent with central foveal thickness by OCT (n=20)

Central foveal thickness by OCT	Before ranibizumab injection	One month after 3 consecutive Doses of ranibizumab	Z	p
Min. – Max.	263.0 – 623.0	260.0 – 603.0	3.924*	<0.001*
Mean ± SD.	420.78 ± 133.8	377.10 ± 107.7		
Median (IQR)	358.0 (320.0 – 550.0)	344.50 (306.0 – 450.0)		

Table 2: Correlation between central foveal thickness by OCT and foveal avascular zone surface area of deep capillary plexus by OCTA in before ranibizumab injection and one month after 3 consecutive doses of ranibizumab (n = 20)

	Central foveal thickness by OCT			
	Before ranibizumab injection		One month after 3 consecutive doses of ranibizumab	
	r_s	P	r_s	p
Foveal avascular zone surface Area of deep capillary plexus by OCTA	0.641*	0.002*	0.648*	0.002*

CONCLUSION

- Our study revealed that; Ranibizumab administered intravitreal reduced macular thickness and enhanced VA. FAZ area was non-significantly greater in before ranibizumab injection using OCTA as compared to and one month after 3 consecutive doses of ranibizumab.
- There was positive correlation between Correlation between Foveal a vascular zone surface area of superficial and deep capillary plexus by OCTA and deep capillary plexus by OCTA in before ranibizumab injection and one month after 3 consecutive doses of ranibizumab

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