VITREORETINAL INTERFACE CHANGES BY OPTICAL COHERENCE TOMOGRAPHY AT DIABETIC NEOVASCULARIZATION SITES AFTER PANRETINAL PHOTOCOAGULATION

Samir Mohamed Elbaha, Mohamed Mohamed Lolah, Islam Shereen Hamdy, Eslam Kamel Hassan Eid

Department of Ophthalmology, Faculty of Medicine, Alexandria University

INTRODUCTION

Diabetic retinopathy (DR) is a microvascular disorder occurring due to long term effects of diabetes, leading to vision-threatening damage to the retina, eventually leading to blindness. It is the most common cause of severe vision loss in adults of working age groups in the western world. Early detection and timely intervention is the key to avoid blindness due to diabetic retinopathy. The number of patients with diabetic retinopathy in America is estimated to reach 16.0 million by 2050, with vision-threatening complications affecting around 3.4 million of them. The usefulness of strict glycemic control was clearly seen in clinical trials like the UK Prospective Diabetes Study (UKPDS) and Diabetes Control and Complication Trial (DCCT).
Out of which diabetic retinopathy is the most common and severe ocular complication. Poor glycemic control, uncontrolled hypertension, dyslipidemia, nephropathy, male sex, and obesity are associated with worsening of diabetic retinopathy.
Optical coherence tomography (OCT) was first is a non-invasive ocular imaging technology.
Proliferative diabetic retinopathy occurs commonly in young individuals where newly formed vessels appear at the margin of the ischemic area.

AIM OF THE WORK

The aim of this study was to assess the vitreoretinal interface changes at neovascularization sites in patients with PDR by SD-OCT before and after PRP.

SUBJECTS AND METHODS

SUBJECTS: The study carried out on 30 eyes undergoing PRP for treatment of PDR patients in the ophthalmology department of the Alexandria Main University Hospital.
The study was conducted as a prospective interventional case series study.
Inclusion criteria:
patient more than 18 years old suffering from type 1 or type 2 diabetes.
Presence of PDR (NVEs or NVDs) close enough to the posterior pole to allow the acquisition of SD-OCT images.
Exclusion criteria:
Previous administration of intra vitreal anti VEGF in the last 6 months.
Presence of other vitreoretinal diseases or retinal abnormality (retinal vein occlusion, vitreomacular traction).

METHODS: Patients subjected to: Full clinical history: Ophthalmic examination:
- Best corrected visual acuity (BCVA).
- Fundus examination by volk lens 90 diopter.

Procedure: - Fundus fluorescein angiography (FFA) whenever possible.
- OCT acquisition of neovascularization sites by (Cirrus HD-OCT Carl Zeiss), using five line raster.
- PRP was done in one or more sessions.

- At least 6 weeks after completion of PRP, follow-up SD-OCT scans were captured.

RESULTS

Table 1: Best Corrected log MAR Visual Acuity in the study population.

Parameters		Studied eyes (n= 30)
BCVA	Mean± SD	0.498±0.76
	Median (IQR)	0.52 (0.72-0.38)
	Range	1.3-0.154

SD= standard deviation, IQR: interquartile range, n: number, %: percentage

Table 2: Baseline characteristics of the eyes included in the study population.

	Studied eyes (n= 30)	
	n	%
Pseudophakia	5	16.7 %
Clear crystalline lens	12	40.0 %
Visually non-significant cataract	13	43.3 %
Eyes with NVE	21	70.0 %
Eyes with NVD	9	30.0 %

SD= standard deviation, IQR: interquartile range, n: number, %: percentage

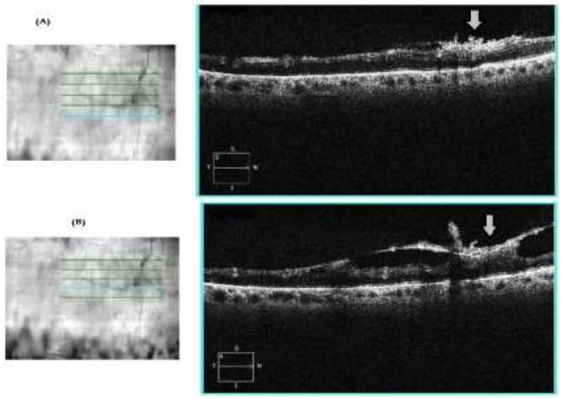

Figure 1:
Near - infrared fundus images and spectral - domain optical coherence tomography scans of neovascularization elsewhere before (A) and after panretinal photocoagulation (B) showing increased retinal traction.

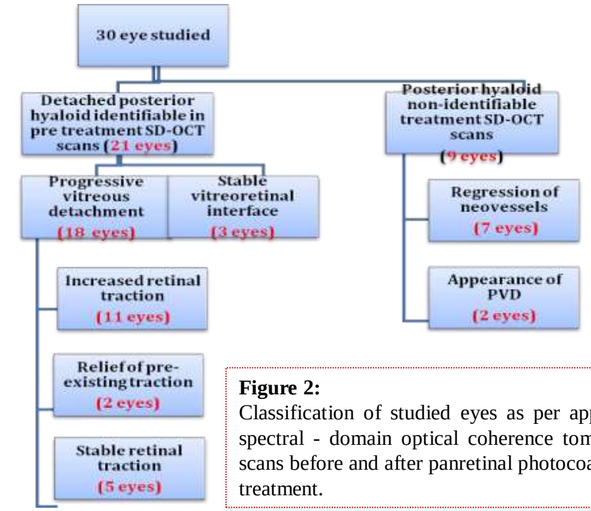

Figure 2:
Classification of studied eyes as per appearance spectral - domain optical coherence tomography scans before and after panretinal photocoagulation treatment.

CONCLUSION

SD-OCT is an important tool in the evaluation of several macular conditions. It enables both studying the morphology of retinal layers and vitreoretinal interface in vivo and quantifcation of macular edema, OCT images may be important for differentiating intraretinal microvascular abnormalities and diabetic papillopathy from neovascularizations.
There are various changes that can happen at the vitreoretinal interface at the neovascularization sites that could be detected by the OCT, During diabetic vitrectomy, the increased traction and progressive PVD in some cases may allow dissection of the posterior hyaloid at the correct plane if started near a site of neovascularization.