PERIPAPILLARY RETINAL NERVE FIBER LAYER THICKNESS CHANGE AFTER PANRETINAL PHOTOCOAGULATION IN PATIENTS WITH DIABETIC RETINOPATHY

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Introduction

Photocoagulation has been proven safe and effective in the treatment of PDR. In this disorder, the retina becomes ischemic and releases a variety of chemical messengers, most importantly VEGF, that stimulates the growth of new blood vessels, and also markedly increases retinal vascular permeability. The abnormal new vessels, and associated fibrous tissue and macular edema, are major causes of sight-threatening complications in diabetic eye disease.

The retina is translucent tissue that lines the posterior two-thirds of the eye posteriorly to the ora serrata anteriorly. The retina consist of ten layers, arranged in two functional components, pigment and neurosensory with potential space between the two. The nerve fibre layer consists of axons of the ganglion cells, which pass through lamina cribrosa to form the optic nerve.

Optical coherence tomography (OCT) has evolved to become an essential tool in ophthalmology. Its ability to noninvasively image detailed ocular structures and associated microvasculature in vivo with high resolution has revolutionized patient care.

Aim of the work

The aim of the work was to measure peripapillary retinal nerve fiber layer thickness change after pan-retinal photocagulation in patients with diabetic retinopathy.

Subjects and Methods

SUBJECTS: The study was carried out on 20 eyes for treatment group and 20 eyes for control group.

Patients in treatment group presented with PDR or severe non proliferative diabetic retinopathy as diagnosed clinically and by fluorescein angiography (FA) and received PRP.

The control group included patients with mild or moderate non proliferative diabetic retinopathy, who dont receive laser treatment.

In the control group, the peripapillary RNFL was measured at baseline and 6 months later.

METHODS:

Procedure:

All patient with DR:

The subjects divided into a treatment group and control group. The treatment group included patients with PDR or severe NPDR who received PRP. All patients in the treatment group received a moderate degree of laser burns from an argon laser photocoagulator (ELLEX Integre Pro Laser - Green) Patients from control group who develop severe non proliferative, PDR or DME were excluded from the study. Laser was the only treatment done during the study period. The peripapillary RNFL thickness was measured before and 6 months after PRP in the treatment group. In the control group, the peripapillary RNFL thickness was measured at baseline point of the study and 6 months later.

Results

Table : Comparison between before PRP and after PRP according to NFL thickness in cases group (n = 20)

NFLμm	Before PRP	After PRP	T	p
SUPERIOR				
Min. – Max.	99.0 – 161.0	90.0 – 158.0		
Mean ± SD.	121.7 ± 20.50	116.7 ± 21.87	3.200	0.005*
Median (IQR)	118.0 (103.0 –133.0)	112.0 (99.0 –131.0)		
INFERIOR				
Min. – Max.	92.0 – 149.0	90.0 – 145.0		
Mean ± SD.	124.8 ± 19.55	114.6 ± 20.79	3.289	0.004*
Median (IQR)	127.5 (105.0 –139.0)	111.5 (95.0 –132.0)		
NASAL				
Min. – Max.	66.0 – 132.0	47.0 – 130.0		
Mean ± SD.	95.80 ± 20.22	88.80 ± 25.01	2.467	0.023*
Median (IQR)	90.50 (82.0 –114.0)	84.0 (77.0 –111.0)		

t: Paired t-test

p: p value for comparing between **Before PRP** and **After PRP**

*: Statistically significant at $p \leq 0.05$

Figure: ELLEX Integre Pro Laser - Green

Conclusion

- RNFL thickness was different between cases and controls after PRP retinal NFL thickness, it was decrease in cases but there was no statistically significant difference between cases and controls.
- Retinal NFL thickness changed 6 months after laser treatment in the cases group with statistically significant difference before and after treatment.
- There was no change in retinal NFL thickness in diabetic patients with controlled DM during 6 months.
- There was no change in the visual acuity with change in nretinal NFL thickness 6 months after PRP treatment.