ORIGINAL RESEARCH PAPER

Ophthalmology

KEY WORDS: Visual field defects, Automated octopus perimeter, Fundus fluorescein angiography.

ANALYSIS OF NORMOTENSIVE GLAUCOMA

Dr.S.Ravikumar M.S Senior Assistant Professor, Govt.Villupuram Medical College, Villupuram.

Dr.D.Hannah Ratna Priya* M.S,D.O,.Assistant Professor, Govt Villupuram Medical College,Villupuram. *Corresponding Author

ABSTRACT

Purpose: To assess the patterns of visual field loss in normotensive glaucoma and to identify the pattern of filling defect seen in FA in these patients.

Materials and methods: 93 eyes of 50 patients with NTG who were clinically diagnosed and monitored in the glaucoma clinic for a period of two years from 2015 to 2017 were recruited in this study.

Results: Field examination with static automated octopus Perimetry gave typical localized field defects which were found in the inferior hemifield, more with IOP between 16-20 mmHg in majority of patients. FFA of these patients typically showed localized sectoral filling defects.

Conclusion: A positive correlation has been identified between the extent & topography of absolute filling defects with visual field loss, supporting the hypothesis of vascular mechanism in normo tensive glaucoma patients

From the above study it was concluded that PROM is related with poor fetomaternal outcome. Early diagnosis and timely adequate management is needed for better outcome.

INTRODUCTION:

Glaucoma is a leading cause of preventable blindness in India. Glaucomatous field defects results from damage to the intraocular portion of the optic nerve extending from the retinal ganglion cells to the portion just posterior to the lamina cribrosa. Axonal damage is the cause of defects in Glaucoma and the pattern of these defects corresponds to the patterns of distribution of intraocular axons. The nasal portion of the visual field is often affected in early Glaucoma.

Computer assisted automated Perimetry permits high quality, reliable visual field testing and allows simple interpretation of sophisticated results for early detection and monitoring of glaucoma status in NTG.

Materials and methods:

93 eyes from 50 patients with normotensive glaucoma who were clinically diagnosed and monitored in the glaucoma clinic for a period of two years from 20 to 20 were included into the study. Patients without lens changes or minimal lens changes were taken. Patients with moderate to severe lens changes were excluded as visualization of fundus becomes difficult and the clarity and subsequently interpretation of the FFA was impaired. Patients with diabetes or any gross fundus pathology were rejected because of unwanted variables. Patients with Burnt- out glaucoma were not taken up for the study.

All patients underwent preliminary examination of testing visual acuity by Snellen chart, Slit lamp biomicroscopy of anterior segment, Intra ocular pressure measurement with Goldmann Applanation tonometer, Optic nerve head changes assessed stereoscopically with volk 90D lens in slit lamp, angle study done with single mirror goniolens and visual field examination with octopus Interzag automated perimeter G1X program.

Fundus fluorescein angiogram with Topcon variable angle retinal camera (model TRC- 50VT) used for fundus photographs. The instrument incorporates the spectrotech type of interference filters to eliminate pseudofluorence. The pupils were dilated with 10% phenylepherine and 1% tropicamide eye drops one hour before FA. 5cc of 10% fluorescent dye was injected in the autecubital vein. About 20 rapid sequential angiograms were taken.

Results:

Subject characteristics

0f 50 subjects assessed there were more men and the and the average age of the patients was 50 years.

Table 1
Subject characteristics

S.No	Subject Characteristics	NTG
1	Age	50
2	Sex	
	Men	36
	Women	14

The higher male preponderance indicate the higher awareness of the visual defect in men and seeking medical treatment.

Type of field defect (Reduction of mean sensitivity in age matched comparison charts)

In normotensive glaucoma group, 0% had normal central fields, 2% had reduced mean sensitivity in paracentral, 12% of eyes had reduced mean sensitivity in siedel's area, 73% had arcuate scotoma, 10% in double arcuate area, and 3% had advanced field defects.

Table 2

S.No	Type of Field defect	No. of eyes	%
1.	Normal central area	0	0
2.	Paracentral area	2	2
3.	Seidel's area	11	12
4.	Arcuate area	68	73
5.	Ring area with nasal step	9	10
6.	Advanced Glaucomatous field loss	3	3
	Total	**93**	**100**

Field defects in NTG are closer to fixation, has greater depth and steeper slope and found in inferior hemifield.

Fluorescein Filling Defects:

Table 3

S.No	Polar Notching	No. of eyes	%	Comparison with Schwartz et al., 1977
1.	Absolute and relative	63	68	95
2.	Relative only	0	0	0
3.	Zero Defect	30	32	5
	Total	**93**	**100**	**100**

68% of the eyes with glaucoma showed localized hypofluorescence of the optic disc. Both relative and absolute defects occurred in the same disc. 32% of the eyes did not show

any filling defect.

The circumscribed filling defects are seen centrally and peripherally. Central defects are usually deep in the floor of the cup and were found to correspond with the areas of severe pallor as seen by colour photography, thus supporting the view that they are present in the areas of ischaemia. Peripheral defects are found to involve the rim of the disc.

The area of the defect, varied in size from small circumscribed areas to large areas involving almost the whole of the disc.

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Comparison between field loss and fluorescein filling defect
Table 4:

Table 4:

S.NO	Types of field loss (	No. of Eyes	%	Sector shaped filling defect		No defect	
				No. of Eyes	%	No. of Eyes	%
1.	Advanced field loss	3	3	2	2	1	1
2.	Ring area	9	10	8	9	1	1
3.	Arcuate area	68	73	56	60	12	13
4.	Seidels area	11	12	6	7	5	5
5.	Normal central field	0	0	0	0	0	0
6.	Paracentral area	2	2	1	1	1	1
	Total	**93**	**100**	**73**	**79**	**20**	**21**

For topographical comparison of the field defect with the fluorescien filling defects, the chart of the visual field is attached to the wall and a 35 mm positive of the fluorescein angiogram was superimposed on this with the help of a projector so that the blind spot overlapped the area of the disc. From this it was found that the site of the visual field loss corresponded to the location of the defect.

- In this study 12% of eyes had siedel's scotoma.
- In these patients 79% of eyes had sectional filling defects.
- 73% of patients had arcuate scotoma of which 60% had a sectoral filling defect .
- 9% of patients who had ring scotoma presented with sectoral hypofluorescence.

Discussion:

Our data showed a predominance of Arcuate defects and a positive correlation has been identified between the extent and topography of the absolute filling defects on the optic disc with the visual field loss. It was found that hypo fluorescence of the neuroretinal rim than the cup corresponds with areas of visual field loss (Spaeth 1975, Hitching and Spasm, 1976)

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