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Optical Coherence Tomography in Central Serous Chorioretinopathy

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Abstract *:The purpose was to correlate the vision and foveal thickness in patients with CSCR(central serous chorioretinopathy) and study the demographic profile.*
Methods*: Retrospective chart analysis of 59 patients, diagnosed to have CSC was done. OCT report of 25 of these patients was further analysed The demographic profile, visual acuity, OCT findings were analysed. Foveal thickness of eyes with acute CSC were compared with the best corrected visual acuity (VA).*
Results*: OCT of 25 patients diagnosed to have CSCR were analysed.22 patients were males (88%) and 3 were females (12%). Mean age was 40.92 +/- 8.06 years. There were 19 eyes with acute CSC (76%) and 6 eyes with chronic CSCR (24%). Foveal thickness in CSCR ranged from 190- 1407µm. Among the 19 cases of acute CSCR, 14 patients (73.6%) patients had VA >6/24 (log MAR 0 to 0.6) with foveal thickness ranging from 237µm to 830µm and 5 patients (26.4%) cases had VA less than 6/24 (logMAR 0.6) with foveal thickness ranging from 311-1407µm.Using Pearson correlation coefficient test, the value of correlation coefficient (r) was 0.72 and showed moderate positive correlation between foveal thickness and VA in acute CSCR. It was concluded that CSCR had a moderately positive correlation between foveal thickness and visual acuity in acute CSCR and mainly present in male.*
Keywords*: Central Serous Chorioretinopathy, Optical coherence tomography, Foveal thickness, visual acuity,*

I. Introduction

Central serous chorioretinopathy (CSCR) is an idiopathic macular disorder affecting the choroidal circulation. Clinically it is characterized by serous retinal detachment and/or retinal pigment epithelial (RPE) detachments. It is associated with leakage of fluid into the sub-retinal space due to deficient pumping and altered barrier function. Patients present with blurred vision and metamorphopsia. Fundus fluorescein Angiogram helps to diagnose and plan treatment but it fails to assess Sub Retinal fluid (SRF). Optical coherence tomography (OCT) is a non-invasive diagnostic tool that helps to monitor SRF in CSCR.

Acute CSC is defined as duration of any subjective symptoms occurring within preceding three months along with serous detachment of neuro sensory retina. Chronic CSCR is when the duration of symptoms exceeds for more than 3 months.

The aim of the study was to correlate visual acuity with foveal thickness as measured on OCT and to analyze the demographic profile of patients with CSCR.

II. Methodology

OCT of patients diagnosed to have CSCR was retrospectively reviewed. Demographic profile, visual acuity was foveal thickness on OCT and other OCT findings were analysed and noted. Visual acuity was Optic coherence tomography was performed using Cirrus HD OCT (Carl Zeiss Model 400.4000) and images were obtained by Macular cube and 5 line Raster scans. Based on the duration of CSC the study group was divided Group 1 and Group 2.Group 1 had patients with acute CSC. Group 1 was further divided into group1 a and group1 b based on the visual acuity and group 2 had patients with chronic CSCR

III. Results

OCT of 25 patients with CSCR was analysed. There were 22(88%) were males and 3 were females (12%). Mean age in this population was 40.92 +/- 8.06 years. Foveal thickness in CSC ranged from 190-1407µm.

Table 1 showing the distribution of patients and mean age in group1 and group 2

	Number of patients	Mean Age
Group 1	19 (76%)	38.78+/-7.6
Group2	6 (24%)	45.5 +/- 7.5 years
Total number	25	

The number of patients in Group 1 was 19 and in Group-2 was 6. The mean age of patients in G-1 38.78+/-7.6 and group-2 45.5 +/- 7.5 years(Table 1)

Table 2 showing distribution of patients in each group, range of visual acuity and mean foveal thickness

Group of patients	Number of eyes	Foveal thickness	Mean Fovealthickness
Group 1a	16eyes (84.2%)	237–830 µm	457.8 µm
Group 1b	3eyes (15.8%)	691-1407 µm	1118.6µm
Group- 2	6 eyes	190-500 µm	283.1µm

Using Pearson correlation coefficient test, the value of correlation coefficient (r) was 0.72 (p 0.00002) and hence ***moderate positive correlation*** *between* ***foveal thickness and BCVA (log MAR) in acute CSC***.

Pattern of CSCR on OCT

Pattern of CSCR	Number of eyes(25)	Percentage
SRF only	15	60%
SRF and PED	4	16%
SRF/ cystoid edema	1	4%
SRF/PED/ fibrin	2	8%
Foveal thinning	3	12%

IV. Discussion

Acute CSC is more common than chronic CSCR as most of the CSCR resolve with or without treatment and few of them progress to chronic CSCR. The number of patients with CSCR in group 1 was more when compared to group2.

Patients in Group 1 were younger in age when compared to group 2 patients. The chronicity of the disease explains age discrepancy in group-1 and group-2. This is reported to occur mostly in patients older than 50 years[1]

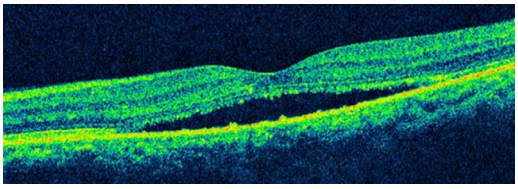
88% of patients in the present study were males. Other studies have also shown male preponderance in CSR with the male female ratio ranging from 2.7:1 to 7:1.[2] [3]CSCR is predominantly a male disease Kim etal reported that the age group of patients with CSCR was 44.7± 8.4 years and 74.6% males and 25.4% females.[4] Almost similar findings were were reported by Nair etal. [5]

The percentage of acute CSR and chronic CSR was 88% and 12% respectively. Acute CSCR is more common than Chronic CSR as most of the acute CSR resolve without treatment in 4-6 months,[6] some resolve with treatment and a small percentage continue to linger as chronic CSR. In our study Group 1 was further divided into subgroups on the basis of visual acuity. Group 1a had vision ranging from 6/6- 6/24 and Group1b had visual acuity less than 6/24.The reason for decreased vision in Group1b is height of subretinal fluid(SRF) which in turn increases the foveal thickness. Visual acuity in acute CSR is usually better as the presence of fluid is just short lived. Generally 60% to 75% of cases resolve spontaneously in 3 months. If the fluid is not absorbed in 3 months there is significant negative effect on visual acuity. A small number of patients develop chronic CSC, and planning treatment for this group is challenging

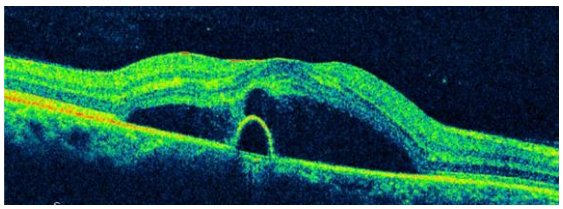
In the present study the foveal thickness in acute CRSR ranged from 550.57+312µm and foveal thickness in chronic CSCR was 190-500 µm(mean 283.1)

Though the the foveal thickness was more in acute CSCR the visual acuity was greatly preserved. On the other hand in spite of minimal foveal thickness the visual acuity was significantly less in chronic CSCR. This is due to the disturbed function of long standing fluid at the fovea on the photoreceptors.[7]

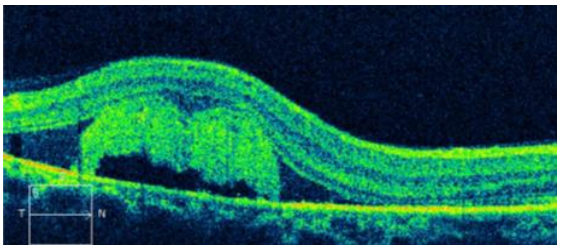
We also came across few interesting pattern of OCT in CSCR. We found 60% of them had SRF (image1).Most of the studies have found neurosensory detachment to be the most common OCT finding.PED was seen in 16% whereas Fujimoto et al[8] has described PED in 32-71% of his patients, a most come finding in acute CSCR. Cystoid edema (image 4) was seen only in one eye which is a feature of chronic CSCR, especially when the duration of the disease is more than 5 years as described by Iida et al[9] and Piccolino etal. [10] Eyes with fibrin were seen in 2 eyes. Kim etal[4] in his study found fibrin in 20-50% in acute CSCR and foveal thinning was seen in 3 eyes which is usually seen in chronic CSCR. **[11]**



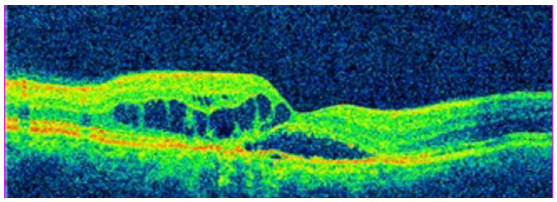
OCT image showing SRF(image1)



OCT showing SRF,PED ,Fibrin and dipping pattern (image 2)



OCT showing SRF and Fibrin (image 3)



OCT showing SRF and cystoid edema (image 4)

V. Conclusion

CSCR is commonly seen in males and had a moderately positive correlation between foveal thickness and visual acuity in acute CSCR.

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