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CLINICAL PROFILE, RISK FACTORS AND VISUAL OUTCOME IN PATIENTS OF ACUTE CENTRAL SEROUS CHORIORETINOPATHY IN A TERTIARY HEALTH CARE CENTRE IN NORTHERN INDIA.

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ABSTRACT Central Serous Chorioretinopathy(CSCR) is predominantly idiopathic and self limiting macular disease . Present study was planned to determine clinical profile and the factors contributing in final visual outcome in CSCR.. Retrospective observational study was done on 65 eyes of 53 patients over a period of 2 years. Their best corrected visual acuity(BCVA), color vision, metamorphopsia and mean central macular thickness(CMT) at presentation were compared with values at 6 months follow-up. Mean age of patients was 38 years ± 5.43 years. 79.24% patients were males and 77.36% had unilateral involvement. 30.19% patients gave history suggestive of one or more potential risk factors. The mean BCVA improved from 20/80 at presentation to 20/20 and 20/25 in patients with isolated and CSCR with PED respectively at 6 months. The mean CMT reduced significantly in both isolated CSCR and when associated with PED at 6 months. Color vision defects in 46(70.77%) eyes and metamorphopsia in 49(75.38%) eyes at presentation persisted in 7(10.7%) eyes and 20(30.76%)eyes respectively at 6 months. Final visual outcome significantly correlated with visual acuity at presentation.

CONCLUSION: BCVA at presentation strongly predicts final visual prognosis. Patients need to be counselled regarding persistence of color vision deficits and metamorphopsia.

KEYWORDS : best corrected visual acuity, central serous chorioretinopathy, pigment epithelial detachment

INTRODUCTION :

Central serous chorioretinopathy (CSCR) is an idiopathic disorder of the outer blood retinal barrier, characterised by a localised serous detachment of retina and/or retinal pigment epithelium (RPE) in macular area.[1] It is typically a unilateral disease predominantly affecting males in their 3rd and 4th decades of life.[2] Patients exhibit acute or sub-acute central vision loss or distortion along with micropsia, metamorphopsia, hyperopic (most common) or myopic shift, central scotoma, and reduced contrast sensitivity and color saturation.[3]The exact pathogenesis remains poorly understood but proposed pathophysiology includes stasis, ischemia, and/or inflammation of inner choroid that leads to hyperpermeable choroidal vasculature, secondary RPE changes and neurosensory retinal detachment.[4][5] Known risk factors include exogenous steroid usage, Type A personality, male sex, hypertension, H. pylori infection, stress, sleeping disturbance, psychopharmacological medication use and autoimmune disorders.[6] The natural course of acute CSCR is self-limiting with resolution of neurosensory retinal detachment and generally good visual recovery within 3 months.[7] However, in the long term, approximately half of the patients experience persistent or recurrent SRF.[8] In these patients, the prognosis can be poor due to complications such as diffuse atrophy of the retinal pigment epithelium (RPE), subretinal fibrosis, and thinning of the outer sensory retina.[9]

In this study, we aim to report the natural course of Acute CSCR in patients from a tertiary health care centre in Northern India.

MATERIALAND METHODS :

This single centre retrospective observational study was designed in accordance with Declaration of Helsinki. After taking permission of the ethical committee, data of 53 patients of acute CSCR managed conservatively with topical nepafenac eye drops and control of modifiable risk factors in a tertiary care hospital in Northern India over 2 years was collected and analysed. Data included their age, sex, history of steroid intake, obstructive sleep apnea(OSA), stress, hypertension and drug intake .Their best corrected visual acuity , color vision, metamorphopsia assessment and central macular thickness(CMT) at presentation and then at each follow-up visit till 6 months was recorded.

Patients with previous history of CSCR, intraocular surgery ,glaucoma were excluded from the study. Patients with media opacities or any other macular or retinal pathology were also not included in the study.

The primary outcome measures of the study were to analyse best corrected visual acuity using Snellen chart, metamorphopsia using Amsler grid, color vision by Ishihara charts and Edridge Green Lantern and CMT with SD-OCT at 3 months and after 6 months of initial presentation . Secondary outcome measure was to correlate final visual outcome with different variables.

Statistical analysis: Categorical variables were reported as count and percentage while continuous variables as mean ±standard deviation (SD). Univariate analysis was conducted using Chi square test and P-value less than 0.05 was considered as statistically significant. Fisher's exact test was used to calculate an exact P-value for 2 x 2 frequency table and P-value =/< 0.015 was considered as statistically significant. All data analysis was done with IBM® SPSS® Statistics version 26.

RESULTS :

The retrospective observational study was conducted between May 2018 to April 2020 on 65 eyes of 53 patients of acute CSR. Mean age of patients was 38 years ± 5.43 years. 79.24% patients were males and 77.36% had unilateral involvement. History of corticosteroid use, including systemic, inhalation and topical was present in 3(5.66%)patients while history of prolonged duration of stress, anxiety or OSA was present in 5(9.43%) patients each. 1(1.88%) male patient was hypertensive. One patient was 32 weeks pregnant while another developed bilateral CSR after uneventful caesarean section following uncomplicated full term pregnancy. [Table 1] Sudden non progressive painless blurring of vision was the predominant complaint in patients. Other complaints included metamorphopsia and central scotoma .

Table 1: Demographic Characteristics of study population.

	Males n(%)	Females n(%)
Number	42 (79.24)	11(20.75)
Mean age	35 years (range, 19-47 years)	39 years (range, 24-50 years)
Unilateral presentation	34(80.95)	7(63.64)
Bilateral presentation	8(19.05)	4(36.36)
Duration of symptoms		
<1 week	23(54.76)	9(81.82%)
> 1week	19(45.24)	2(18.18)
History of steroid use	2(4.76)	1(9.09)
History of stress	4(9.52)	1(9.09)
History of obstructive sleep apnea	3(7.14)	2(18.18)
History of hypertension	1(2.38)	0
Pregnancy	0	2(18.18)
Number of risk factors		
0	32	5

1	7	3
>1	3	3

The mean BCVA at presentation (20/80) improved to 20/20 in patients with isolated CSCR and to 20/25 in patients with CSCR with PED at 6 months. CSCR was associated with PED in 16(24.62%)eyes. The mean CMT at presentation, 479.32 ± 122.84 µm and 541 ± 116.72 µm in eyes with isolated CSCR and in CSCR with PED respectively significantly decreased to 292 ± 52.51 µm and 316 ± 37.84 µm at the end of 6 monthly follow-up but the difference between two groups was insignificant (p> 0.05). Spontaneous and complete resorption of SRF occurred in 47(96%) and 13(81.25%)affected eyes at the end of 6 months follow up in isolated CSCR and CSCR with PED respectively. Color vision defects were present in 46(70.77%)eyes with acute CSCR ,majority (63%) of them had tritan defect. At 6 months follow up,some degree of color vision defect persisted in 7(10.7%) eyes. Metamorphopsia in 49(75.38%) eyes at the time of presentation persisted in 20(30.76%)eyes, out of which 16(83.33%) eyes showed disruption of external limiting membrane.[Table 2]

Table 2 : Showing Initial And Final Outcome In Isolated Cscr And Cscr With Ped

	Isolated CSCR(49)	CSCR with PED(16)	P value
Mean BCVA			
At presentation	20/80	20/80	1
3 months	20/25	20/40	<0.0001
6 months	20/20	20/25	<0.0001
Mean CMT			
At presentation	479.32 ± 122.84 µm	541 ± 116.72 µm	0.0825
3 months	323 ± 61.44 µm	355 ± 39.76 µm	0.0558
6 months	292 ± 52.51 µm	316 ± 37.84 µm	0.0966
Resorption of SRF	n(%)		
3 months	41(83.67)	10(62.5)	0.076
6 months	6(12.24)	3(18.75)	0.516
Abnormal Color vision	n(%)		
At presentation	36(73.46)	10(62.5)	0.406
3 months	5(10.2)	3(18.75)	0.3697
6 months	5(10.2)	2(12.5)	0.798
Metamorphopsia			
At presentation	38(77.55)	11(68.75)	0.481
3 months	18(36.73)	7(43.75)	0.619
6 months	15(30.61)	5(31.25)	0.961

BCVA at 6 months follow up was significantly associated with BCVA at presentation (<0.015) while duration of symptoms, baseline CMT , CSR with or without PED and number of risk factors did not correlate significantly with final BCVA.[Table 3]

Table 3: Association of study variables with final visual outcome

Variable	Final Visual outcome at 6 months		P value (Fisher's exact test; P = 0.015 significant)
	BCVA > 20/25	BCVA < 20/25	
Time of presentation(53 patients)			
>1 week	14(21.54)	4(6.15)	>0.015
<1 week	31(47.69)	16(24.62)	
Risk Factors(53 patients)			
0	29(54.71)	8(15.09)	>0.015
1or >1	11(20.75)	5(9.43)	
Baseline VA(65eyes)			
BCVA > 20/40	42(64.62)	2(3.08)	<0.015
BCVA < 20/40	6(9.23)	15(23.08)	
CMT(65eyes)			
< 400 µm	26(40.00)	6(9.23)	>0.015
> 400 µm	28(43.08)	5(7.69)	
CSCR (65eyes)			
CSCR without PED	45(69.23)	4(6.15)	>0.015
CSCR with PED	12(18.46)	4(6.15)	

DISCUSSION:

CSCR is a self-limiting condition most commonly associated with complete resorption of SRF and good recovery of vision . Our retrospective case study included 65 eyes of 53 patients with CSCR who were followed up for 6 months. Mean age of patients was 38 years ± 5.43 years. 79.24% patients were males and 77.36% had unilateral involvement.

In accordance with our observations Sahoo NK et al[10] in an Indian cohort reported the mean age of the patients as 42.3±10.1 years, more common in males(88%) and more often unilateral (73.06%). This was also consistent with the results of other studies which reported increased incidence of CSR in middle aged males and predominantly unilateral.[2][3][7][11]

The mean BCVA at presentation in our study was 20/80 which improved to 20/20 in patients with isolated CSCR and to 20/25 in patients with CSCR with PED at 6 months. Mudvari SS et al[12] retrospectively reviewed case records of CSCR associated with angiographic evidence of PED and concluded that CSCR with associated retinal PED mostly resolves completely with a mean final visual acuity of 20/25.

Islam QU [11]in their study reported statistically significant difference in baseline CMT(467.49) and 6 month follow-up values(244.67 µm)in patients with acute CSCR. In accordance with this study we also found significant resolution of initial mean CMT in eyes with isolated CSCR (479.32 ± 122.84 µm) as well as in CSCR with PED (541 ± 116.72 µm) to 292 ± 52.51 µm and 316 ± 37.84 µm respectively.

Adaptive optics have shown reduced cone density in eyes with resolved CSCR with 20/20 vision compared with controls which explains residual symptoms like metamorphopsia and reduced colour and contrast sensitivity.[13] In our study, color vision defects in 46(70.77%) eyes at presentation persisted in 7(10.77%)eyes at 6 months follow-up. Majority of them had tritan defect. Results were consistent with other studies in literature.[14][15] Residual metamorphopsia after resolution of CSCR may lead to poor quality of vision even after good recovery of visual acuity. In a study conducted by Bae S et al[16]the only structural parameter that determined presence of residual metamorphopsia was final distruption of ELM as detected by SD-OCT after complete resolution of SRF. We observed residual metamorphopsia in 20(30.77%) eyes at 6 months, out of which 16(83.33%) showed disruption of ELM.

A systematic review and meta-analysis of CSCR found hypertension, Helicobacter pylori infection ,corticosteroid use, sleeping disturbance ,autoimmune disease consumption of psycho pharmacologic medication, and Type A behaviour as statistically significant risk factors for development of CSCR.[6] In addition to these risk factors another meta analysis[17] found hyperopia also as significant risk factor, Sahoo NK et al[10] found smoking and Yavaş GF et al[18] in observed OSA a significant risk factor for CSCR.

In accordance with the above studies we also found either corticosteroid use , stress, OSA ,pregnancy or hypertension as associated risk factors in 30.19% of the patients.

The CSCR in 32 weeks pregnant woman resolved completely with BCVA of 20/20 at 3 weeks post delivery while another 34 year old female who experienced sudden bilateral vision loss with central scotoma 4 days after an uneventful caesarean section also regained BCVA of 20/20 at 6 weeks. Occurrence of CSCR in pregnancy may be a result of the increased endogenous corticosteroids levels and stress associated with pregnancy.[7] It has been observed that most of these cases occur in third trimester and the disease course is self-limiting with complete spontaneous recovery in most cases.[2]

Maalej et al[19] and Aggio et al[20]observed that visual prognosis in acute CSCR significantly varies with BCVA at presentation ,duration of symptoms and with presence of PED. We observed strong association of final BCVA with BCVA at presentation only and found no significant association of final BCVA with duration of symptoms, number of risk factors, baseline CMT or presence of PED. Islam QU[11] and Loo et al[21] also observed significant correlation of visual prognosis with baseline BCVA. In contrast to our observations Loo et al [21] found persistent PED associated with reduced final BCVA.

CONCLUSION :

Acute CSCR is a benign self-limiting condition with a good visual prognosis. Serous retinal detachment usually resolves in 12 weeks

with or without treatment. Associated risk factors include corticosteroid use, hypertension, stress , sleep disturbances and pregnancy . CSCR at times may be associated with retinal PED which resolves completely with subsequent retinal pigment epithelial atrophy but good visual recovery. Color vision defects and metamorphopsia are present in majority of patients with acute CSCR and these symptoms may persist and interfere with quality of vision even after complete resolution of neurosensory retinal detachment.

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