



Original Research Article

Demographic profile and associated risk factors in retinal vein occlusion

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ARTICLE INFO

Article history:

Received 04-07-2020

Accepted 17-04-2020

Available online 30-03-2021

Keywords:

Demographic factors

Hypertension

Retinal vein occlusions

ABSTRACT

Materials and Methods: A descriptive cross sectional study was carried out in 52 eyes of 46 patients in the department of ophthalmology, Silchar Medical College, Silchar for a period of one year. May, 2019 with due consideration of definitive aims and objectives.

Results: The commonest (60.87%) age group affected in RVO was 50-69 years. Majority of patients belonged to middle socioeconomic status. Systemic hypertension was the most frequently (52.17%) associated systemic condition to be found as predisposing factors for developing retinal vein occlusion. Other significant risk factors found in this study were diabetes mellitus, hypercholesterolemia, and hypertriglyceridemia and hypermetropia was found to be another risk factor for the development of RVO.

Conclusion: Though RVOs occur with different facets of demography and predisposing factors, most of these are not in direct association with RVOs.

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1. Introduction

Retinal vein occlusion (RVO) is one of the (second most common) of acquired retinal vascular abnormality after diabetic retinopathy. RVO is a frequent cause of sudden onset visual loss. There are a few data on the prevalence of RVO in the general population, with current estimates derived largely from studies in white populations.¹ However, a recently published pooled analysis of 11 major studies from the United States, Europe, Asia and Australia has found the incidence of branch retinal vein occlusion (BRVO) to be 4.4/1000 persons and 0.8/1000 persons for central retinal vein occlusion (CRVO) in the general population.²

Although various factors are apparently involved in the production of retinal vein occlusions, the exact cause is unclear. Predisposing conditions of retinal vein occlusion include diabetes mellitus, hypertension, hyperlipidemia, systemic vascular diseases, open angle glaucoma, hyperviscosity, increased ESR, certain medications,

smoking etc.

RVOs are classified according to whether the central retinal vein or one of its branches is obstructed. Central retinal vein occlusion (CRVO) and branch retinal vein occlusion (BRVO) differ with respect to pathophysiology, underlying systemic associations, average age of onset, clinical course and therapy.

CRVO can be divided further into ischemic and non-ischemic type. This distinction among types of CRVO is important because up to two-thirds of patients who have the ischemic variety develop iris neovascularization and neovascular glaucoma.

Days are not far when the major cause of blindness in adults will be shifted from the anterior to posterior segment of the eye and studies have shown increased incidence of blindness during the last decade or two due to various retinal ailments and are showing an uphill trend hence serves as a stimulus for the research and development in the field of retinal diseases.

With this view in mind, the present study of retinal vein occlusion was undertaken with the following aims and objectives:(i)To study the demographic factors & clinical

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presentation of retinal vein occlusions. (ii) To study the predisposing factors associated with retinal vein occlusions & compare the individual risk factors for central and branch retinal vein occlusion.

2. Materials and Methods

The current study was carried out in the department of ophthalmology, Silchar Medical College, Silchar for a period of one year from June, 2018 to May, 2019. All the cases in which retinal vein occlusion was observed for the first time in the OPD during the study period were included in the study excluding the old diagnosed cases. A total of 46 cases were found & examined meticulously.

Each one of the selected cases of retinal vein occlusion after a preliminary screening was subjected to complete sequential evaluation for the aetio-pathological and clinical study with full cooperation of the respective patient and the attendant as the nature of the study was properly explained to them prior to the procedures. The cases which were selected on the basis of a positive clinical history and funduscopy by direct and indirect ophthalmoscopy were confirmed by the optical coherence tomography and fluorescein angiography.

All selected were questioned thoroughly to know the presence or absence of cardio-pulmonary abnormalities, thromboembolic phenomenon and diabetes mellitus any ischemic episodes, chronic infection, hypertension etc. and the findings were noted accordingly. Due importance was given to the history of Glaucoma with reference to its duration and medication.

All patients underwent for detailed systemic and ocular examinations, including visual acuity, anterior segment slit lamp biomicroscopy, applanation tonometry, fundus examination, gonioscopy, optical coherence tomography, fundus fluorescein angiography as per need, laboratory investigations like routine blood, urine analysis were done in each case. Blood sugar (fasting & post prandial) was done to know the glycemic status of the patient. Kidney function test was done to know the status of renal function. Lipid profile, BT, CT and prothrombin time were also done.

3. Results

Our study included 46 cases (52 eyes) of retinal vein occlusion attending the outpatient department of Silchar Medical College & Hospital, from June, 2018 to May, 2019.

Sudden onset deterioration of vision was the predominant complaint in 43 patients (93.4%). Only 3 cases (6.52%) complained of gradual onset diminution of vision and 4 (8.69%) patients complained of floaters and 1 patient complained of sectoral defect of vision. Association of pain was reported by 7 (15.21%).

In CRVO group, increased IOP was found in 3 cases (15%) and 4 cases (7.6%) were found to have relative

afferent pupillary defect.

Table 1: Age group of patients suffering from roves

Age group	CRVO	BRVO
30-49	6	7
50-69	10	18
≥ 70	1	2

Table 2: Distribution of sex in patients suffering from roves

Sex distribution	CRVO	BRVO
Male	16	10
Female	9	11

Table 3: Distribution of socioeconomic status in patients suffering from roves

Socioeconomic class	CRVO	BRVO
Upper	1	1
Middle	20	21
Lower	2	1

Table 4: Fundus findings in RVO

Fundus Findings	No. of Eyes (total no. of eyes= 52)	Percentage (%)
Vitreous Haemorrhage	2	3.8
Diffuse Retinal Haemorrhage	18	34.6
Localized Haemorrhage	33	63.4
Hard Exudates	16	30.7
Cotton Wool Spots	20	38.4
Disc Oedema	16	30.7
NVD	8	15.3
NVE	4	7.6
Macular Oedema	22	42.30
Macular Haemorrhage	6	11.5

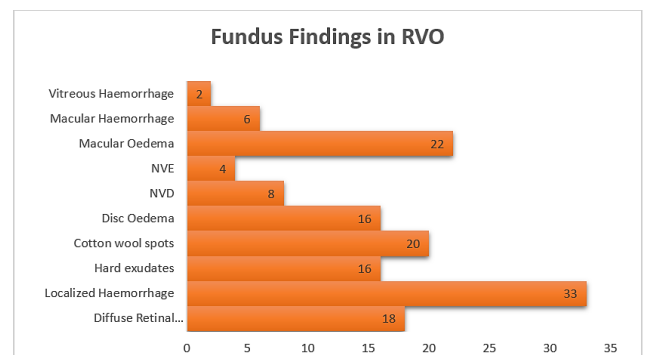


Fig. 1: Distribution of systemic diseases in RVO

Table 5: Distribution of systemic diseases in RVO

Associated medical diseases	CRVO		BRVO	
	No. of cases (total cases= 17)	Percentage	No. of cases (Total cases= 29)	Percentage
Hypertension	8	47%	16	55%
Diabetes Mellitus	5	29%	8	27%
CVS disorders	3	17%	2	7%
Hypertension + Diabetes Mellitus	4	23%	1	3%

Table 6: Distribution of ocular conditions in /CRVO &/ BRVO

Ocular Conditions	CRVO		BRVO	
	No. of eyes (total eyes= 20)	%	No. of eyes (total eyes= 32)	%
Refractive status				
Emmetropia	13	65%	13	40.62%
Hypermetropia	5	25%	15	46.87%
Myopia	2	10%	4	12.5%
Raised IOP	3	15%	5	15.62%

The association of systemic diseases with the cases of RVO was found to be statistically non-significant ($p > 0.05$).

The association of Refractive status and intraocular pressure with retinal vein occlusion was found to be statistically insignificant ($p > 0.05$).

There was no statistical significant association between lab findings and RVO ($p > 0.05$).

4. Discussion

Retinal vein occlusion is a relatively most common retinal vascular disorder second to diabetic retinopathy.³ Since the time of Leibrich in 1854, Leber in 1977 and Michel in 1878, the exact aetiology and pathophysiology of the disease is yet to be fully established, making the disease progression unpredictable.

In our study, the age group of patients suffering from retinal vein occlusion varies from 39 to 75 years. The mean age of presentation in male was 57.68 years and for female, it was 56.1 years. Foster Moore⁴ and Coats⁵ reported the average age of patient with retinal vein occlusion was 60 years which ranged between 35 to 80 years which corroborates with our study.

A male preponderance was seen in most of the published series of central vein obstruction (56.7% vs. 43.3%).⁵ We have encountered similar prevalence of male predominance (56.5% and 43.5%) in our study. In CRVO group, 55.5% of the patients were male and 44.4% were female. In patients with BRVO, 57.1% were male and 42.8% were female. Thus, our study is in accordance with the work of the above said authors.

Most of the patients of both CRVO & BRVO group belonged to middle class family/ i.e, 83.33% of CRVO and 91.3% patients of BRVO were from the middle class strata.

Mc Grath et al.⁶ in their study evaluated the systemic factors contributory to retinal vein occlusion found that 61% of their patients with retinal vein occlusion were suffering from hypertension. In our present study, we observed that 52.17% cases of RVO (24 out of 46 cases) were suffering from hypertension. In CRVO patient group, 47% cases were hypertensive and in BRVO, it was 55%. Thus, incidence of hypertension in our study was higher in patients with BRVO than CRVO.

Quinlan et al.⁷ found 18% of central vein occlusion were associated with diabetes in elderly patients, whereas only 8% cases of younger age group, below 50 years having diabetes. In our study, 13 patients (28.2%) with RVO were diabetic. 29% were in CRVO group & 27% were in BRVO group. Thus, our study corroborates with the studies of the above authors.

Clarkson⁸ described association of CRVO with cardiovascular diseases. Appiah and Trempe⁹ also reported in their study that heart disease was contributory to CRVO and BRVO in 22.2% and 23.4% cases respectively. In our study, we had found 10.86% patients were suffering from CVS disorders. 17% of the total CRVO patients were found to have a CVS disorder & in cases of BRVO, it was 7%.

Dodson et al.¹⁰ in their study found a significantly increased prevalence of hyperlipidemia (28.8%) and hypercholesterolemia (23.7%) in the group of branch retinal vein occlusion and of hyperlipidemia (32.2%) and hypercholesterolemia (22.5%) in the group with central vein occlusions compared to the controls. In our study, we have found increased levels of triglyceride in 29.41% of CRVO patients & 34.48% of BRVO patients. Total cholesterol was found to be elevated in 23.52% of CRVO cases and in BRVO cases it was 41.37%. Therefore, in our study there is increased prevalence of hypertriglyceridemia &

Table 7: Abnormal laboratory findings in CRVO & BRVO

Laboratory Parameters	CRVO		BRVO		Ref. value (upper limit of normal value)
	No. of cases (Total cases= 17)	Percentage	No. of cases (Total cases=29)	Percentage	
Elevated ESR	7	41.17%	4	13.7%	< 20mm AEFH
Elevated bl. sugar	5	29.41%	8	27.5%	FBS <110mg/dl PPBS <140mg/dl
Elevated triglyceride	5	29.41%	10	34.48%	<150mg/dl
Elevated LDL	5	29.41%	9	31.03%	<130mg/dl
Decreased HDL	2	11.7%	9	31.03%	>35mg/dl
Elevated VLDL	2	11.7%	9	31.03%	<50mg/dl
Elevated Total Cholesterol	4	23.52%	12	41.37%	<200mg/dl
Decreased Hb%	5	29.41%	8	27.58%	M=14mg/dl F=13mg/dl

hypercholesterolemia in BRVO patients in comparison with the CRVO patients, which corroborates partially with the studies of Dodson et al.

Appiah/ & Trempe¹¹ in their study reported an association between raised ESR and retinal venous occlusion. This rise of ESR was more prevalent in CRVO than BRVO. However, in our study, we had found elevated ESR in 41.17% & 13.7% of cases of CRVO & BRVO respectively. The reason for high prevalence of elevated ESR in our study may be multifactorial.

Vannas and Tarkkanen¹⁰ reported 42% incidence of simple glaucoma in a series of 71 patients with CRVO and only 10% of BRVO cases associated with simple glaucoma. However, in our study, we had found only 15% of CRVO patients with elevated IOP and in case of BRVO, it was 15.62%. No case of angle closure was detected.

Appiah and Trempe¹² in their studies found that on comparing CRVO with BRVO, hyperopia was found in 38.5% and 52.8% cases respectively. Gutman¹³ reported a high incidence of hypermetropia in young patients with CRVO. In our study, 25% & 46.87% patients with CRVO & BRVO cases respectively, were hyperopic. Thus, our study findings were in accordance with that of Appiah and Trempe.¹²

5. Conclusion

The present study draws the following conclusions.

Sudden onset deterioration of vision is the predominant presentation in RVO. It occurs in all age groups though the middle and older age groups are commonly affected. Socio- demographic distribution of both CRVO & BRVO were statistically insignificant i.e, they have no association. systemic hypertension, diabetes mellitus, Hypercholesterolemia, Hypertriglyceridemia and Hypermetropia are common predisposing factors for developing retinal vein occlusion.

6. Source of Funding

None.

7. Conflict of Interest

The authors declare that there is no conflict of interest.

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Cite this article: Deb S, Paul G. Demographic profile and associated risk factors in retinal vein occlusion. *Indian J Clin Exp Ophthalmol* 2021;7(1):102-106.