

Baseline Characteristics and Risk Factors for Retinal Vein Occlusions

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ABSTRACT

Introduction: Venous obstructive disease of the retina is causing significant visual morbidity affecting quality of life of patient. Incidence of CRVO is 0.8 per 1000 persons and 4.4 per 1000 persons for BRVO. RVO most commonly affects the venous blood supply of entire retina [CRVO] or a quadrant drained by one of the branches [BRVO] less commonly superior or inferior half of retina alone is affected [HRVO]. Study Aimed to study demographic characteristics and risk factors of Retinal Vein Occlusions (Both CRVO and BRVO)

Material and methods: This is a cross sectional observation study. It included 208 patients [64 CRVO patients and 144 BRVO patients] at Retina department, Sarojini Devi Eye Hospital, Hyderabad. Study was conducted for 1 year and 7 months.

Results: Hypertension stands alone as the most significant risk factor (P Value is 0.005). Other factors studied like Urban Background, Lack of physical Activity, Diabetes, Hyperlipidemias, CVA, CAD etc. though were present in good numbers in the cases studied but they were not statistically significant.

Conclusion: Hypertension, Diabetes and Raised Serum Lipids are significant risk factors for Retinal Vein Occlusions in South Indian population.

Keywords: Central Retinal Vein Occlusion (CRVO), Branch Retinal Vein Occlusion (BRVO)

INTRODUCTION

Venous obstructive disease of the retina is a common retinal vascular disorder, second only to diabetic retinopathy in incidence¹ causing significant visual morbidity affecting quality of life of patient. Incidence of CRVO is 0.8 per 1000 persons and 4.4 per 1000 persons for BRVO in general population.¹

RVO most commonly affects the venous blood supply of entire retina [CRVO] or a quadrant drained by one of the branches [BRVO] less commonly superior or inferior half of retina alone is affected [HRVO]. Central retinal vein obstruction [CRVO] and branch retinal vein obstruction [BRVO] differ with respect to pathophysiology, underlying systemic associations, average age of onset, clinical course and therapy. CRVO most commonly occurs in the elderly usually above 50 years.² Many systemic and local factors that contribute to the thrombus formation can predispose to the development of central retinal vein occlusion, including hypertension, diabetes mellitus, hyperviscosity, hyperlipidemia, POAG, and hyperopia.

Branch retinal vein occlusions occur three times more common than central retinal vein occlusion. Men and women affected equally, usual age of onset is 60-70 years.³ BRVO almost always occur at an arterio-venous crossing,

where the artery and vein share a common adventitial sheath. Most BRVO's occur superotemporally, probably due to the highest concentration of arteriovenous crossings lied there. Most common risk factors associated with BRVO are systemic hypertension, diabetes, hyperlipidemia, glaucoma, smoking and age related atherosclerosis. Antiphospholipid antibodies, elevated plasma homocysteine levels and low serum folate levels have been associated with increased risk of vein occlusion.⁴

Study aimed to study demographic characteristics and risk factors of Retinal Vein Occlusions (Both CRVO and BRVO) in patients who attend Retina Department of Sarojini Devi Eye Hospital.

MATERIAL AND METHODS

This was a cross sectional observation study included 208 patients of Retinal Vein Occlusions diagnosed at Retina department, Sarojini Devi Eye Hospital, Hyderabad.

Inclusion criteria: All patients with Retinal Vein Occlusions with clear media for evaluation.

Exclusion Criteria: Macular Edema other than vein occlusion, Lenticular Opacity, Vitreous Hemorrhage.

A complete ophthalmic examination of all patients was done including visual acuity, anterior segment evaluation by slitlamp biomicroscopy, post dilated examination of fundus using indirect ophthalmoscopy. Fundus fluorescein angiography was done as and when required.

All basic Lab investigations were studied as CBP, FBS, PLBS, Lipid Profile, Serum Homocysteine levels (if necessary), Carotid Doppler, 2D Echo and any other investigations whenever required.

STATISTICAL ANALYSIS

Statistical analysis was done using SPSS . Descriptive statistics was done by calculating mean, standard deviation, range and proportion appropriately. The inferential statistics (test of significance) was done using unpaired t- test two way.

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Parameters	Number of patients in CRVO (Percentages)	Number of patients in BRVO (Percentages)
Diabetes	27 (42.18%)	43(29.86%)
Hypertension	35 (54.68%)	107(74.30%)
Diabetes + Hypertension	13 (20.31%)	35(24.3%)
Hyperlipidemia	20 (31.25%)	19(13.19%)
CVA	0	4(2.77%)
CAD	1 (1.56%)	2(1.38%)

Table-1: Distribution Patients in CRVO and BRVO with risk factors

Gender distribution	Number of patients in CRVO (Percentages)	Number of patients in BRVO (Percentages)
Male	42(66%)	81(56%)
Female	22(34%)	63(44%)
Total	64(30%)	144(69%)

Table-2: Gender Distribution of CRVO and BRVO

Parameters	CRVO		BRVO	
	>50=39	<50=25	>60=58	<60=86
Age in number	M = 25 F = 14	M = 17 F = 8	M = 39 F = 19	M = 42 F = 44
Sex	M=42	F=22	M=81	F=63
Physical Activity decrease Ddedecreases	15		45	
Obesity	1		2	
Dietary Factors	V=0	NV=64	V=2	NV=142
Smoking	4		12	
Alcohol Consumption	1		16	

Table-3: Patient Demographics and Risk Factors

Variables	P Values of RVOs
Age	0.916
Sex	0.204
Demography	0.222
Diabetes	0.082
CAD	0.923
CVA	0.178
Hyperlipidemias	0.099
Obesity	0.923
Alchol Consumption	0.200
Hypertension	0.005 *
Physical Activity	0.251
Diatery Factors	0.343
Smoking	0.603
Hypertriglyceridemia	0.900
Raised LDL	0.900

Table-4: P Values of Parameters Studied

RESULTS

In present study Central retinal vein obstruction [CRVO] were 31% and branch retinal vein obstruction [BRVO] were 69% (figure-1). Most of the patients (67%) in study were of more than 50 years age group. In CROV and BROV patients most of the patients are hypertensive (table-1). In CROV and BROV patients most of the patients were males (table-2). Most of the patients in study are more than 50 and males, most of the patients are nonvegetarians and have habit of smoking and alcohol consumption (table-3). Only hypertension was the only significant finding in both groups and all others were insignificant (table-4).

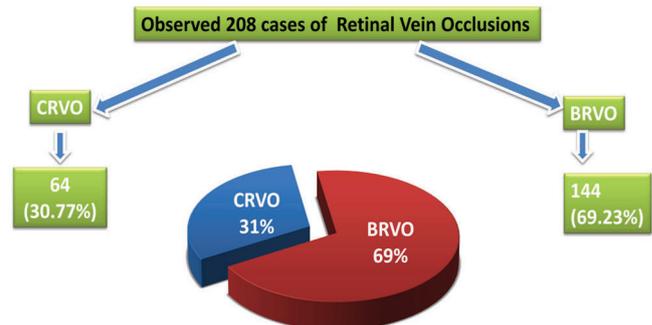


Figure-1: Distribution of RVOs

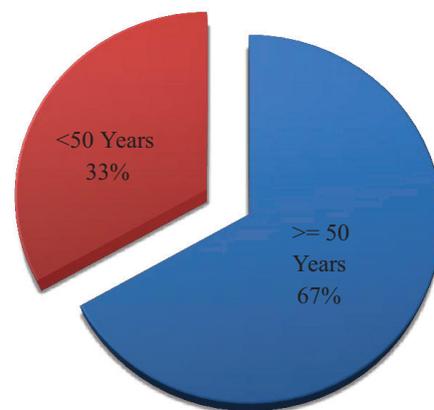


Figure-2: Age Distribution in RVOs

DISCUSSION

In this study 208 patients of RVOs attending Retina Department of Sarojini Devi Eye Hospital are studied for

their Demographic characteristics and Risk factors. CRVO most commonly occurs in elderly usually above 50 years.⁴ BRVO's occur 3 times more common than CRVO's, men and women affected equally usual age of onset is 60-70 years.⁵

Hayreh et al.² have observed that the most prevalent ages for CRVO development are 65 years and older, and it is more common in men than in women. However BRVO is more common in women. But according to present study CRVO and BRVO are more common in Men than in women and occurring in age group of above 50 years. Of total 144 patients of BRVO that were studied 81(56%) are males and 63(44%) are females and of total 64 patients of CRVO 42(66%) are Males and 22(34%) are Females. Of total 64 patients of CRVO 39(60.93%) patients are more than 50 years and 25(39.07%) patients are less than 50 years. Of total 144 patients of BRVO 58(40.7%) are more than 60 years and 86(59.7%) are less than 60 years.(Table-2)

Gutman⁵ reported that 90% of retinal vein obstructions occur in the 50 year age group or older.⁹ But according to present study of total 208 cases 139(67%) are above 50 years and 69(33%) are below 50 years.

According to present study 139(67%) are above 50 years with a mean age of 60.44 years. Their ages ranged from 20 to 84 years. Out of 64 patients of CRVO 39(60.93%) patients are more than 50 years and 25(39.07%) patients are less than 50 years with a mean age of 51.37 years and the ages range from 20 to 84 years. Out of 144 patients of BRVO 58(40.7%) are more than 60 years and 86(59.7%) are less than 60 years with a mean age of 54.03 years and the ages range from 21 to 82 years.

As mentioned earlier there are so many risk factors reported for RVO, including Hypertension, Diabetes Mellitus, Arteriosclerosis, Primary Open Angle Glaucoma, Hyperlipidemia, Hyperviscosity⁶ increase in Fibrinogen and Coagulation factors and deficiencies in protein C and S⁷, Hyperopia² (Table-1 and table-4).

Hypertension

Previous studies have shown systemic hypertension to be a risk factor for both CRVO and BRVO. The present study also demonstrated a similar trend^{6,8}

In CRVO group 35 [38%] patients had Hypertension.

In BRVO group 107 [53%] patients had Hypertension.

Hypertension comes as a statistically significant parameter with P Value of 0.005.

Diabetes Mellitus

Previous Studies have found that the frequency of diabetes was significantly increased in patients with RVO compared to normal subjects. The present study also demonstrated a similar trend.^{5,2} 27 patients of CRVO group [29%] and 43 patients of BRVO group [21%] had diabetes mellitus (P Value is 0.082).

Diabetes Mellitus and Hypertension

In this study 13 patients of CRVO [13%] and 35 patients of BRVO [17%] had both DM and HTN. This study is consistent with previous studies.^{8,9,10}

Hyperlipidemia

In this study 20 patients of CRVO [20%] and 19 patients of BRVO [9%] had Hyperlipidemia. The results of our study were consistent with previous studies of CRVO and BRVO^{8,9} (P Value is 0.099).

Hypertriglyceridemia

In this study 24 patients have raised TGs of these 9(37.5%) patients are diagnosed as CRVO and 15(62.5%) patients as BRVO. The results of our study were consistent with previous studies of CRVO and BRVO (P Value is 0.900).

Raised LDL

In this study 33 patients have raised LDL Levels of these 14(42.42%) patients are diagnosed as CRVO and 19(57.58%) patients as BRVO. The results of our study were consistent with previous studies of CRVO and BRVO (P Value is 0.900).

Age

In this study,39(60.93%) patients of CRVO are >50 years and 25(39.07%) patients are <50 years. 58(40.7%) patients of BRVO are >60 years and 86(59.7%) patients are <60 years. (P Value is 0.916).

Sex

In this study, 42(66%) patients of CRVO are males and 22(34%) are females. 81(56%) patients of BRVO are males and 63(44%) are females. The present study is consistent with previous studies (P Value of 0.204).

Demography

In present study out of 208 patients of RVOs 112(53.84%) are from Urban background and 96(46.16%) are from rural background indicating Urban population is of greater risk of occurrence of RVOs than rural population (P Value is 0.222).

CAD

In present study out of 208 patients of RVOs only 3(1.44%) patients have CAD and all these 3 cases are diagnosed as BRVO and none of patients with CRVO had an attack of CAD (P Value is 0.923).

CVA

In present study out of 208 patients of RVOs only 5(2.40%) patients have CVA and all these 5 cases are diagnosed as BRVO and none of patients with CRVO had an attack of CVA (P Value is 0.178).

Obesity

In present study out of 208 patients of RVOs only 2(0.96%) patients are obese with increased BMI and both these cases are diagnosed as BRVO and none of patients with CRVO are obese (P Value is 0.923).(Table-3)

Alcohol Consumption

In present study out of 208 patients of RVOs only 16(7.69%) patients are alcoholics and all these 16 cases are diagnosed as BRVO and none of patients with CRVO are alcoholics (P Value is 0.200). (Table-3)

Physical Activity

In present study out of 208 patients of RVOs 148(71.15%) patients have sedentary lifestyle and of these 49(33.10%) cases are diagnosed as CRVO and 99(66.90%) patients are

diagnosed as BRVO conveying that lack of physical activity is significant risk factor for occurrence of RVO (P Value is 0.251). (Table-3)

Smoking

In present study out of 208 patients of RVOs only 17(8.17%) patients are smokers and of these 4(23.52%) cases are diagnosed as CRVO and 13(76.48%) patients are diagnosed as BRVO (P Value is 0.603). (Table-3)

CONCLUSION

In the present study it was found that Hypertension stands alone as the most significant risk factor (P Value is 0.005). Other factors studied like Urban Background, Lack of physical Activity, Diabetes, Hyperlipidemias, CVA, CAD etc. though were present in good numbers in the cases studied but they were not statistically significant. With changing life style patterns and sedentary habits, the incidence of retinal vein occlusions is increasing. Hypertension, Diabetes and Raised Serum Lipids are significant risk factors for Retinal Vein Occlusions in South Indian population.

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