Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/zb6d6735

ASSOCIATION OF PRIMARY GLAUCOMA WITH RETINAL VEIN OCCLUSION IN PATIENTS ATTENDING TERTIARY CARE CENTRE

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ABSTRACT

Background: Retinal vascular occlusion refers to vein or arterial occlusion. It may be central or branch vein occlusion. Retinal vein occlusion may not be a expression of a single disease but a clinical phenomenon common to several diseases like Diabetes Mellitus, Systemic arterial hypertension and atherosclerotic cardiovascular disease, hyperlipidemia and many others. An association between primary glaucoma and retinal vein occlusion was first reported by Verhoeff, who postulated that the critical factor responsible for these changes is the increased intraocular pressure compressing and collapsing the wall of retinal vein, hence leading to the intimal proliferation in the vein.
Methods: A prospective study was done on 40 patients with retinal vein occlusion, visual acuity, slit-lamp examination to assess the depth of anterior chamber, recording of intraocular pressure, gonioscopic examination, detailed fundus evaluation were done. Visual field analysis was done with Humphreys perimeter. **Results:** Out of 40 patients, 16 patients had central retinal vein occlusion ,3 patients had hemi retinal vein occlusion and 21patients had branch retinal vein occlusion .Among 40 patients 27.5% had glaucoma and 72.5% glaucoma was absent. Out of 16 patients of central retinal vein occlusion, 6 patients had primary open angle glaucoma and 1 patient had primary angle closure glaucoma. **Conclusion:** Primary glaucoma and retinal vein occlusion are important causes of blindness. Its early detection and timely intervention remains the key to prevent visual deterioration from these two diseases. Good control of intraocular pressure in a patient known to have glaucoma may prevent occurrence of retinal vein occlusion.

Keywords: Primary Open Angle Glaucoma, Primary Angle Closure Glaucoma, Central Retinal Vein Occlusion, Branch Retinal Vein Occlusion.

INTRODUCTION

Retinal vascular occlusion refers to vein or arterial occlusion. It may be central or branch vein occlusion. Retinal vein occlusion may not be a expression of a single disease but a clinical phenomenon common to several diseases like Diabetes Mellitus, Systemic arterial hypertension and

atherosclerotic cardiovascular disease, hyperlipidemia and many others. An association between primary glaucoma and retinal vein occlusion (RVO) was first reported by Verhoeff (1913),[1] who postulated that the critical factor responsible for these changes is the increased intraocular pressure (IOP) compressing and collapsing the wall of retinal vein, hence leading to the intimal proliferation in the vein. Since the report by Verhoeff, many studies have revealed a significantly higher prevalence of primary open angle glaucoma (POAG) in patients with central retinal vein occlusion (CRVO) and branch retinal vein occlusion (BRVO) than in the general population.[2,3] However, few studies have shown the relationship between primary angle closure glaucoma (PACG) and RVO.[4,5]

AIM AND OBJECTIVES

This study was done to determine the association of primary glaucoma with retinal vein occlusion with following specific objectives:

- To find out the pattern of retinal vein occlusion.
- To find out age and sex distribution of retinal vein occlusion patients.
- To find out the association of glaucoma with retinal vein occlusion.
- To find out the pattern of glaucoma in retinal vein occlusion.

MATERIALS AND METHODS

It was a Prospective study conducted on 40 patients with optic neuritis in the department of Ophthalmology, at a tertiary care center, from July 2018 to June 2019. The institute Ethics Committee approval was obtained. A written and informed consent was taken from the patient regarding the study in his/her vernacular language and English.

Inclusion Criteria

- All diagnosed cases of retinal vein occlusion.

Exclusion Criteria

- Patients with media opacity whose fundus evaluation is not possible,
- Patients with secondary glaucoma,
- Patients with non-glaucomatous optic atrophy.

All patients diagnosed as a case of retinal vein occlusion were considered for glaucoma evaluation. Detailed history was taken and recorded in the proforma. Visual acuity was recorded with self-illuminating standard Snellen`s chart or E chart for illiterate. Visual acuity with best corrected refraction was recorded. Detail slit-lamp examination was done. The depth of anterior chamber was assessed by Van Herick method. Recording of intraocular pressure was done with Goldmann`s applanation tonometer. Gonioscopic examination with Goldmann four mirror gonio lens was done in all patients. Mydriatic (Tropicamide 1%) drops were used to dilate the pupil for detail view of fundus. Detailed fundus evaluation was done with a. Direct ophthalmoscopy b. Indirect ophthalmoscopy c. Binocular evaluation in slit-lamp with Volk 78D lens. While doing funduscopy the sizes, shapes of the optic discs were evaluated. Similarly the status of neuroretinal rim was assessed. Visual field analysis was done with Humphreys perimeter. Fundus photography was done of all the retinal vein occlusion patients with primary glaucoma by Canon fundus camera. Diagnosis of glaucoma was confirmed by presence of any two of the following parameters: 1. Glaucomatous optic atrophy 2. Visual field changes 3. High Intraocular pressure (> 22mm Hg). The data collected was entered in excel spread sheet. The data was analyzed by using SPSS statistical software version 20. Statistical analysis in the form of percentages was done.

RESULTS

Total 40 patients of retinal vein occlusion were included in this study. Out of 40 patients, 16 patients had central retinal vein occlusion that is 40%, 3 patients had hemi retinal vein occlusion (HRVO) that is 7.5% and 21patients had branch retinal vein occlusion that is 52.5% (Graph 1). Out of 21 patients with BRVO, 10patients (42.5%) had superior temporal branch vein occlusion, 6 patients (28.5%) had

inferior temporal branch retinal vein occlusion and 5 patients (23%) had macular branch retinal vein occlusion.

Out of 40 patients of retinal vein occlusion, minimum number of patients (3) were in the age group of 30-40 years (7.5%) and maximum about 15 patients were in the age group of 51-60years (37.5%). 10 patients (25%) were in the age group of 61- 70 years (Table 1).

Out of 40 patients, 21were males (52.5%) and 19 were females (47.5%) (Table 1).

Out of total 40 patients of retinal vein occlusion, 11 patients (27.5%) had glaucoma and in 29 patients (72.5%) glaucoma was absent. Out of 21 patients of branch vein occlusion patients 3(14.2%) had glaucoma and 18 patients (85.7%) did not have glaucoma (Graph 2).

Out of 16 patients of central retinal vein occlusion, 6 patients (37.5%) had primary open angle glaucoma and 1 patient (6.5%) had primary angle closure glaucoma. Out of 21 patients of branch retinal vein occlusion 3 patients (14.2%) had primary open angle glaucoma. out of 3 patients of hemi retinal vein occlusion, 1 patient (33.3%) had primary open angle glaucoma (Graph 3).

Age	**Male**	**Female**	**Total**
31-40	2	1	7.5%
41-50	4	4	20%
51-60	7	8	37.5%
61-70	6	4	25%
71-80	2	2	10%
	21	19	100%

Table 1: Age and sex distribution of the patients

DISCUSSION

In this study glaucoma was present in 11 patients out of 40. POAG was most commonly associated with RVO. Vannas & Tarkkanen.et al and Hayreh et al.[5,6] in their study also found association between POAG and RVO and suggests that preexisting glaucoma predisposes an eye to RVO. The reasons are the optic cupping may cause mechanical displacement of the main venous trunk, leading to stretching and weakening of the vein wall, which facilitates the transmission of an increased IOP through the vein wall into the lumen[7,8] and the Second is the increased IOP leads to compression and collapse of the vein and induces venous stasis, thus potentially obstructing the vein.[9]

1 case of PACG was seen in CRVO. Posner et.al also shown high incidence of PACG in CRVO than BRVO[4].The reason for the higher frequency of PACG in CRVO than in BRVO is likely associated with local anatomic factors.

Present study showed that central retinal vein occlusion is associated with primary open angle glaucoma more than branch vein occlusion. This study is comparable to the study done by Appiah & Trempe.et al[10] and Sperduto et al[11] who also showed that CRVO is more closely related to POAG than BRVO. The prevalence of POAG was higher in CRVO (6–69%) than in BRVO (6.6–15%)[9] as studied by Larsson S & Nord et.al.

CONCLUSION

Primary glaucoma and retinal vein occlusion are important causes of blindness. Its early detection and timely intervention remains the key to prevent visual deterioration from these two diseases. It would be worthwhile to carefully evaluate all the patients of retinal vein occlusion for primary glaucoma. Good control of intraocular pressure in a patient known to have glaucoma may prevent occurrence of retinal vein occlusion.

This study thus emphasizes frequent and careful evaluation of retinal vein occlusion cases primary open angle glaucoma.

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