ORIGINAL RESEARCH PAPER
Volume - 12 | Issue - 03 | March - 2023 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A SHORT TERM STUDY OF OUTCOMES OF INTRA VITREAL BEVACIZUMAB IN THE TREATMENT OF MACULAR EDEMA DUE TO RETINAL VENOUS OCCLUSIONS.

Ophthalomology

Dr. Ramya Parvathaneni Post Graduate, M S Ophthalmology,GEMS and Hospital.

Dr. Dinesh Kanth Vudayana Associate Professor, Department of Ophthalmology, GEMS and Hospital.

Dr. Kolluru Padmaraju Professor and HOD , Department of Ophthalmology, GEMS and Hospital.

ABSTRACT

Aims And Objectives: To study the efficacy and safety of intravitreal bevacizumab in the treatment of macular edema secondary to retinal venous occlusions. **Materials And Methods:** A prospective interventional study was done among patients with macular edema due to retinal venous occlusions from January 2021 to July 2022. Bevacizumab of dosage 1.25mg/0.05 ml is given intravitreally for every 4 to 6 weeks until the macular edema subsided. Visual acuity, ophthalmic examination and central retinal thickness measurement by optical coherence tomography are done and recorded at baseline and subsequent visits. **Results:** In this study, 28 eyes were included with Central Retinal Venous Occlusion in 16 eyes and Branched Retinal Venous Occlusion in 12 eyes. In eyes with CRVO, central retinal thickness reduced from 648 + 202 µm at the first visit to 252 + 130) µm ($p<0.0001$) at the final follow up. In eyes with BRVO, central retinal thickness reduced from 538 + 195 µm at the first visit to 220 + 130 µm ($p<0.0001$) at the final follow up. BCVA is improved in 72% of cases with BRVO and 61% of cases with CRVO at the final follow up. No ocular or systemic adverse effects were recorded during the study. **Conclusion:** Bevacizumab is an effective and safe drug given intravitreally in the reduction of macular edema, complicated by retinal venous occlusions and improvement of visual acuity.

KEYWORDS

Bevacizumab, macular edema, retinal venous occlusions.

INTRODUCTION

Retinal venous occlusion is the most common retinal vascular occlusive disorder which is usually associated with variable amount of visual loss. Venous occlusive disease of the retina is the second most common retinal vascular disorder, behind diabetic retinopathy.RVO is usually classified into branch RVO (BRVO) and central RVO (CRVO) according to the anatomical site of the vascular occlusion.

Important event in the pathogenesis is the intraluminal thrombus formation, which is usually secondary to several conditions such as hypertension, hyperlipidemia, diabetes and thrombophilia. The blockage of venous circulation causes an elevation of intraluminal pressure in the capillaries, leading to hemorrhages and leakage of fluid within the retina, increase of interstitial pressure and a consequent reduction of retinal perfusion.

Is chemia may develop resulting in secretion of vascular endothelial growth factor (VEGF) that causes further vascular leakage and retinal oedema. VEGF has therefore a leading role in RVO pathogenesis and symptoms.[1] As a consequence use of anti-VEGF agents by intravitreal injections has become very common with the aim to improve the clinical outcomes in these patients.

Intravitreal bevacizumab (IVB) (Avastin®, Genentech, San Francisco, CA, USA) is used off-label for the treatment of VEGF-mediated ocular diseases such as choroidal neovascularization, proliferative diabetic retinopathy, retinal vein occlusions, and pseudophakic macular oedema[2] Our study is done to evaluate the outcomes of use of intravitreal Bevacizumab , an anti –VEGF agent , in the treatment of macular edema due to retinal venous occlusions.

AIMS AND OBJECTIVES:

- To evaluate the efficacy of intravitreal bevacizumab in the treatment of macular edema in central and branched retinal venous occlusions.
- To assess the visual outcome with the intravitreal bevacizumab in the treatment of macular edema in central and branched retinal venous occlusions.
- To study the safety of intravitreal bevacizumab in the treatment of macular edema secondary to retinal venous occlusions.

MATERIALS AND METHODS:

A prospective interventional study was done among patients attending the ophthalmology outpatient department with macular edema due to retinal venous occlusions from January 2021 to July 2022.

Informed consent was taken from the patients before enrollment in the study after fully explaining the possible risks and benefits of intra-vitreal Bevacizumab. Detailed history was taken regarding the demographics, chief complaints including the duration of problem, presence of systemic diseases like hypertension, diabetes mellitus, cardiac diseases and hyperlipidemia. Ocular evaluation included presenting and best corrected visual acuity (BCVA), anterior segment examination, posterior segment examination and IOP is measured by Goldman applanation tonometry.

Retinal venous occlusions are further evaluated to be classified as CRVO or BRVO. Central retinal thickness is measured by ocular coherence tomography at baseline and every follow-up visits at 4 - 6 weeks intervals till the macular edema subsided. Systemic blood pressure was measured at baseline, and at each follow up visit. Fasting and post prandial blood sugar and lipid panel tests were advised in all cases to find out the underlying systemic risk factors and to assess the level of control in diagnosed cases before intravitreal injection.

Inclusion Criteria:

Cases with macular edema (CRT >249µm) and visual acuity worse than 6/12 secondary to either BRVO or CRVO .

Exclusion Criteria:

- Patients with anterior segment pathologies.
- Patients with other posterior segment pathologies like retinal detachment , vitreous haemorrhages.
- Patients with glaucoma.
- Patients on treatment for macular edema previously .
- Patients with previous ocular surgery.
- Patients with uncontrolled hypertension, myocardial infarct or cerebrovascular accident within 3 months of presentation.
- Patients not willing to be part of the study.

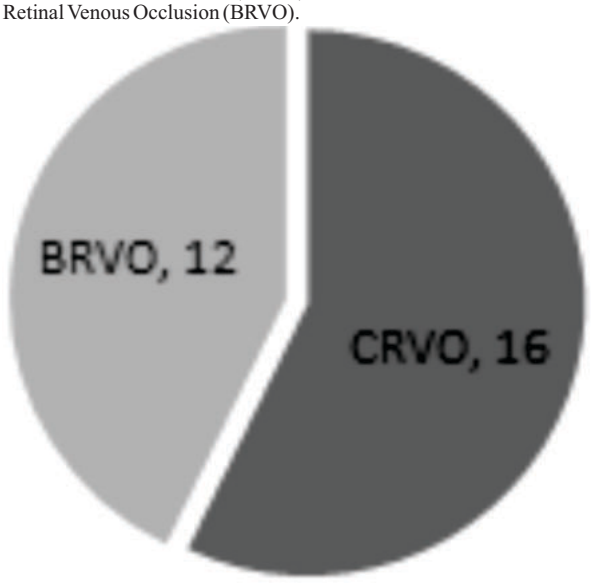
The intra-vitreal Bevacizumab was given in a dose of 1.25 mg/0.05 ml through pars plana with 26G needle at baseline and repeated at 4 - 6 week intervals until the macular edema subsided. The injection was given in the operation theatre with aseptic precautions under topical anesthesia.[3]

Detailed ophthalmic evaluation including visual acuity, anterior and posterior segment evaluation, and assessment of macular edema was done at each follow up.

RESULTS:

28 eyes were included in the study. Of them, 16 cases are with Central

Retinal Venous Occlusion (CRVO) and 12 cases are with Branched Retinal Venous Occlusion (BRVO).



CRVO (N=16) :

All the 16 cases of CRVO came for followup at 4 weeks and 8 weeks. 10 cases of them came for the subsequent followup at 4 weeks after the second visit as advised and 6 cases came later with further deterioration of vision.

VISIT	CENTRAL RETINAL THICKNESS	p-value	BCVA (average)
Baseline	648±202µm		1.2
4 weeks	430±226µm	0.006	0.9
8 weeks	297± 129µm	<0.0001	1.0
Last followup	252±130µm	<0.0001	0.89

Mean central retinal thickness was 648 + 202 µm at the baseline visit which reduced to 430 + 226 µm (p – value = 0.006), 297 + 129 µm (p-value < 0.0001) and 252 + 130 µm (p-value <0.0001) at 4 weeks, 8 weeks and the final followup respectively. Best Corrected Visual Acuity (BCVA) measured with logMAR was 1.2 (average) at the baseline visit , improved to 0.9, 1.0 and 0.89 at 4 weeks, 8 weeks and the last followup respectively

BRVO(N=12) :

9 of 12 cases of BRVO came to the followup at 4 weeks, 8 weeks and 12 weeks as advised. 3 cases came at 4 weeks and 8 weeks but came at later periods with decreased vision.

VISIT	CENTRAL RETINAL THICKNESS	p-value	BCVA (average)
Baseline	538±195µm		1.0
4 weeks	348±120µm	<0.0001	0.7
8 weeks	228±115µm	<0.0001	0.6
Last followup	220±130µm	<0.0001	0.5

Mean central retinal thickness was 538+195µm at the baseline visit which reduced to 348+120µm (p-value < 0.0001), 228+115µm (p-value < 0.0001) and 220+130µm (p-value <0.0001) at 4 weeks, 8 weeks and the final followup respectively. Best Corrected Visual Acuity (BCVA) measured with logMAR was 1.0 (average) at the baseline visit , improved to 0.7, 0.6 and 0.5 at 4 weeks, 8 weeks and the last followup respectively.

CONCLUSION:

There was a significant reduction of central retinal thickness in CRVO and BRVO cases with macular edema. BCVA is improved in 62.5% i.e. 10 out of 16 cases in CRVO.BCVA is improved in 75% i.e. 9 out of 12 cases in BRVO.There are no ocular or systemic side effects. Bevacizumab is an effective and safe drug given intravitreally in the reduction of macular edema, complicated by retinal venous occlusions and improvement of visual acuity.

REFERENCES:

[1] HayrehSS1983Classification of central retinal vein occlusion Ophthalmology 458746877778 .

[2] Iturralde D, Spaide RF, Meyerle CB, Klancnik JM, Yannuzzi LA, Fisher YL *et al*. Intravitreal bevacizumab (Avastin) treatment of macular edema in central retinal vein occlusion. A short term study. *Retina* 2006; **26**: 279–284.

[3] Juan Carlos Mesa Gutiérrez, Luis Arias Barquet, Josep Maria Caminal, Mitjana, Sergi Prades Almolda, Nùria Planas Domènech, Octavi Pujol Goita, Marc Rubio Caso & Jorge Arruga Ginebreda (2008) Intravitreal bevacizumab (Avastin) in the treatment of macular edema secondary to retinal vein occlusion, Clinical Ophthalmology, 2:4, 787-791, DOI: 10.2147/opth.s3798.