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ROLE OF INTRAVITREAL BEVACIZUMAB IN THE TREATMENT OF MACULAR OEDEMA DUE TO RETINAL VEIN OCCLUSION

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ABSTRACT

AIM: To study the effectiveness of intravitreal Bevacizumab (Avastin) in macular oedema due to retinal vein occlusion
STUDY: Hospital based interventional study. Sample size: 50 patients
METHODS: All the patients with retinal vein occlusion (CRVO & BRVO) with centre involving macular oedema of CMT >300 micronswere taken in the study, the patients with media opacities and other causes for macular edema were excluded.
Patients who met inclusion criteria received IVA 1.25mg in 0.05 ml.
BCVA, ophthalmic examination, OCT-Macula were performed at baseline and after 1 month post injection.
Re-injections were given if OCT-Macula showed persistent or recurrent macular oedema(ME) in follow-up visits.
Each were evaluated at follow-up visits monthly till 6months.The results are analyzed according to OCT values.
CONCLUSION: Intravitreal Bevacizumab (IVA) seems to be safe and effective in treatment of RVO associated with macular oedmea in reducing the CMT, however higher randomised controlled trails are required to establish its safety.

KEYWORDS :

INTRODUCTION:
Retinal vein occlusions (RVOs) remains the second most common sight-threatening vascular disorder after diabetic retinopathy. It is caused due to compression of retinal vein by arteriosclerotic artery resulting in turbulent venous flow-endothelial damage- leakage of fluid and blood. The main cause of visual loss in RVO is macular oedema.

VEGF has been implicated in the process of new vessel formation and increased vascular permeability. Of the VEGF receptor blockers in clinical trials and practice, Bevacizumab (Avastin, Genentech, Inc., San Francisco, CA), a full-length, humanized, monoclonal antibody directed against VEGF is gaining popularity for treatment of macular edema. Originally used for metastatic colorectal carcinoma, this PAN-VEGF blocking monoclonal antibody was found to have beneficial effect in Retinal vein occlusion, Wet ARMD, Diabetic retinopathy.

In Retinal Vein occlusions, the vascular changes are acute and hence even with single Anti-VEGF injection, there is significant reduction in CMT

AIM: To study the effectiveness of intravitreal Bevacizumab (Avastin) in macular oedema due to retinal vein occlusion

METHODOLOGY:
This is an hospital based interventional study, conducted in Govt Regional eye hospital, Andhra medical college; Visakhapatnam. 50 patients with Retinal vein occlusion from Jan 2016 to June 2017 were taken.

Inclusion criteria:
All the patients with retinal vein occlusion (CRVO & BRVO) with centre involving macular oedema of CMT >300microns diagnosed by Optical coherance tomography(OCT) were taken in the study

Exclusion criteria:
Eyes with cataract,corneal opacities, Macular edema due to other causes like Diabetic retinopathy, CNVM etc, Intraocular surgery within 1 month, Vitreo-macular traction, Epiretinal membrane were excluded.

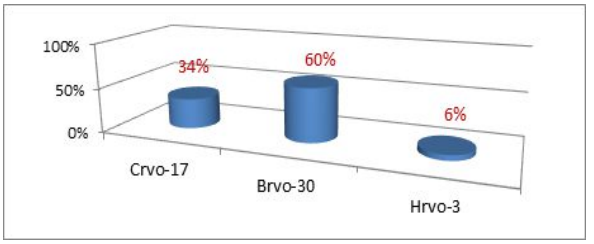
An informed consent is taken from the patient regarding the off-labelled use of intravitreal Bevacizumab. Patients with macular oedema (ME>300microns) due to CRVO/BRVO received IVA 1.25mg in 0.05 ml.

BCVA, ophthalmic examination, OCT-Macula were performed at baseline and after 1 month post injection.

Re-injections were given, if OCT-Macula showed persistent or recurrent macular oedema(ME) in follow-up visits.

Each were evaluated at subsequent follow-up visits monthly till 6months. The results are analyzed to see whether there is a significant change in CMT.

RESULTS: Out of 50 Retinal vein occlusion cases CRVO were 17(34%), HRVO were 3 (6%) and BRVO were 30 (60%)



Mean Age of presentation was 62.35yrs, Females accounted for 34% and males accounted for 66%.

Age	CRVO	HRVO	BRVO	%
<40yrs	0	0	3	6%
41-50yrs	2	1	4	14%
50-60yrs	3	2	7	24%
61-70yrs	10	0	13	46%
>70yrs	2	0	3	10%
Total	17	3	30	

Sex distribution

	Males	Females
CRVO	11	6
HRVO	2	1
BRVO	20	10
Total	33	17
%	66%	34%

Mean visual acuity in BRVO is 0.78(6/36) log mar units & in CRVO Mean visual acuity is 1.23(6/120) log mar units.

VA	CRVO&HRVO	BRVO
6/6-6/18	0	3 (10%)
<6/18-6/60	3(15%)	12 (40%)
<6/60-3/60	6(30%)	4 (13.33%)

<3/60-1/60	8 (40%)	6 (20%)
<1/60	3 (15%)	5 (16.66%)
Total	20	30

The Mean CMT at presentation in BRVO is 490.25 microns and Mean CMT in CRVO & HRVO is 757.37 microns

CMT at presentation	CRVO & HRVO	HRVO
301-500	3 (15%)	16 (53.33%)
501-700	7 (35%)	8 (26.66%)
701-900	5 (25%)	4 (13.33%)
901-1100	3 (15%)	
1101-1300	2 (10%)	
Total	20	30

Mean reduction in CMT after IVA Injections

	At baseline	**After 1st IVA**
BRVO (30cases)	490.25 mic	287.16 203.09 mic
CRVO & HRVO(20)	757.37 mic	604.625 152.75 mic
	Mean before 2nd IVA	**After 2nd IVA**
BRVO (21cases)	424mic	301.33 mic 122.67 mic
CRVO & HRVO (18)	586.30 mic	451.7 mic 134.6 mic
	Mean before 3rd IVA	**After 3rd IVA**
BRVO (8cases)	319.83mic	255.75 mic 64.08 mic
CRVO & HRVO (13)	416.7 mic	326.01 mic 90.7 mic

At the end of six months

	CRVO & HRVO	BRVO
Reduction in macular edema	15	28
Persistence/ Recurrence of edema	5	2
Total	20	30

Visual acuity outcomes at the end of 6 months

— At the end of 6months-
— In CRVO & HRVO-There is improvement of 0.22 log mar units in terms of vision
— In BRVO- There is improvement of 0.28 log mar units in terms of vision

Discussion:

— In the present study taking 50 cases of RVO, BRVO accounted for 60% (30 cases), and CRVO & HRVO accounted for 40% (20 cases), the mean age of presentation is 62.35yrs.
— The Mean CMT at presentation in BRVO is 490.25 microns and Mean CMT in CRVO & HRVO is 757.37 microns
— The mean CMT decrease in BRVO after 1st IVA is 203.09 microns, after 2nd IVA is 122.67 microns and after 3rd IVA is 64.08microns. The Mean CMT reduction is decreased with subsequent injections
— There is reduction of edema in 30% (9) of BRVO cases after 1month with single IVA, which were followed monthly for recurrence of edema and reinjections were given as required.
— The mean CMT decrease in CRVO & HRVO after 1st IVA is 152.75 microns and after 2nd IVA is 134.6 microns and after 3rd IVA is 90.7 microns.
— In Shaaban A. Mahey study the mean age of all patients was 65.3 years ± 8.5 (range, 55–82 years), 20 males and 10 females patients. The CMT reduction range is about 455±126 to 356 ± 118 microns
— In this study 88% (18 cases) of CRVO needed reinjections after 1 month
— There is more reduction in CMT after 1st IVA which decreased following subsequent injections.
— At the end of 6 months there is reduction of macular edema in 93.33% (28cases) in BRVO and 75% (15 cases) of CRVO cases.
— Persistence or recurrence of macular edema implicates possibility of inflammatory mediators other than VEGF
— In BRVO there is improvement from 0.78(6/36) log mar units to 0.50(6/18) log mar units. In CRVO, there is improvement from 1.23(6/120) log mar units to 1.01(6/60) log mar units.
— In Shaaban A. Mahey study the mean baseline VA was 20/240 (log MAR 1.08 ± 0.52) and improved to 20/60 (log MAR 0.48 ± 0.32).
— In Pielen A etal study gain in visual acuity after 12 months was observed with Bevacizumab of around 1.25 mg: +16.1 letters (8 injections)in CRVO and in BRVO resulted in a visual acuity gain of +18.3 letters
— No intraocular or systemic adverse effects were reported in our study during the 6months of follow-up.

CONCLUSION

— Intravitreal Bevacizumab (IVA) seems to be safe and effective in treatment of RVOs in reducing the CMT, however higher randomised controlled trails are required to establish its safety
— The effect lasted for about 4-6 weeks, then started to deteriorate again with need for re-injection. However there is a variation from one patient to another in which considerable proportion of eyes with BRVO cured by one IVA injection while others with CRVO showed recurrence with need for re-injections.

The response for improvement and recurrence depend of degree of macular ischemia, amount of retinal hemorrhages, extend of irreversible photoreceptor damage and progression over time from perfused to non-perfused RVOs

— Limitations of the current study are
- Relatively short-term follow-up period
- Small sample size
- lack of a control group
- Use of off labelled drug

References

1. Early Avastin management in acute retinal vein occlusion.Shaaban A. Mehany, (MD),Khaled M. Mourad (MD),Ahmad M. Shawkat (MD)
2. Pielen A, Feltgen N, Isserstedt C, Callizo J, Junker B, et al (2013)
3. Efficacy and safety of Intravitreal Therapy in Macular edema due to Branch and Central Retinal Vein Occlusion: Systematic Review. PLoS ONE 8(10):e78538. doi:10.1371/journal.pone.0078538
4. Bevacizumab in Inflammatory and Vascular Diseases of the Eye Dr. Anju S. Raju MBBS DOMS, Dr. Biju Raju MS FNB, Dr. NSD Raju MS DOMS, Dr. PR Santha MBBS DOMSDepartment of Ophthalmology, El-Minia Faculty of Medicine, El-Minia University Hospitals, El-Minia University, Egypt
5. Intravitreal Injections Sami Kamjoo, MD, Koushik Tripathy, Sami Kamjoo, MD and Theodore Leng, MD, MS Is intravitreal bevacizumab (Avastin) safe? S Michels