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Role of Intravitreal Bevacizumab on Ischaemic and non Ischaemic Central Retinal Vein Occlusion and a Comparison.

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ABSTRACT

Background: To evaluate the effect of intravitreal bevacizumab on macular edema in diagnosed cases of ischaemic and non ischaemic central retinal vein occlusion. **Methods:** In a prospective study conducted between April 2016 to March 2017, 34 diagnosed cases of ischaemic CRVO and 42 diagnosed cases of non ischaemic CRVO with macular edema (macular thickness >350 micometer) were assessed for best corrected visual acuity, macular thickness by OCT, fluorosceine angiography and tonometry. Each of the patients were given intravitreal bevacizumab (1.25 mg in 0.05 ml total volume) thrice at interval of 4 weeks and follow up was done at 1 ,2 and 6 months following last injection. **Results:** The mean macular thickness decreased significantly in both ischaemic and non ischaemic CRVO following intravitreal bevacizumab and the mean BCVA improved (log Mar). **Conclusion:** Intravitreal bevacizumab is the mainstay for macular edema following CRVO. Decrease in macular thickness in non-ischemic CRVO is faster and more constant compared to ischemic CRVO. Ischaemic CRVO is more resistant to intravitreal bevacizumab, needs more number and frequency of injections. Intravitreal steroid for better response and more closer follow ups with frequent interventions were needed.

Keywords: Ischaemic central retinal vein occlusion, non ischaemic CRVO, bevacizumab, anti VEGF.

INTRODUCTION

Central retinal vein occlusion (CRVO), a retinal vascular occlusive disease is a potential blinding condition whose pathogenesis is not well understood. The non ischaemic variety of CRVO has been reported more commonly than the ischaemic, though a third of non ischaemic progress to ischaemic form within months.[1] The main symptom in both the varieties is a painless monoocular loss of vision, which is more severe (CF or less) in ischemic CRVO as compared to non ischaemic (variable degree ranging from 6/12 to worse than 6/60). While the prognosis of the non ischemic variety is variable depending on the initial presenting visual acuity it is poor in the ischaemic variety. One of the mojor complications resulting in a long term poor visual acuity is the development of macular edema.

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Currently there is no standard treatment protocol for treatment of macular edema in patients with macular edema in CRVO. Macular grid laser photocoagulation used in treatment for macular edema in BRVO has shown limitation in cases of CRVO.[2]

The centre to pathogenesis of CRVO is retinal hypoxia and it has been shown that vascular endothelial growth factor(VEGF) triggers hypoxia.[3,4] Also in CRVO, there is evidence of upregulted expression of VEGF mRNA in retina and increases VEGF in vitreous fluid.[5,6] As VEGF is shown to play a major role in development of macular edema anti VEGF has been tried in cases of macular edema in CRVO and is now accepted as treatment for CRVO associated macular edema.

In this study we demonstrate the effect of one of the earliest and most used anti VEGF bevacizumab given intravitreally CRVO associated macular edema and also compare its effectiveness and frequency of dosing required in both ischaemic and non ischaemic forms.

Aim:

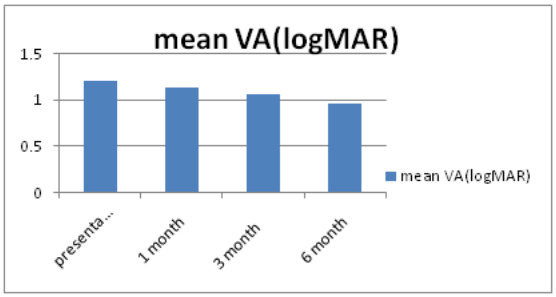
To evaluate the effect of intrvitreal bavacizumab on macular edema in diagnosed cases of ischaemic and non ischaemic central retinal vein occlusion.

MATERIALS AND METHODS

In a prospective study 34 diagnosed cases of ischaemic CRVO and 42 diagnosed cases of non ischaemic CRVO with macular edema (macular thickness >350 micometer) were assessed for best corrected visual acuity, macular thickness by OCT, fluorosceine angiography and tonometry. Each of the patients were given intravitreal bevacizumab (1.25 mg in 0.05 ml total volume) thrice at interval of 4 weeks and follow up was done at 1 ,2 and 6 months following last injection.

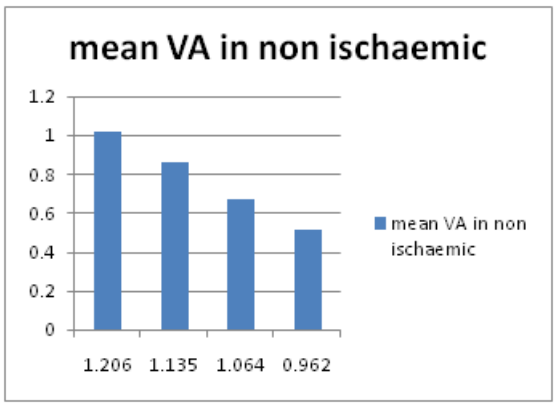
RESULTS

Visual acuity expressed as log MAR
In ischaemic CRVO-

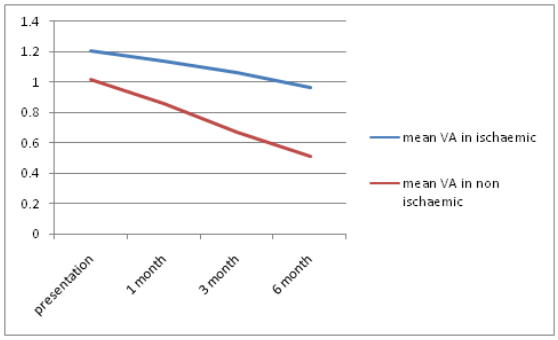


The mean VA at presentation in case of ischaemic CRVO was 1.206 (expressed in log MAR) which improved to 1.135, 1.064, 0.962 at 1st, 3rd and 6th month respectively. The improvement in VA at presentation and at 6th month is statistically significant (paired t test,$p < 0.05$)

In non ischaemic CRVO



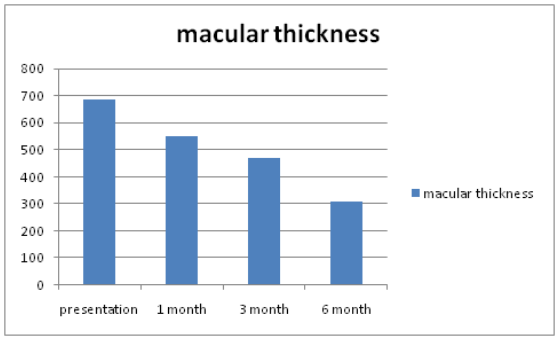
The mean VA at presentation in case of non ischaemic CRVO was 1.017 which improved to 0.859, 0.671 and 0.515 at 1st,3rd and 6th month respectively. This improvement was statistically significant (paired t test, $p<0.05$)
Comparison between ischaemic and non ischaemic CRVO –



The mean VA at presentation is better in case of non ischaemic CRVO. Also following intravitrealbevacizumab VA improves more significantly in case of non ischaemic CRVO.

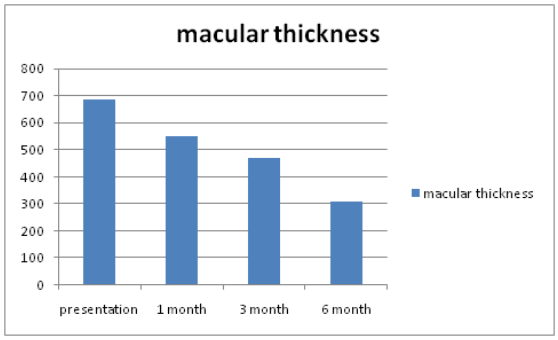
Macular thickness

1. Mean macular edema measured in case of ischaemic CRVO using Spectralis domain OCT-



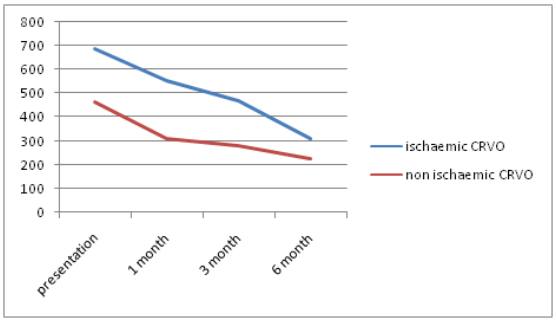
The mean macular thickness at presentation was 685 microns which reduced significantly to 310 microns in a period of 6 months ($p<0.05$), however the mean macular thickness remains high even at the end of 6 months.

2. Mean macular edema measured in case of non ischaemic CRVO using Spectralis domain OCT-



The mean macular thickness reduced to 225 microns from 465 microns in a period of 6 months which is significant.

3. Comparison between macular thickness of ischaemic CRVO and non ischaemic CRVO-



The presenting macular thickness is higher in ischaemic CRVO compared to non ischaemic CRVO. Also mean macular thickness reduces to below 250 microns in case of non ischaemic cases but in remains higher than 250 microns in ischaemic cases.

DISCUSSION

Macular edema is the most important cause of decreased visual acuity in cases of CRVO both ischemic and non ischameic. Various treatment protcols have therefore targeted an outcome of reduction in macular edema to improme vision. Laser photocoagulation has shown its limitation in cases of ischaemic CRVO. Intravitral triamcinolone acetonide injections have been tried with variable results.[7] The role of intravitreal ranibizumab in non ischaemic study was demonstrated in a systematic review published by Cochrane EYE and Vision Group.[8] Hence intravitreal anti VEGF is a promising modality of treatment in ischemic and non ischemic CRVO.

CONCLUSION

The mean VA , both in case of ischaemic and non ischaemic CRVO improves significantly following intravitreal bevacizumab given thrice at an interval of 4weeks. However, it is seen thatintravitreal bevacizumab shows better results with non ischaemic CRVO. The macular edema also reduces significantly in both cases but in case of ischemic CRVO the mean macular thickness remains at 310 microns which is still high. Therefore it can be concluded that intravitrael bevacizumab given thrice, has significant effect on non ischaemic CRVO. Though significant effect is also seen in the ischaemic variety, more number of doses and more frequent dosing may be needed along with intravitreal steroids.

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