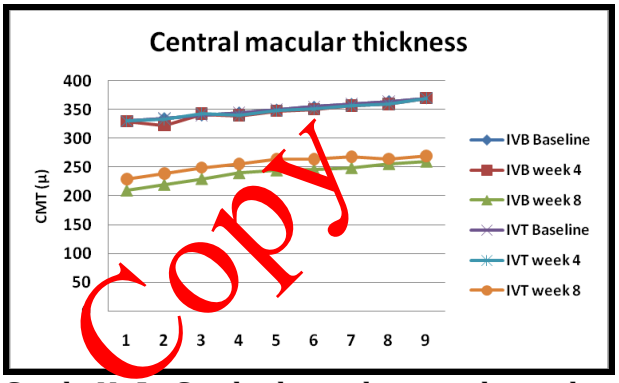
Therefore, the present study was designed to investigate efficacy and safety of intravitreal triamcinolone acetonide (IVT) and intravitreal bevacizumab (IVB) in the treatment of ME related to BRVO at our tertiary care hospital.

MATERIALS AND METHODS

The present comparative case series study was conducted at the Department of Ophthalmology, Department of Ophthalmology, El-Ibrahim Eye Hospital and Al-Tibri Medical College from January 2013 to March 2015. A sample of 64 patients of BRVO was selected and divided into two groups; Group I. Intravitreal Bevacizumab (IVB) (n=32) and Group II. Intravitreal triamcinolone (IVT) (n=32). Subjects were selected as per predefined inclusion and exclusion criteria. RBVO related ME cases were included by non-probability purposive sampling. Macula looking thicker than surrounding parts of retina was deemed as ME positive as examined by slit lamp biomicroscope and 90 diopter lens. Diagnosis of RBVO was made if multiple flame-shaped hemorrhages in any quadrant of fundus with dilated retinal vein were observed. Dilated retinal vein was defined as vein with caliber larger than rest of veins on fundoscopy. The fundoscopy was performed with slit lamp biomicroscope and 90 diopter lens. Patients with diabetic maculopathy, traction retinal detachment, macular pucker, vitreous hemorrhage, maculopathy of other etiologies and central retinal vein occlusion (CRVO) were excluded. Volunteers were asked to sign informed written consent. Baseline vision (BCVA) was checked by ETDRS acuity chart. Optical coherence tomography (OCT) was used to computed central macular thickness (CMT). Improvement of vision and central macular thickness were noted at baseline, week 4 and week 8. The data was analyzed on statistix 8.1 (USA). Continuous and categorical variables were analyzed by Student`s t test and Chi-square test respectively. Data was analyzed at 95% confidence interval with significant p-value of ≤ 0.5.

RESULTS

Age mean± SD was noted as 51.6 ±7.01 and 52.1±5.6 years in group I and II respectively (p=0.93).



Graph No.I. Graph shows the central macular thickness in Bevacizumab (IVB) and triamcinolone (IVT) at baseline, week 4 and 8.

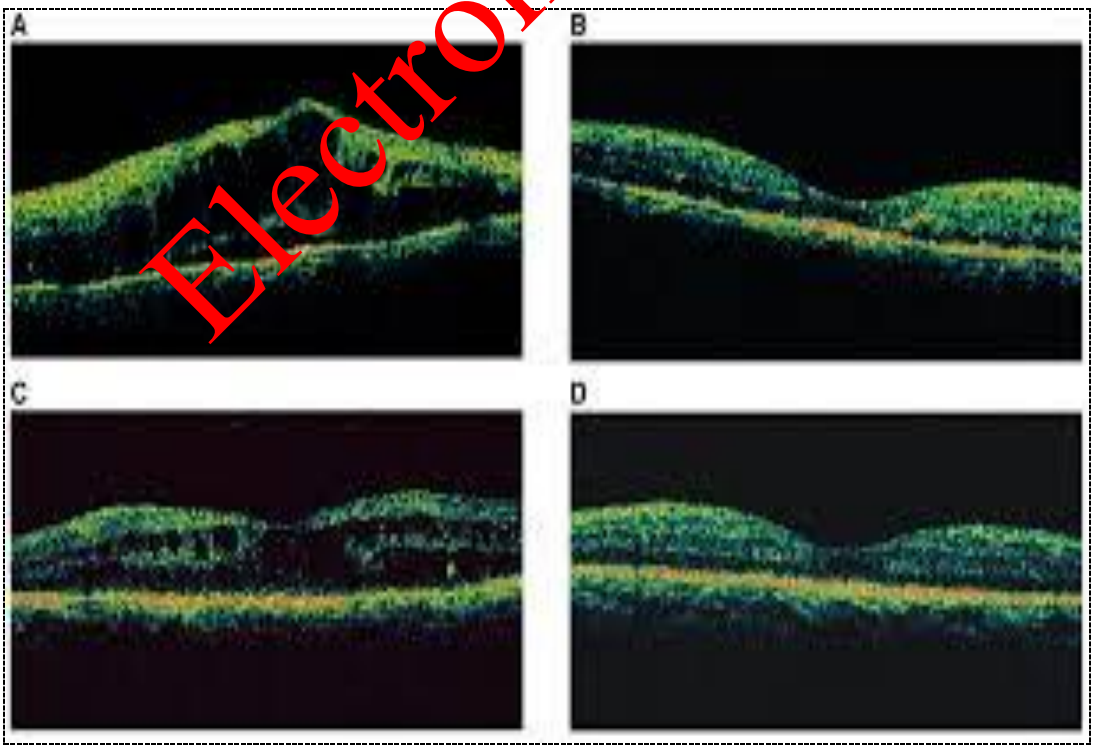


Figure I. A. Pre-injection baseline triamcinolone, B. Post-injection IVT at week 8, C. Pre-injection baseline Bevacizumab, D. Post-injection Bevacizumab at week 8

Group I comprised of 19 (59.3%) male and 13 (40.6%) female (χ^2=49.1, p=0.034) and group II 16 (50%) male and 16 (50%) female (χ^2=1.01, p=0.90). Mean± SD duration of BRVO was 8.37±4.21 and 8.35±4.3 months (p=0.09) in IVB and IVT respectively. Mean± SD of central macular thickness (CMT) in group I and II at baseline was 365.71±159.7µ and 363.91±153.9µ respectively (p=0.95).

Similarly, difference was not observed in BCVA for near at 1st visit and 2nd follow up visit at week 4 (p≥0.85) between 2 groups. At week 8 follow up, there was significant difference in the BCVA (for distance p = 0.03 and for near (p = 0.017).

At week 8, mean CMT was reduced in IVB group compared to IVT, but difference was statistically non-significant (p >0.05) (graph I). IVB group showed visual improvement in 28 (87%) compared to 20 (62.5%) in IVT at week 8 (p=0.017). 3 in IVB and 11 in IVT showed no improvement in vision (p=0.011) on comparison of pre and post treatment vision. On the contrary, one patient in each group showed decrease in vision.

Procedure related complications; the subconjuctival hemorrhage, raised intraocular pressure (IOP) and cataract were noted in both groups but more in IVT group compared to IVB. One patient of endophthalmitis was noted in the IVT (group II). Triamcinolone group showed one patient of cataract and 8 (24.9%) of raised IOP. Topical agents were used to control raised IOP. Raised IOP was not observed in IVB group (p=0.0001).

DISCUSSION

Retinal vein occlusion is one of the major causes of blindness Worldwide. Still controversies exist in the management options to be preferred one over other.[3] Although, most of the researchers believe that early detection of the disease can prevent vision loss if managed properly and appropriately, thus reducing the morbidity.[1,4] Controversies also exist regarding the exact causes of retinal vein occlusion, but thrombus formation has been considered as the most important cause of retinal vein occlusion.[11] Retinal vein occlusion has been the subject of almost incessant research but its etiology and mechanism remains ambiguity.[12]

Branch retinal vein occlusion (BRVO) is one of the frequent retinal vascular diseases.[13] BRVO may reduce blood perfusion of retina with manifest retinal hypoxia resulting in vision loss. It can also be complicated by ME, which further intensifies the loss of vision. Some time the vision loss caused by macular edema exceeds the vision loss caused by hypoxia itself. Multiple treatment options have been tried as reported including "laser photocoagulation".[14, 15]

It has been shown in many studies that VEGF is one of the factors that is released in increased amount after branch retinal vein occlusion and is associated with certain complication such as macular edema.[16] The exact mechanism behind this effect is that the retinal ischemia which causes up regulation of VEGF.

In many studies, IVT has been used in patients with macular edema secondary to BRVO. Variation has been reported in its success by many researchers.[17]

It is suggested that by inhibiting the VEGF, the vascular leakage could be prevented as a consequence a reduction occurs in macular edema also.[16] A previous retrospective study by Fish et al, analyzed 56 patients treated with Bevacizumab alone or in combined with Triamcenolone. The Bevacizumab proved more effective than Triamcenolone acetonide in improving the vision.[17]

Another previous study[18] confirmed the effectiveness of Bevacizumab in improving the macular edema due to BRVO; it was reported that 2-3 injections might be needed in every patient due to short half life of the Bevacizumab injection.[18] The findings of above study are consistent with our present study.

A previous study by Rabeen et al[19] reported the effects of Bevacizumab in macular edema due to BRVO. He reported a successful result of Bevacizumab in improving vision and reducing the central macular thickness as well with almost negligible adverse effects. The findings of present are consistent with above cited study. Two more previous studies reported similar effectiveness with safety of the drug.[20, 21] Previous studies had reported adverse effects such as raised IOP and risk in intraocular infections by triamcinolone[22], the findings are consistent with present study. The present study reports Bevacizumab more effective and safe in reducing macular edema in branch retinal vein occlusion. The present study has some limitations, in particular those of sample size, for which further studies may be conducted on large scale for results to be authenticated.

CONCLUSION

Bevacizumab is more effective than triamcinolone in improving vision and reducing macular edema secondary to Branch Retinal Vein Occlusion. Triamcinolone showed more complications. Further studies with large sample size are recommended to confirm the findings.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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