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COMPARISON OF FOCAL LASER WITH INTRAVITREAL TRIAMCINOLONE INJECTION AS TREATMENT FOR MACULAR OEDEMA FOLLOWING BRANCH RETINAL VEIN OCCLUSION

Ophthalmology

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ABSTRACT

Background: Branch Retinal Vein Occlusion is a sight threatening disease in which Macular edema is the most important cause of central visual loss. Grid laser photocoagulation was the only treatment for macular oedema. Nowadays, intravitreal injection of vascular endothelial growth factors inhibitors and triamcinolone acetonide can play a role in management of BRVO. **Objective:** To study the visual acuity after focal laser and intravitreal triamcinolone injection and to compare the visual outcome of focal laser with intravitreal triamcinolone injection. **Methods:** 30 eyes were taken up for study. Based on the FFA findings, the area with capillary non perfusion were excluded from the treatment. Only 24 cases were included in the treatment with focal laser and IVTA. **Result:** The study groups were divided into Group 1 (underwent focal laser) and Group 2 (underwent Triamcinolone injection). The p-value was >0.5 and there was no significant difference in the visual outcome among the 2 groups. **Conclusion:** The therapeutics effects of Triamcinolone showed no significant difference compared with focal laser with regard to visual outcomes but seemed to cause more adverse events. Therefore, further large randomized trials with longer follow up are needed to compare the long term safety and efficacy of these treatments provide sustainable concrete.

KEYWORDS

Laser, Intravitreal Injection, Macular oedema, Branch retinal vein occlusion

INTRODUCTION

Retinal vein occlusion (RVO) is the second most common retinal vascular disease following diabetic retinopathy and a significant cause of visual handicap; therefore it has been an area of interest for many investigators over the years (1, 2)

There are three distinct types of RVO (3): Branch retinal vein occlusion (BRVO), central retinal vein occlusion (CRVO) and an anatomical variant of CRVO, namely Hemiretinal vein occlusion (HRVO). Branch retinal vein occlusion is three times more common than CRVO. Branch retinal vein occlusion is defined as a focal occlusion of a branch retinal vein at an arteriovenous crossing site. (4)

The fundamental cause of the disease is located in the retinal arteriole. The pathogenesis in BRVO may be due to a combination of three primary mechanisms: compression of vein at arteriovenous crossing, degenerative changes of the vessel wall, and abnormal hematological factors. Branch retinal vein occlusion is usually a disease of the elderly and occurs most frequently between 60 to 70 years of age, affecting males and females equally.

Most BRVO involves either the superior or the inferior temporal veins. The superotemporal vein is involved in 49 to 63% eyes and infratemporal vein in 29 to 51% eyes.

Hypertension is the most commonly associated disease. Sarcoidosis, toxoplasmosis, acute intermittent porphyria, hyperlipidemia and hypercholesterolemia, as well as abnormalities of thromboglobulin and platelet factor 4 can be associated with BRVO.

Branch retinal vein occlusion is almost always of sudden onset; the patient presents with painless decreased vision or field defect. Vision loss in BRVO may be due to macular edema, macular nonperfusion, dense intraretinal hemorrhages, vitreous hemorrhages, neovascular glaucoma, epiretinal membrane, or tractional retinal detachment. Macular edema (ME) is the most common cause of visual loss in BRVO. (5) The development of macular edema has been hypothesized to be caused by fluid flux from vessels to tissue according to Starling's law, (6, 7) which is based on the breakdown of the blood retinal barrier (BRB) as a result of damage to the tight junctions of capillary endothelial cells, vitreoretinal adhesion and secretion into the vitreous of vasopermeability factors produced in the retina.

Fundus Flourescein Angiography is a major breakthrough in the study of RVO as it has demonstrated the phenomenon of capillary non-perfusion found in ischemic variety of vein occlusions and gave the investigators a useful tool for trying to determine the pathophysiology of condition. Currently, Optical Coherence Tomography (OCT) is used for exact measurement of ME and is superior to FFA findings and facilitates the evaluation of treatment response.

The aim of treatment in BRVO is to reduce macular edema and to prevent neovacularization. The Branch Retinal Vein Occlusion study (BVOS) (8) investigators in 1984 recommended Laser photocoagulation for treatment of macular edema due to BRVO. The eligibility criteria for laser photocoagulation include visual acuity of 20/40 or less, fluorescein angiographically proven macular edema, absorption of intraretinal hemorrhage and no diabetic retinopathy. The action of the laser is to stimulate the RPE (Retinal pigment epithelium) cells to reabsorb fluids from the edematous retina and thins the retina to allow for more oxygen diffusion form the choriocapillaries into the inner retina. (9)

In case of retinal neovascularization, sectorial panretinal photocoagulation is given. The new treatments for BRVO that are being evaluated include Intravitreal Triamcinolone injection, Intravitreal Dexamethasone implant, Intravitreal injections of Anti-VEGF and surgical technique like Vitrectomy, Sheathomy.

Visual acuity response is more likely to be favourable with perfused rather than nonperfused macular edema. Currently the only proven treatment modality for Macular edema is Grid laser photocoagulation

as given in Branch Vein Occlusion Study. More recently administration of Intravitreal Triamcinolone injection has shown promising results in treatment of macular edema. In view of the above, a study is needed to determine the visual outcomes of therapy with Intravitreal Triamcinolone injection and Focal Laser and to compare them. Therefore, the present study was conducted to evaluate the therapeutic effects of IVTA and Focal Laser and main outcome was to compare changes in visual acuity before and after treatment.

Objective

To study the visual acuity after focal laser and intravitreal triamcinolone injection and to compare the visual outcome of focal laser with intravitreal triamcinolone injection.

MATERIALAND METHOD

This Non randomized controlled study was conducted in the Department of Ophthalmology at Regional Institute of Medical Science, Imphal for a period of 2 years. Approval was obtained from Institutional Ethics Committee. Informed consent was obtained from all the participants.

Inclusion criteria:

1) Best-corrected visual acuity letter score of 6/12 or worse.
2) Macular edema secondary to BRVO present on clinical examination
3) Media clarity, pupillary dilation, and subject cooperation sufficient for adequate fundus photographs.

Exclusion criteria:

1) Macular edema due to a cause other than BRVO
2) Eyes with capillary nonperfusion and extensive haemorrhage
3) Substantial cataract estimated to have reduced visual acuity by ≥3 lines.
4) Prior treatment with intravitreal corticosteroids at any time or peribulbar steroid injection.
5) History of focal/grid macular photocoagulation within 15 weeks (3.5 mo) or PRP or anticipated need for PRP within the 4 months following nonrandomization
6) Prior pars plana vitrectomy.
7) Major ocular surgery (including cataract extraction) prior to 6 months or anticipated within the next 6 months following non randomization
8) Yttrium aluminum garnet capsulotomy performed within 2 months prior to non randomization
9) IOP (Intra ocular pressure) ≥25 mm Hg, open-angle glaucoma (either primary open-angle glaucoma or other cause of open-angle glaucoma), or steroid-induced IOP elevation that required IOP-lowering treatment or pseudoexfoliation.

A total of 30 patients consented to participate in the study. All the study participants underwent a detailed ophthalmologic examination at baseline. Visual acuity was recorded using Snellen's chart. IOP was measured with Schiotz tonometer. Direct and Indirect ophthalmoscopy was performed after pupillary dilatation with tropicamide 1% and phenylephrine 1% eyedrop and fundus finding recorded. Slit lamp biomicroscopy with +78D/+90D was used to examine the posterior segment. Then the patients were subjected to FFA. The capillary perfusion areas (nonischaemic variety) on FFA are taken up for study. Patients were divided into two groups- Group 1, those patients who will go for Focal Laser treatment and Group 2- those patients who will be given Intravitreal Triamcinolone Injection. A duly informed consent was obtained before undergoing the treatment.

The data collected from the study were analysed using descriptive statistics like mean, percentage and proportions. Analytical statistics like paired t test, chi-square test and one way ANOVA were performed. A probability value of less than 0.05 was considered significant.

RESULTS

The study sample consists of 30 patients who attended eye OPD during the study period. The maximum numbers of cases were in the age group of 61-70 years (36%) with male (70%) preponderance.

Table 1: Age distribution

Age groups (years)	Number of patients	Percentage
31 -40 Years	2	6.6%
41 – 50 Years	7	23.3%
51 – 60 Years	8	26.6%
61 – 70 Years	11	36.6 %
71 – 80 Years	2	6.6%

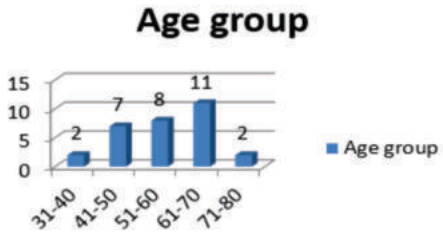

Fig 1: Bar diagram showing distribution of study population (N=30) by age group

Table 2: Sex Distribution

Sex	Number of patients (N=30)	Percentage
Male	21	70%
Female	9	30%

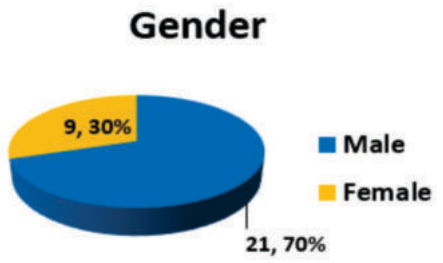

Fig 2: Pie chart showing distribution of study population by gender (N=30)

Table 3: Laterality

Laterality	Number of patients (n=30)	Percentage
Right eye	18	60%
Left eye	12	40%

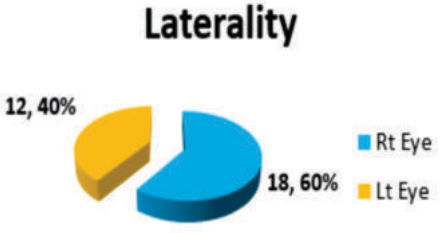

Fig 3: Showing distribution of study population by laterality (N=30)

In this study the right eye was affected more than the left eye with the right eye affected in 60% and left eye in 40% of the cases.

The most common occluded vein in the study group was superotemporal seen in 21(70%) followed by Inferotemporal 7(23.3%), Superonasal 2(6.7%) and Inferonsal in 0% of cases.

Table 4: Occluded Vein

Occluded vein	Number of patients (n=30)	Percentage
Supero- temporal	21	70%
Infero- temporal	7	23.3%
Supero- nasal	2	6.7%
Infero-nasal	0	0

Table 5: Systemic disease associated

Systemic disease associated	Number of patients (n=30)	Percentage
Hypertension	14	46.7%
Diabetes	5	16.7%
CVS	1	3.3%
Hypertension & Diabetes	7	23.3%
None	3	10%

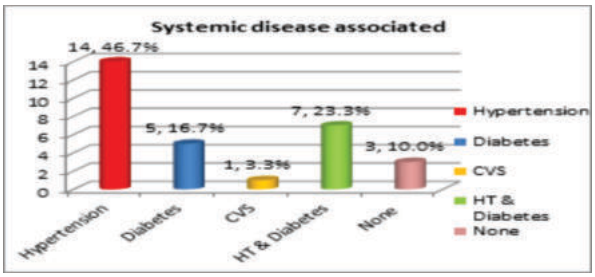

Fig 4: Bar diagram showing associated systemic disease of the study population

The study shows Hypertension with a total of 14 (46.7%) patients out of 30 as the most common associated systemic disease. This was followed by Hypertension and Diabetes 7(23.3%), Diabetes 5 (16.7%), Cardiovascular 1(3.3%) and in others 3(10%).

Table 6: Associated ocular conditions of BRVO

Refractive status	Number of patients (n=30)	Percentage
Emmetropic	11	16.7%
Hypermetropic	14	46.7%
Myopic	5	3.3%

Table 6 shows the refractive status of the eye in which Hypermetropia is seen in 14 (46.7%) cases.

The routine examination showed normal total WBC, RBC and platelet count. Bleeding time, clotting time and prothrombin time was within normal range in all cases.ESR was elevated in 9 cases. In serum blood lipid profile study, 6 cases showed rise in Triglyceride level and Total Cholesterol in 11 cases .Blood sugar level was found raised in8 cases. Decreased Hb % was detected in 6 cases.

Table 7: Laboratory findings

Variable	Number of cases	Percentage
Elevated ESR	9	30%
Elevated blood sugar	8	26.7%
Elevated TGs	6	20%
Elevated LDL	7	23.3%
Decreased HDL	7	23.3%
Elevated VLDL	8	26.7%
Total cholesterol	11	36.7%
Decreased Hb%	6	20%

The fundus of the affected eyes shows localized haemorrhages in 30 (100%) cases and Macular edema in 83.3%. Others findings includes Cotton wool spots 21(70%), hard exudates 5(16.7%) and with a similar percentage of 1% in Disc edema, NVE, NVD and Macular haemorrhage.

Table 8: Fundus findings in BRVO

Fundus findings	Number of cases	Percentage
Diffuse retinal haemorrhages	0	0
Localized haemorrhages	30	100%
Hard exudates	5	16.7%
Cotton wool spots	21	70%
Disc edema	1	3.3%
NVD	1	3.3%
NVE	0	0
Macular edema	25	83.3%
Macular haemorrhages	1	3.3%
Vitreous haemorrhages	0	0

Table 9: Fundus Fluorescein Angiography

FFA characteristics	Number of cases	Percentage
Capillary and venous dilatation of the affected segment	30	100%
Delayed filling of the affected vein	28	93.3%
Macular edema	24	80%
Collaterals	0	0
NVD	1	3.3
NVE	0	0

In Fundus Fluorescein Angiography, capillary and venous dilatation was observed in 30 (100%) cases. A delayed filling of the affected vein was documented in 28(93.3%) cases. Macular edema was encountered in 24 (80) and NVD in 1 (3.3%) cases.

Based on the FFA findings of fluorescein leakage and non leakage, we differentiated BRVO into ischaemic and non- ischaemic variety. Table 01 shows non- ischaemic variety in 24 (80%) and ischaemic variety in 6(20%) cases.

Table 10: Ischaemic and Non- ischaemic variety

BRVO	Number of eyes	Percentage
Ischaemic	6	20
Non ischaemic	24	80

Table 11: Preoperative visual acuity

log Mar vision(Snellen)	Number of patients	Percentage
0.3 (6/12)	2	6.6
0.5 (6/18)	4	13.3
0.6 (6/24)	4	13.3
0.8 (6/36)	4	13.3
1 (6/60 and <)	16	53.33

Table 11 shows that maximum number of cases, 16 (53.3%) were with visual acuity 6/60 and less, followed by similar percentage in 4(13.3%) cases each with visual acuity of 6/18, 6/24 and 6/36. Mean (SD) VA was 0.9267(±0.458) and median-0.900.

Table 12: Comparison of the baseline characteristics from the study group (n=24)

Variable	Group I (Focal laser) Mean (SD)	Group II (Intravitreal triamcinolone) Mean (SD)	p-value
Age	55.10 ±10.0	55.0 ± 10.45	0.981
Pre-operative VA	0.810 ± 0.508	0.928 ± 0.402	0.530

Table 12 shows that there is no significant difference in the baseline characteristics of the two study groups, thus the two groups are comparable. The mean age in focal laser group is 55.10 and triamcinolone group 55. Mean (SD) Preoperative visual acuity in Focal laser was 0.810 ±0.508 and in triamcinolone 0.928± 0.402. Number of patients in Group1- Focal laser group is 10(41.7%) cases. Number of patients in Group 2- Intravitreal Triamcinolone group is 14 (58.3%).

Table 13: Comparison of visual acuity changes between the two study groups (n=24)

Month	Group I (Focal laser) Mean (SD) logMAR	Group II (Intravitreal triamcinolone) Mean (SD) logMAR	p-value between groups
Baseline	0.8100 ± 0.5087	0.9214 ± 0.4098	0.553
Month 1	0.6300 ± 0.3888	0.8429 ± 0.4602	0.247
Month 3	0.4100 ± 0.3573	0.5500 ±0.42381	0.405

Table 13 shows the best corrected visual acuity from base line to follow up visits at 1 and 3 months following laser and intravitreal injection. In both the groups the baseline visual acuity shows improvement by month 1 and month 3 but the difference in the improvement between the two groups is not statistically significant.

Table 14: Comparison of visual acuity changes in the focal laser group

Month	Group I (Focal laser) Mean (SD) logMAR	Month	Group I (Focal laser) Mean difference (SD) logMAR	p-value
Baseline	0.8100 ± 0.5087	Baseline –month 1	0.180 ± 0.235	0.038
Month 1	0.6300 ± 0.3888	Month 1 – month 3	0.220 ± 0.322	0.059
Month 3	0.4100 ± 0.3573	Baseline - Month 3	0.400 ± 0.537	0.043

In group 1, mean visual acuity improved significantly from a mean logMar (logarithm of minimum angle of resolution) value of 0.8100± 0.5087 at baseline to a maximum of 0.4100± 0.3573 during a mean follow up time of 3months. In the Focal laser group the improvement

in visual acuity from baseline to 1month is statistically significant (p=0.038). The improvement in visual acuity from baseline to 3 month is also statistically significant (p=0.043).

Table 15: Comparison of visual acuity changes in the intravitreal triamcinolone group

Month	Group II (Intravitreal triamcinolone Mean (SD) logMAR	Month	Group II ((Intravitreal triamcinolone Mean difference (SD) logMAR	p-value
Baseline	0.9214 ± 0.4098	Baseline –month 1	0.0786±0.299	0.344
Month 1	0.8429 ± 0.4602	Month 1 – month 3	0.2929 ± 0.194	0.000
Month 3	0.5500 ±0.42381	Baseline - Month 3	0.3714 ± 0.267	0.000

In the Triamcinolone group, the improvement in visual acuity from baseline to 1month is not statistically significant (p=0.344) but statistically significant (p=0.000) from baseline to month 3.

Table 16: Adverse ocular effects

Side effects(IVTA)	Number of patients (n=24)	Percentage
IOP	2	6.6%
Cataract	0	0
Enophthalmitis	0	0
Retinal detachment	0	0

Table 16 shows IOP was raised in 6.6% of patients in IVTA group. There were no laser related complications.

DISCUSSION

In this non- randomized controlled study, 30 eyes of clinically diagnosed cases of BRVO were taken up for study and thoroughly investigated. FFA was done for all cases. Only 24 cases out of total 30 cases were included in the treatment with Focal Laser and IVTA.Laser was given after 2 to 3 months following the guidelines for standard care. IVTA was given in acute cases of BRVO.

In this study maximum number of cases was found in the age group of 61-70 years with male preponderance. Hayreh et al (3) in his study reported male and female ratio of 1.2:1. H Sadaf et al (11) in their study found the number of males 49 (70%) and female 21 (30%) respectively. Ramezani A et al (12) also reported of 18 male and 12 female in their study.

In the present study, the right eye was affected in 18 (60%) cases and the left eye in 12 (40%) cases and absent of bilateral involvement. Sekimoto et al (13) reported right eye involvement in 34 cases and left eye in 28 cases and 1 cases of bilateral involvement.

Sekimoto et al (13) reported superotemporal involvement in 61% cases, infratemporal vein involvement in 31% cases where as involvement of superonasal, inferonasal and macular vessels are 3%, 0% and 5% respectively. H Sadaf (11) reported in his study a greater number of superotemporal occlusions as compared to inferotemporal occlusion. Out of 30 eyes, superotemporal vein was involved in 21 (70%) cases, followed by inferotemporal 7 (23.3%) and superonasal 2 (6.7%), which is in accordance with the above said studies. Occlusion in the nasal quadrant was not observed.

In this study, Hypertension14 (46.7%) is the most commonly associated systemic disease followed by diabetes and hypertension 7(23.3%), diabetes 5(16. 7%) and others3 (10.0%).

In our study the refractive status of the eye showed Hypermetropia in 14(46.7%) cases. Appiah and Tremp in their studies found that comparing CRVO with BRVO hyperopia was found 38.5% and 52.8% respectively.

In our study we have found and increased level of triglyceride in 20% and total cholesterol in 36.7% of BRVO patients. Elevated ESR was found in 30% of patients. . Dodson et al (31) in their study found a significant increased prevalence of hyperlipidaemia (28.8%) and hypercholesterolemia (23.7%) in the group of branch retinal vein occlusion. O Mahoney et al (14) reported incidence of hyperlipidaemia in 35.1% of BRVO patients. Thus our studies are in accordance with that of Dodson et al (15). Examination of fundus details revealed localized haemorrhages in 30 eyes, hard exudates were found in 5 eyes, cotton wool spots were found in 21 eyes, macular edema in 30 eyes, disc edema in 1 eye and disc neovascularization in 1 eye.

In the FFA findings capillary and venous dilatation of the affected segment is seen in all cases. Delayed filling of the affected vein was also observed in 28 cases. Macular edema was encountered in 24 cases and NVD in 1case.

The study groups were divided into Group 1 (underwent focal laser) and Group 2 (underwent Triamcinolone injection). Post Laser follow up at 1month and 3months:

In our study, the Group 1 baseline VA in logMar unit is 0.8100 ± 0.5087. Following Laser, there was a statistically significant improvement in the VA in logMar units (mean ± SD) from 0.8100± 0.5087 to 0.6300±0.3888 at 1 month (p= 0.038) and 0.4100± 0.3573 at 3 months (p=0.043) follow up.

In comparison to this study, Ozkiris A et al (16) in his study of 15 eyes with IVTA (Group 1) and 19 as control (Group 2 who had received laser treatment) reported that IVTA treatment was effective in rapid improvement of visual acuity in macular edema. In Group 1, mean visual acuity improved significantly from a mean logMAR value of 0.98±0.19 at baseline to a maximum of 0.24±0.24 during a mean follow-up time of 6.3 months. In the Group 2, the mean baseline logMAR value for visual acuities of the patients before laser treatment was 1.02±0.22, and it was 0.71±0.30, 0.52±0.26, and 0.50±0.28 at the 1-, 3-, and 6-month follow-up examinations, respectively.

In the study conducted by BVOS (17) which is the largest randomized prospective trial, it reported that in patients treated with argon laser grid photocoagulation to the area of macular capillary leakage, 65 percent of treated eyes improved at least two lines of visual acuity compared to 35 percent of the untreated eyes (mean follow up of 3.1 years). For eyes with macular ischemia only, no treatment is recommended.

Post triamcinolone injection follow up at 1and 3 months:

In Group 2 baseline VA in logMar unit is 0.9214±0.4098. After IVTA, the vision improves to 0.8429±0.4602 at 1month follow up. At 3months follow up, the mean VA is 0.55±0.42381. In the present study, IVTA injection was associated with significant visual improvement upto 3 months after intervention.

Cakir M et al (18) reported in his study that IVTA treatment produced a statistically significant BCVA gain when performed as initial treatment. When IVTA injection was performed following grid laser treatment, however, it yielded only a small gain in BCVA, which was statistically significant only at the 3 month visit.

Ramazeni A et al (20) in a group analysis showed significant VA improvement from baseline in the IVT group up to three months ($P < 0.05$); the amount of this change was -0.53 ± 0.46, -0.37 ± 0.50, -0.46 ± 0.50, and -0.29 ± 0.45 logMAR at 1, 2, 3, and 4 months, respectively. Corresponding VA improvements in the control group were -0.20 ± 0.37, -0.11 ± 0.46, -0.25 ± 0.58, and -0.05 ± 0.50 logMAR (all P values > 0.05).

The results of these studies are comparatively similar to the present study. In our study we found response to IVTA at 1month and significant level was maintained upto 3 months but longer follow up will be required to see the diminishing effect of IVTA and need for repeated injections.

In the present study, raised IOP was developed in two eyes which was controlled with medications. The rate of steroid induced IOP rise was lower than other studies.

Comparison of visual acuity changes between the two study groups:

When we compare the visual acuity changes between the two study groups, the difference between the two study groups is not statistically significant (p=0.405) though in both the groups the baseline VA shows improvement by 1month and 3 month. In this present study VA improved by 34.9% percent in Focal Laser Group from baseline to month 3. There is a slightly better VA improvement in Triamcinolone

Group by 40.3% from baseline to month3. The Score-BRVO (19) group included 411 subjects who were randomly assigned to three treatment arms: macular grid laser; 1mg intravitreal triamcinolone (IVT) injection; or 4mg IVT injection. At three-year follow-up, the researchers documented a visual acuity improvement of three or more lines in 29% of patients in the laser group compared to 26% of patients in the 1mg IVT group and 27% of patients in the 4mg IVT group. The study reported that at the 12month end point there were no significant differences in visual acuity between the laser treatment, 1mg and 4mg IVTA groups; however both the 1mg and 4mg doses had an inferior safety profile compared to laser in terms of a higher incidence of raised intraocular pressure >35mmHg (IOP) (2% and 14%, vs. 1%), incidence of cataract formation progression (25% and 35%, vs. 13%) and need for cataract surgery (0% and 4%, vs. 3%). As such, laser is considered to have a more favourable benefit: risk profile to IVT in BRVO.

The Score –BRVO study is the only study in which IVTA is compared directly with current standard of care, argon laser photocoagulation, and shown to be nonsuperior. In the present study, the difference in the improvement between the study groups is not statistically significant which is similar to the above study. 2 of 14 eyes in our study had raised IOP in IVTA group and no serious side effects were seen in Laser group. In view of the complication reported with IVTA, we can consider Laser treatment is better and safe.

This study had the limitation of being based on small sample size and short duration of follow up. So our findings may not be generalizable to the whole population. Further studies with larger sample and longer duration and preferably randomized trials are needed to evaluate and compare the long term safety and efficacy of this treatment.

CONCLUSIONS

Branch Retinal Vein Occlusion is a complex retinal vascular disorder that commonly leads to severe visual impairment. A large percentage of patients with branch retinal vein occlusion have a history of cardiovascular disease, hypertension, hyperlipidemia and/or diabetes mellitus. Evaluation of a new patient with branch retinal vein occlusion must include as a first line, examination of blood pressure, lipid profile and glucose levels because BRVO may be a presentation of significant vascular morbidity. Early diagnosis and timely treatment will help patients prevent from visual loss due to macular edema.

The present study draws following conclusions:

- Patients in the age group of 61 to 70 years were most commonly affected.
- Both males and females suffer from BRVO with slight male preponderance.
- Right eye involvement was more than Left eye in branch vein occlusion.
- The most frequently involved vein was Superotemporal branch.
- Systemic hypertension, Diabetes mellitus, Hypercholesterolemia, Hypertriglycerdaemia and Hypermetropia are common predisposing factors for developing branch retinal vein occlusion.
- FFA is an indispensable tool in the diagnosis and management of BRVO.
- Focal Laser and Intravitreal triamcinolone are both effective in increasing the best corrected visual acuity(BCVA) in cases of macular edema due to Branch Retinal Vein occlusion. The visual outcomes between the two groups was compared and found to be insignificant. This may be because study was based on a small number of patients and short follow up. Further studies with larger sample, longer follow up and preferably randomized trials are needed to record the precise outcome improvement of the two treatment measures.

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