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ORIGINAL ARTICLE

Effect of Intravitreal Triamcinolone (IVT) Injection on Visual Acuity in Patients with Ischemic CRVO

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ABSTRACT

Aim: To govern the intravitreal injection effect of triamcinolone (IVT) on visual acuity in patients with ischemic central retinal vein obstruction (CRVO).

Study Design: A randomized clinical trial.

Methods: The patients with ischemic event of CRVO less than amonth who were referred to the ophthalmology departmentof Hayatabad Medical Complex, Peshawar and Woman Medical and Dental College, Abbottabad. Patents were included for the duration from March 2021 to August 2021.Inclusion criteria were: < one month duration of CRVO, normal intraocular pressure, no symptoms of hypertensive or diabetic retinopathy, history of eye surgery or laser therapy, and no vascular disease. Patients were randomized into 2 groups: control group (no injection) and intervention group (0.1 cc IVT injection). Follow-up is scheduled for 1, 2, 3 and 6 months after injection for all patients. The main outcomes of the study were evaluated and used for statistical analysis were SPSS software version 21.0 ion test-t statistical test.

Results:70 patients (36 men and 34 women) participated in the study. 62.1 ± 8.9 was the mean age of patients (range: 30-80). The time of symptoms was 20 ± 4.9 days in the control group and in the IVT group; duration was 19 ± 6 days (p = 0.65). All subjects had symptoms of ischemic CRVO. The IVT group has mean baseline visual acuity of 1.80 ± 0.19 logMAR and in the control group; it was 1.91 ± 0.08 logMAR (p = 0.1). The enhancement in VA in the IVT group was better after one month as compared to the control group (p = 0.018); though, this variance was not significant in other control studies. Also, before and after injection; the alteration in IOP was not significant (p = 0.802).

Conclusions: This analysisexhibited that triamcinolone intravitreal injection had no substantial long-term outcome on visual acuity among CRVO patients.

Keywords: Triamcinolone, Central Retinal Vein Occlusion

INTRODUCTION

Central retinal vein obstruction (CRVO) is a common vascular disorder that has been diagnosed in recent years with the emergence of the topic of medicine in the elderly, with different methods and ideas for its treatment[1-2]. Research in this area has been extensive since the past. The site of blockage often occurs at the level of the necrotic or at the intersection of large arteries and veins (crossing AV); in other words, in the vicinity, there may be vascular endothelium damage and thrombosis[3-4]. The amount of reduction in macular degeneration depends on the extent of macular edema and retinal ischemia[5]. Despite the relatively high prevalence or effective treatment there has been no significant improvement in visibility, and in recent years some efforts have been made to improve the visual acuity of patients by increasing blood flow[6-7]. It has been shown to lead to promising results as well. These include neurotomy of the optic nerve and injection of tissue plasminogen activators[8]. The results obtained from the CVOSG study showed that grid macular degeneration reduces the angiographic symptoms of macular edema, but this hereditary treatment has no definitive effect on patients[9]. More important is the secondary complication of this disease or vascular obstruction in the iris of glaucoma (NVI) (neovascularization of the iris) (NVG: neovascular glaucoma)[10]. The results of some studies indicate the effectiveness of intravitreal (IVT) methylprednisolone injections in some and treatments of macular edema caused by CRVO or ischemic studies[11]. This study was performed to evaluate the intravitrealTriamcinoloneand its effect on the visual acuity.

MATERIAL AND METHODS

This is a randomized clinical trial and patients with ischemic event of CRVO less than a month who were referred to the ophthalmology department of Hayatabad Medical Complex, Peshawar and Woman Medical and Dental College, Abbottabad. Patents were included for the duration from March 2021 to August 2021. Prior to the study, patients were given adequate explanations about the prognosis of the disease and the different methods of treatment or the response to each method, and then their written consent was obtained. A group of patients with a diagnosis of CRVO were considered for inclusion in the study. Exclusion criteria include more than one month of the disease, hypertension, diabetic retinopathy (severe type of NPDR and higher stages based on the symptoms present in the study),

subclinical retinopathy (grade 2, more severe than grade II) Intraocular schema or laser therapy including MPC (macular or pan retinal photocoagulation) (PRP) and local retinal laser photocoagulation. The main outcome of this study was visual acuity (VA) in patients based on the logarithm unit before and after injection of intravitrealtriamcinolone. Other important outcomes were evaluated. The ischemic presence of CRVO was determined based on the presence of relative pupillary defect (RAPD) and VA greater than 1/10. Patients were divided into interventional and control groups based on a table of random numbers. In the intervention group, in sterile operating room conditions, triamcinolone acetonide (4 mg (0.1%) and by ophthalmologist were injected into the vitreous with an insulin syringe from Pars Plana at a distance of 4 mm, but in the control group, no injection was injected. In patients who received injections, endophthalmitis was evaluated on the third or fourth day after injection in addition to intraocular pressure (IOP) and the possibility of endophthalmitis. The main outcomes of the study were evaluated and used for statistical analysis were SPSS software version 21.0 ion test-t statistical test.

RESULTS

A total of 70 patients with 60.5±9.7 years mean age were divided into interventional and control groups. 32 patients in the control group with 60±10.2 years mean age (range 35-65), including 18 women and 14 men and 38 patients in the intervention group with 58.2±6.7 years mean age (range 35 to 75), Including 16 women and 22 men were studied. The age difference (P = 0.74) and gender (P = 0.79) between the two groups were not statistically significant.

Table 1: Baseline characteristics of the patients

Characteristics	Interventional Group	Control group
Males	22(57.9%)	14(43.8%)
Females	16(42.1%)	18(56.2%)
Mean age	58.2 ± 6.7 years	60 ± 10.2 years
baseline visual acuity	1.80 ± 0.19 logMAR	1.91 ± 0.08 logMAR
Mean duration of symptoms	19 ± 6 days	20 ± 4.9 days

VA was observed, its effect was not stable and after time, visual acuity decreases again. The effects of this treatment range from three months to one year.As can be seen, in almost all studies that have found IVT injection to be effective in improving visual acuity, this effect is temporary and limited to patients with CRVO. Few studies that have found IVT to be effective in improving VA in patients with ischemic CRVO are not available due to the small number of patients.Our study examined the IVTtriamcinolone effect on patients' visual acuity with ischemic CRVO and It shows no difference in the improvement in visual acuity of subjects in the intervention group and the control group for up to 6 months.According to the authors, the main reason for these results is severe ischemic changes and retinal cell destruction, which is more pronounced in the ischemic type.

In our study, the difference between IOP before and after IVT injection in the group of intervention was not significant (P = 0.80). In our study, 12.5% of subjects in the group of control underwent NVI in the third and fourth months and 7.9% of patients in the intervention group in the sixth month. Although the number of NVI cases was higher in control patients, this difference was not statistically significant. The outcomes of this study exhibited that the use of a single dose of triamcinolone injection in vitro, except for a partial improvement at the end of the first month after injection, did not cause a significant change in the visual outcome of individuals.

Table 2:Mean visual acuity (logmar) Comparison of patients in Interventional and control groups in different examinations

Follow-up	Intervention group	Control group	P-value
On admission	1/75 ± 0/20	1 / 91±.0/8	0.01
1st Month	1/62 ± 0/24	1 /84 ±0/12	0.09
2nd Month	1/72 ±0/16	1/81 ±0/16	0.20
3rd Month	0/78 ± 0/16	1/70 ±0/21	0.15
4th Month	0/79 ± 0/13	1 / 71± 0/34	0.14

DISCUSSION

In this study, the intravitreal injection effect of triamcinolone on the visual acuity of ischemic CRVO patients was investigated[12-13]. Triamcinolone has been used to prove that ischemia and macular edema have been shown to reduce patients' viscosity, and steroid use may be effective in reducing macular edema caused by another diseases[14-15]. The retinal blood barrier (BRB) is impaired in CRVO, which leads to macular edema, and researchers believe that this event is mediated by inflammatory factors such as endothelial vasoactive growth factor (VEGF) and ischemic factors. Steroids have been shown to inhibit VEGF formation and reduce capillary leakage[16]. The reduction in macular edema in CRVO patients following intavitreal triamcinolone injection has been shown in two previous studies. At one month, three months and six months after injection of 4 mg triamcinolone in comparison with the control group at the same time intervals, did not make a statistically significant difference and improved visual acuity was observed only at the end of the first month, such results were obtained. In a study by Ramezani et al., The effect of IVT on improving VA in acute CRVO was seen in the first month and decreased at the end of the fourth month, although the initial amount of retinal ischemia may be effective in improving visual results after IVT injection[17-18]. Bashshur study also found IVT injection to improve VA and reduce macular edema in patients with non-ischemic CRVO[19-20]. Ozdek et al. Evaluation of the therapeutic effects of IVT on CRVO of ischemic and non-ischemic type showed that the functional results in the non-ischemic group were better than the ischemic group[21]. Lubczynska's study also showed similar results in patients with non-ischemic BRVO and CRVO. However, the study of Gelston et al. Treatment method in patients with both non-ischemic and ischemic CRVO was not effective and the improvement of VA was statistically significant[23-23].

CONCLUSION

This analysis exhibited that triamcinolone intravitreal injection had no substantial long-term outcome on visual acuity among CRVO patients.

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