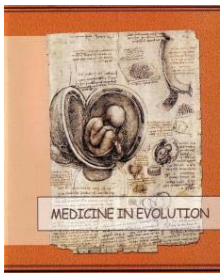
VISUAL ACUITY IMPROVEMENT IN PATIENTS DIAGNOSED WITH NONINFECTIOUS INTERMEDIATE UVEITIS TREATED WITH INTRAOCULAR TRIAMCINOLONE ACETONIDE



Suta M.C.[1], Munteanu M.[2], Salavat M.-C.[1], Boruga M.V.[1]

[1]*phD student, University of Medicine and Pharmacy "Victor Babes", Timisoara*
[2]*Department of Ophthalmology, University of Medicine and Pharmacy "Victor Babes", Timisoara*

Correspondence to:
Name: Prof. Mihnea Munteanu
Address: Clinica de Oftalmologie, Scuar Martir Belici Radian, Timisoara
Phone: +40 744661405
E-mail address: mihneam1@gmail.com

Abstract

The aim of the study was to determine the effectiveness of intravitreal triamcinolone acetonide in improving the visual acuity, three months after treatment. The objectives of the study were to perform a baseline evaluation of the patients enrolled in the study, to perform intraocular injections with triamcinolone acetonide and to evaluate the best corrected visual acuity three months after the treatment. Fifty patients diagnosed with noninfectious intermediate uveitis were treated with intravitreal injection of four mg triamcinolone acetonide. The patients were divided into two study arms, twenty-three patients were subjected to intraocular injection with Triamcinolone acetonide, the rest, twenty-seven were subjected to intraocular injection with Triamcinolone acetonide and general cortisone administration. Best corrected visual acuity was determined three months after treatment. Globally, for all fifty patients, the mean ±SD visual acuity gain was 0.29 ±0.27 LogMAR. This study proves that intraocular cortisone administration has a positive effect on visual acuity that lasts for at least three months period.

Keywords: uveitis, triamcinolone acetonide, intraocular cortisone

INTRODUCTION

From antiquity, inflammatory reactions of the eye represented a challenge for ophthalmologists. Nowadays, the underlying mechanisms of this disease have become better understood and defined. Uveitis defines the inflammation of the uvea. The uvea represents the middle layer of the eye and includes the iris, ciliary body, and choroid. Uveitis is a serious diagnosis and represents an ophthalmic emergency needing urgent treatment to control the inflammation. Often, uveitis is associated with other general diseases [1]. Currently, different treatments options for uveitis have been studied, each of them with advantages and disadvantages. Uveitis may appear at any ages and principally affects young and middle age population (20-60 years) [2,3]. Depending on the period of activity, uveitis can be acute or chronic [4]. Some types of uveitis may recur, and episodes of active uveitis may be described. The prevalence of uveitis is 38–714 cases per 100,000 [5]. It causes 10% up to 15% of blindness cases in the modern world [6]. Triamcinolone acetonide is a synthetic corticosteroid that can be used topically, intra-articular and intraocular. Intravitreal Triamcinolone acetonide has been used to treat various eye diseases and has been found useful in reducing macular oedema [7,8].

Aim and objectives

The aim of the study was to determine the effectiveness of intravitreal triamcinolone acetonide in improving the visual acuity, three months after treatment. The objectives of the study were to perform a baseline evaluation of the patients enrolled in the study, to perform intraocular injections with triamcinolone acetonide and to evaluate the best corrected visual acuity three months after the treatment. [Book Antiqua, 11 point, normal, justified alignment].

MATERIAL AND METHODS

The present study is a retrospective, interventional, comparative assessment with consecutive enrolment of patients affected by non-infectious intermediate uveitis.

All subjects expressed in writing, prior to enrolment, their informed consent to be subjected to appropriate intermediate uveitis reduction techniques. The study was conducted between 2018-2020. The study received the Local Ethics Committee of the Clinic "Centrul Oftalmologic Prof. Dr. Munteanu" approval and was conducted in accordance with the Declaration of Helsinki and with the "International Standard of Good Clinical Practice (ICH-GCP E6 Step 4)".

Fifty patients diagnosed with noninfectious intermediate uveitis were treated with intravitreal injection of four mg triamcinolone acetonide. Before the treatment was initiated, all subjects were evaluated ocular and general. The patients were divided into two study arms, twenty-three patients were subjected to intraocular injection with Triamcinolone acetonide, the rest, twenty-seven were subjected to intraocular injection with Triamcinolone acetonide and general cortisone administration. Depending on the clinical condition of the 50 patients, they were assigned to one arm of the study. The criteria for applying the general treatment was a BCVA below 0.7 df. Thirty-eight (38) patients fell under the above-mentioned criteria. Eleven (11) patients refused the general (oral) treatment so they were given only the IVTA treatment. Consequently, 27 patients received, in addition to the intravitreal triamcinolone acetonide (IVTA) treatment, the general treatment. Twenty-three (23) patients received only the IVTA treatment. Best corrected visual acuity (BCVA) was determined three months after treatment.

Oral cortisone scheme. 27 patients with BCVA < 0.7 df (> 0.2 LogMAR) received oral cortisone treatment by following the scheme: 1 mg/kg body weight for 7 days, tapered weekly, up to ¼ pill during the last week of treatment.

Each patient received a single intravitreal injection of 4 mg triamcinolone acetonide. Local antibiotic drops were spread on and drops of oxybuprocaine 0.4% were administered. All injections were performed in the operating room. After topical disinfection with povidone-iodine, the sterile field and the lid speculum were applied. After 30 seconds another drops of 0.4% oxybuprocaine were administered. Injections were performed using 30-gauge needles through the inferotemporal pars plana, 4 mm from the limbus (Figure 1). After the injection, local antibiotic drops were instilled. A protective eye bandage was applied for a few hours after the procedure.

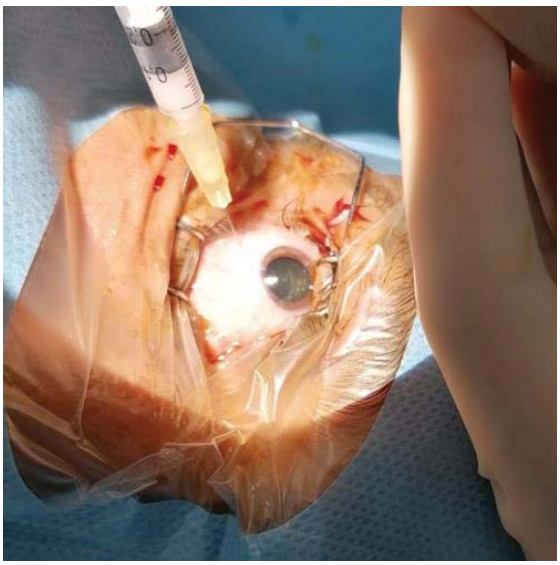


Figure 1. Intraocular injection technique

RESULTS

In the current study the BCVA values were collected by using decimal fractions. For correctness, the data will be converted, analysed, and presented in LogMAR scale.

The correct usage of visual acuity measurements in the sense of the mean, SD and other statistics is set to be in LogMAR units.

Table 1 presents the measured BCVA statistical results by treatment groups in LogMAR scale.

Table 1. BCVA at Baseline and 3 Months Follow-up by Treatment Groups (in LogMAR units)

TREATMENT GROUP	TIME	N	%	MEAN	SD	MEDIAN	MIN*	MAX*
IVTA Only Treatment	Before	23	46	0.24	0.17	0.15	0.70	0.05
	After	23	46	0.29	0.58	0.05	2.20	0.00
IVTA + General Treatment	Before	27	54	1.00	0.73	0.70	2.30	0.22
	After	27	54	0.19	0.11	0.15	0.40	0.00
ALL	Before	50	100	0.65	0.67	0.40	2.30	0.05
	After	50	100	0.23	0.40	0.15	2.20	0.00

Note: *MIN represents the worst vision and MAX the best vision

To evaluate the change in BCVA (LogMAR) from baseline to 3 months follow-up we performed Wilcoxon signed-rank tests for all patients and by treatment group. Results proved highly significant for all patients (Wilcoxon signed-rank test, $p < 0.001$). In the case of patients subjected to IVTA + General treatments, the results showed also high statistically significance (Wilcoxon signed-rank test, $p < 0.001$). Statistical significance was achieved also in the case of patients subjected only to the IVTA treatment, although it was only marginal (Wilcoxon signed-rank test, $p = 0.03$).

Figure 2 presents the BCVA (LogMAR) before and after treatment(s) for the ITVA + General Treatments group. There are high statistically significant differences between baseline and follow-up at 3 months (Wilcoxon signed-rank test, $p < 0.001$).

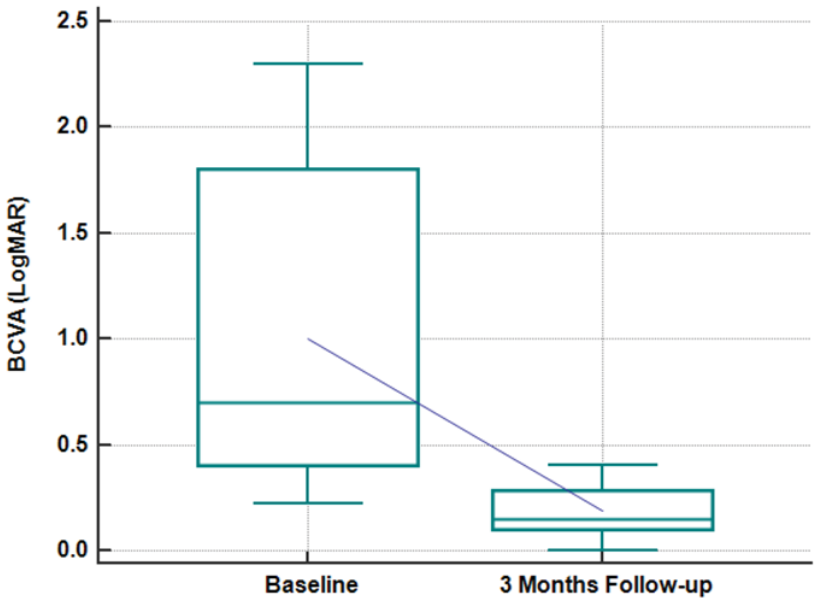


Figure 2. BCVA (LogMAR) for the IVTA + General Treatment Groups

Change in BCVA is statistically significant higher for the IVTA + General treatment group (0.45 ±0.24 LogMAR, Mean ±SD) than IVTA only group (0.12 ±0.19 LogMAR), demonstrated by a Wilcoxon-Mann-Whitney test ($p < 0.001$, median difference 0.30, 95%CI 0.48 - 0.19). Globally, for all 50 patients, the mean ±SD visual acuity gain was 0.29 ±0.27 LogMAR.

DISCUSSIONS

There are many different types of medication that can be administered intravitreally for the treatment of non-infectious intermediate uveitis, but it is difficult to differentiate the medication without comparative studies. Moreover, each drug has advantages and disadvantages in treating the disease. Consequently, each patient should receive an individual treatment scheme of the intravitreal medication. A risk/benefit and cost-effectiveness ratio should be considered when deciding between intravitreal and systemic therapies.

The study conducted by Kok et al. 65 eyes were evaluated. This was a retrospective noncomparative interventional case series. All patients were under systemic medication, corticosteroids, or immunosuppression. The purpose of the study was to evaluate the effectiveness of 4 mg IVTA in treating/reducing uveitic macular oedema, by determining their BCVA. Study duration ranged from 3-51 months; mean duration was 8 months. Baseline BCVA was 0.65 LogMAR, 0.25 in decimal fractions. BCVA after IVTA was 0.39 LogMAR, 0.4 in decimal, no BCVA changes in 16.9% of patients, at an average of 4 weeks (range, 1-30). The increase of visual acuity was higher if the duration of central macular oedema before intravitreal triamcinolone acetonide was < or = 12 months ($p = 0.006$) and if patients were < or = 60 years old ($p = 0.005$). Mean improvement of visual acuity after intravitreal triamcinolone acetonide was 0.26 (LogMAR) [9]. In our study, the mean ±SD visual acuity gain was 0.29 ±0.27 LogMAR.

As shown by our study and in accordance with international data, both types of cortisone administration have a positive effect on BCVA in patients with intermediate non-infectious uveitis that lasts for at least 3 months period [10].

CONCLUSIONS

In conclusion, both treatment groups showed statistically significant improvements in visual acuity from baseline to 3 months follow-up. There are marginal statistically significant differences between baseline and follow-up at 3 months (Wilcoxon signed-rank test, $p = 0.03$) for the IVTA only treatment group. There are high statistically significant differences between baseline and follow-up at 3 months (Wilcoxon signed-rank test, $p < 0.001$) for the IVTA + General treatments group. Recurrent IVTA injections may be necessary in the treatment of intermediate non-infectious uveitis due to its duration of action. In our country, the presented study represents a starting point in the research of non-infectious intermediate uveitis and can be continued with a larger number of treated eyes and a longer period of follow-up.

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