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Original Article

Comparison Between Intravitreous Fluocinolone Acetonide Implant, Ozurdex Implant, and Cyclosporine in Treatment of Noninfectious Uveitic Macular Edema

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ABSTRACT

Background: Communicable etiologies such as Toxocara canis tuberculosis, herpes virus, toxoplasmosis, syphilis, and Lyme disease, can cause secondary uveitis. Ocular inflammation is frequently accompanied by an underlying general disease, such as sarcoidosis, juvenile idiopathic arthritis (JIA), Vogt-Koyonagi-Harada (VKH), tubulointerstitial nephritis (TINU), inflammatory bowel disease and uveitis.
Methods: A sum of 60 eyes of 45 uveitic participants were enlisted in our study. In 1st group; 20 eyes undergo an Intravitreous fluocinolone acetonide implant 2nd group; 20 eyes undergo an ozurdex implant. The 3rd group of 20 eyes undergo cyclosporine injection.
Results: For our study, a sum of 60 eyes from 45 uveitic participants (36 men, 24 women) were enrolled. 20 eyes from the 1st group receive intravitreal fluocinolone acetonide implants. 20 eyes from the 2nd group receive Ozurdex implants. The 3rd group of 20 eyes received nine injections of cyclosporine at a dose of 5 mg/kg/day, one dose every two weeks for three months, and subsequently one dose per month for three months.
Conclusion: In order to reduce the negative outcomes of corticosteroids and other hazardous medications, this research showed cyclosporin injection could remain as a solitary treatment to manage uveitic ME related to noninfectious uveitis. Tiny subset of individuals, though, cannot tolerate the toxicity of cyclosporine, therefore it must be carefully monitored. The final management must be customized established regarding severity of illness, the risk/benefit ratio of each treatment, and the participant preferences.

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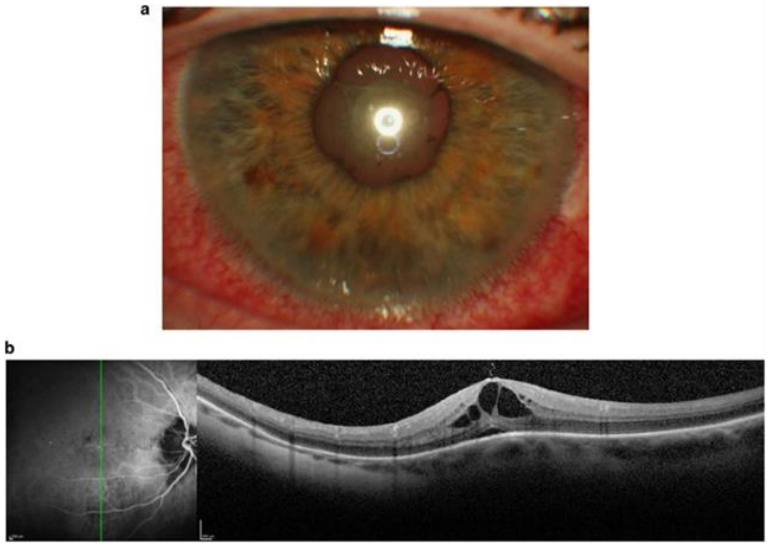
GRAPHICALABSTRACT



Introduction

Uveitis is used broadly to describe eye irritation. It is categorized as frontal, middle, posterior, or diffuse uveitis giving toward where inflammatory process is located [1]. Communicable etiologies such as Toxocara canis tuberculosis, herpes virus, toxoplasmosis, syphilis, and Lyme disease, can cause secondary uveitis. Ocular inflammation is frequently accompanied by an underlying general disease, such as sarcoidosis, juvenile idiopathic arthritis (JIA), Vogt-Koyonagi-Harada (VKH), tubulointerstitial nephritis (TINU), inflammatory bowel disease, and uveitis. Uveitis, on the other hand, is not accompanied by an essential disorder and is referred to as "idiopathic" [2].

The prevalence of 38-714 instances per 100,000 people has been observed for uveitis, one of the main causes of visual illness. 10%-15% of blindness in the industrialized world is caused by it. Younger people are disproportionately affected, and also resulting efficient blindness places a heavier strain on culture and healthcare [3].

The retinal photoreceptors could gradually deteriorate, and it may also result in problems like macular ischemia, macular cysts, or hole development that impair vision permanently. Chronic macular edema can potentially lead to the emergence of an epiretinal membrane. As a result, macular edema must be treated as soon as possible. Treatment for persistent macular edema may become increasingly challenging as it progresses. The majority of patients with chronic or recurrent uveitis develop refractory macular edema [4].

The fluocinolone acetonide intravitreal implant offers a general treatment-saving treatment option by delivering a small daily amount regarding corticosteroids interested in vitreous for 36 months. It stayed accepted in Europe and aimed at inhibition regarding degeneration through repeated non-infective uveitis affective in following section regarding eye.

Continuous microdose delivery of the corticosteroid produces extended outcomes. The purpose of the implant is to avoid relapses [5]. Likewise, implantation enables constantly extended safety versus infection, obviates need for repeated treatments by dispensing the drug for a rating of 0.2 ug/day as far as 36 months. In addition, drug has the extra benefit of demanding fewer doses aimed at therapy since it helps avoid infection recurrences. This helps protect and retain eyesight for longer.

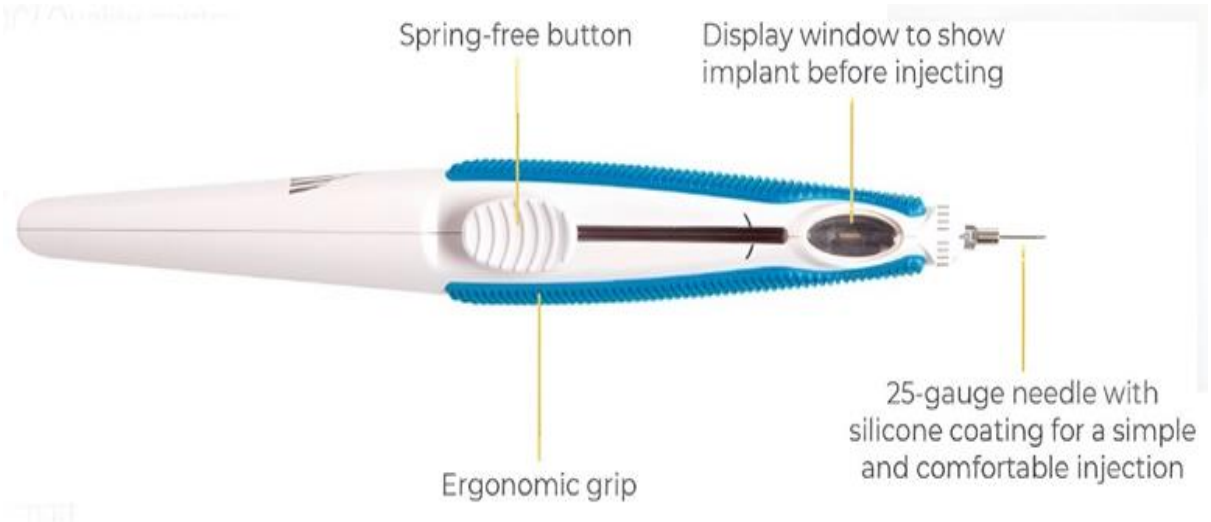


Figure 1: Modified 25-gauge needle injector used to administer 0.2 ug/day. The fluocinolone acetonide 3 mm core in the tube is intended to release corticosteroids into the vitreous for up to 3 years

Since non-infective inflammation of the uvea typically long-lasting condition, it is frequently necessary for therapy alternatives would extend as possible according for prevention of infection until 36 months (Figure 1). Corticosteroid injections intravitreally may have a safer safety profile than injections orally (by reducing the possibility of systemic side effects), while more research including more patients is needed to demonstrate this statistically [6]. Long-term treatment also contributes to a reduction in flares frequency.

The primary way for management of the uvea inflammation is still steroids. These medications are also effective for ME treatment because they have strong anti-inflammatory effects. They do this by avoiding steadying endothelial cell fitted junctions, and leukocyte relocation, which decreases cellular and fluid extravasation, and by preventing the production of VEGF, prostaglandins, and proinflammatory cytokines [7].

Due to its small size, the potency of dexamethasone (DEX) is quickly removed in humans [8]. Ozurdex implant is an intravitreal, biodegradable, and continual-release rod-shaped implant. It is made of polymers and polylactic acids, which slowly hydrolyze and release 700 g of the medication into the vitreous cavity over the course of six months, obviating the need for repeated intravitreal injections [9].

An immunosuppressive drug called cyclosporine is a calcineurin inhibitor that is a natural product. By blocking calcineurin in the calcineurin-phosphatase pathway and limiting the permeability transition hole in the mitochondrial membrane opening, cyclosporine reduces the T-cells activity, which is its principal action.

The earliest report of immunosuppressive agents in the treatment of uveal inflammation was published in 1983 by Nussenblatt *et al.* [10], and it was initially used in a clinical setting for kidney transplantation in 1978. Since after, numerous investigations confirmed the effectiveness of cyclosporine in cases caused by serpiginous choroiditis, idiopathic uveitis, and multifocal choroiditis.

Material and Methods

The sum of sixty eyes of 45 uveitic participants was enlisted through our research. In the 1st group; 20 eyes underwent the Intravitreous Fluocinolone acetonide implant, in the 2nd group, 20 eyes underwent an ozurdex implant. The 3rd group of 20 eyes underwent cyclosporine injection.

We included a total number of patients who had macular edema (ME) brought on by uveitis. Individuals without any neovascularization and through a baseline (CMT) of at minimum 250 µM were incorporated.

We enrolled patients in trials that had long-lasting posterior uveitis, intermediate uveitis, or

panuveitis (one eye with a record of recurrent non-infectious uveitis affecting the posterior part for at least 12 months) and vision that was better than hand movements.

Entirely patients do full systemic testing, which included blood pressure monitoring and cardiovascular evaluation. At baseline, 1 month, 3 months, and 6 months, every patient got a thorough ophthalmologic evaluation. Follow-up exams included calculating IOP 2 times using Goldman applanation tonometry and testing (BCVA) using an E-letter chart. If measurements varied further than 2 mmHg, a third measurement was made. Tono-Pen readings were made twice, and a third measurement was taken if the initial two measurements varied by 3 mmHg or more. Goldman IOP was used if it could not be acquired.

To determine the ME severity, optical coherence tomography (OCT) was done at one, three, and six months. To assess the CMT at a 1 mm circle, a 30 × 30-degree rectangle enclosing the macula was acquired, around 40 frames, and contained 31 horizontal line scans. IOP is one of the other significant consequences mentioned here.

Participants in group 3 had baseline consecutive measurements of serum creatinine performed at every follow-up appointment to assess their kidney job. Every follow-up included the measurement of the CBC, and electrolytes, with Mg, BG, TC, SA, and ESR.

After a preliminary paracentesis conducted in a clean operating room and performed beneath topical anesthesia through benoxinate 0.4% eye drops, all participants in the 1st group received a single intravitreal injection of the 0.2 µg/day of Fluocinolone acetonide implant. The Fluocinolone acetonide implant stayed inserted intravitreally through pars plana with a definite cartridge.

After preparing conjunctiva with 5% iodopovidone and applying a topical anesthetic with Naropin, all patients in the 2nd group were implanted with dexamethasone, and all implants were carried out in sterile conditions. After two to three days of baseline assessment, a 700 µg gradual - discharge intravitreal dexamethasone implant Ozurdex remained inserted beneath a crystalline lens in a vitreal cavity. The operating room was used for all injections. Using a specialized, one-time 22-gauge applicator, the dexamethasone implant is situated through vitreous cavity across pars plana. Following therapy, patients had 7 days of topical ophthalmic antibiotic (netilmicin sulfate) medication.

All of the participants in the 3rd group got 9 injections of cyclosporine (5 mg/kg/day), one per two weeks for three months, followed by one per month for three months.

Inclusion criteria

The next were the inclusion criteria: (1) CMT >250 M, (2) age > eighteen years, and (3) BCVA between 5 and 40 letters.

Exclusion criteria

The following were the exclusion requirements: (1) Mechanical impairment (including organized hard exudative plaques within 0.5 disc diameter of the investigated eye's macula center, subretinal fibrosis, laser scars, epiretinal membrane affecting fovea, or atrophy of the retinal pigment epithelium), (2) Glaucoma, (3) ophthalmic operation performed in the studied eye during the previous 6 months, (4) ME brought on by conditions other than uveitic macular edema were disqualified, and (5) compromised kidney or liver utility, hypertension, abuse of drugs or alcohol, pregnancy, and malabsorption disorder.

Safety criteria

Development unfavorable side effects linked to injection, like anterior chamber infection, cataract, eye discomfort, or vitreous opacification, remained watched. The surgically linked side effects, including endophthalmitis, eye perforation, conjunctival bleeding, and systemic injection-related symptoms, were also permanently observed.

Ethical approval

We obtained informed written consent from all participants before getting them involved in the study and discussed with them about steps, aims, potential benefits, and hazards of the work. The study protocol was approved by the Al-Azhar

University Local Ethics Committee, Faculty of Medicine (for Boys); all procedures were in accordance with the Declaration of Helsinki

Results and Discussion

For our study, a sum of 60 eyes from 45 uveitic participants (36 males, 24 females) was enrolled. 20 eyes from the 1st group received intravitreal fluocinolone acetonide implants. 20 eyes from the 2nd group received Ozurdex implants, and the 3rd group of 20 eyes receives nine injections of cyclosporine at a dose of 5 mg/kg/day, one dose every two weeks for three months, and subsequently one dose per month for three months.

Concerning age, sex, uveitis type, and baseline ocular parameters like VA and ME thickness, the three therapy groups were comparable. Moreover, there is no discernible difference in related systemic disorders between populations (Table 1). The demographics and fundamental traits of the groups were compiled in Table 1 and Figure 2.

In this study, the causes of uveitis **were** determined in 75% of all participants, while it was not determined in 25% of participants across each group (Table 2 and Figure 3). The main result factors are IOP, CMT, and BCVA. Actual p-values were used to compute standard deviations. Regarding the standard criteria and additional data, no discernible change regarding 3 groups. VA enhancement in the 1st group was noteworthy in the second month, at 0.9 ± 0.45.

Table 1: Demographics and basic features in all groups

	The 1st Group	The 2nd Group	The 3rd Group
Demographics	N = 125	N = 128	N=127
Age, mean ages (SD)	42.27 ± 13.2	39.5 ± 14.6	43.8 ± 14.1
Male	12 (40%)	11 (55%)	13 (65%)
Female	8 (40%)	9 (45%)	7 (35%)
Clinical Characteristics			
Unilateral uveitis	17 (85%)	16 (80%)	15 (75%)
Site of uveitis			
Intermediate	3 (15%)	4 (75%)	1 (5%)
Posterior or Panuveitis	17 (85%)	16 (80%)	19 (95%)
Systemic disease			
Diabetes mellitus	12 (40%)	14(70%)	3(15%)
Hypertension	18 (90%)	13 (65%)	5 (25%)

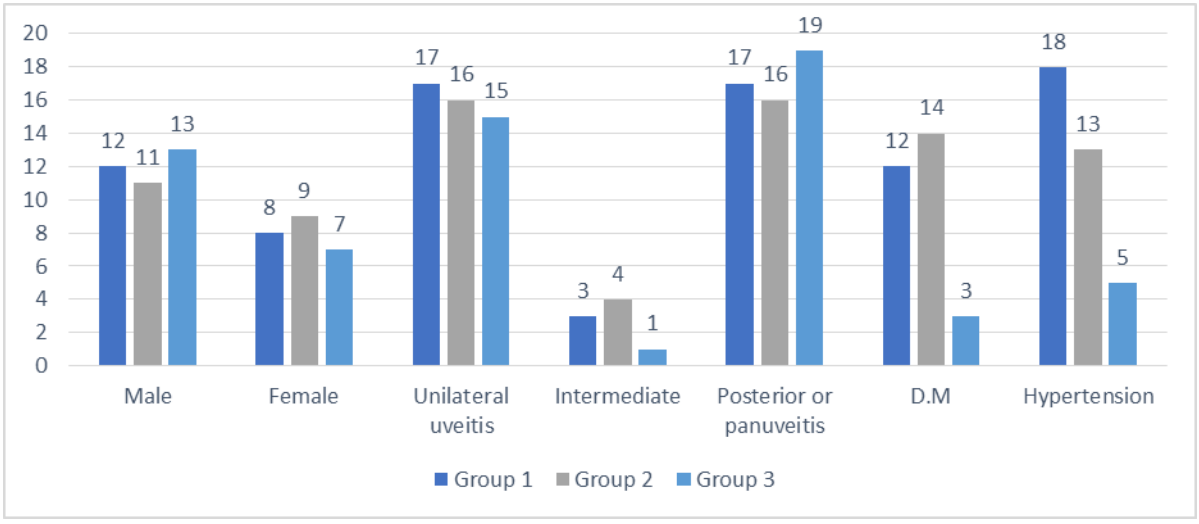


Figure 2: Demographics and basic characteristics in all groups

All cases discovered in our study either demonstrated an increase in mean VA and a decrease in ME through six months, with the exception of the second group, which only showed a substantial decrease in CMT at all weeks.

In the 1st group, a total of twenty eyes (eight female and twelve male) were studied. The mean age of the study population was 42.27±13.2 years (range: 42-62) and the baseline means 1 mm CMT was 565.6 ± 245 M (range: 330-665 M), according to OCT. After one month, the VA improved and CMT reduced slightly, but not dramatically to 2.56 ± 0.35 and 435.3 ± 196.5 M, respectively, from the medial BCVA of 2.37 ± 0.22. Yet three months later the injection, the VA improved and the CMT reduced towards 2.83, 0.47, 325.5, and 173.8 M, correspondingly (Figure 6). Furthermore, the mean BCVA had greatly risen to 2.93 ± 0.51 (P=0.006) after 6 months of follow-up, whereas retinal thickness had marked reduction to 25.3 ± 128.6 M (P=0.045) (Table 3).

Table 2: Reasons for uveitis

	The 1st Group	The 2nd Group	The 3rd Group
Multiple sclerosis	2 (10%)	4 (20%)	3 (15%)
Behçet disease	2 (10%)	2 (10%)	3 (15%)
White dot syndrome	4 (20%)	3 (15%)	4 (20%)
Fuchs uveitis	7 (35%)	6 (30%)	5 (25%)

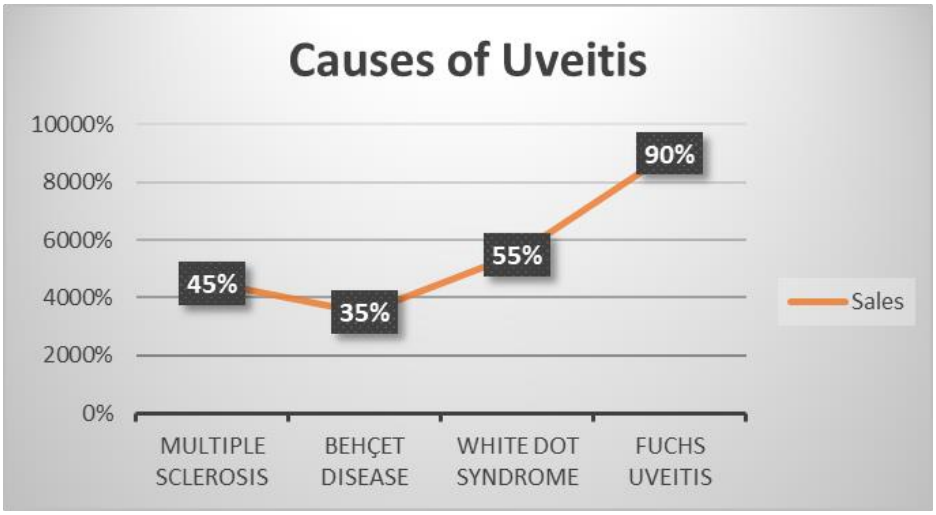


Figure 3: Reasons for uveitis

Table 3: CMT and BCVA levels at baseline and follow-up visits throughout all groups

	The 1st Group		The 2nd Group		The 3rd Group	
	V.A	CMT (µM)	V.A	CMT (µM)	V.A	CMT (µM)
Baseline (T0)	2.37 ± 0.22	565.6 ± 245 µM	2.27 ± 0.11	535.8 ± 190.56 µM	3.09 ± 0.20	580.7 ± 230.65 µM
1 month (T1)	2.56 ± 0.35	435.3 ±196.5 µM	2.35 ± 0.21	485.35 ± 180.13 µM	3.25 ± 0.29	545.32 ± 220.35 µM
3 months (T3)	2.83 ± 0.47	325.5 ± 173.8 µM	2.43 ± 0.45	335.6 ± 165.71 µM	3.45 ± 0.45	480.65 ± 210.63 µM
6 months (T6)	2.93 ± 0.51	253.3 ± 128.6µM	2.67 ± 0.56	295.5 ± 135.15 µM	3.65 ± 0.56	460.33 ± 190.35 µM

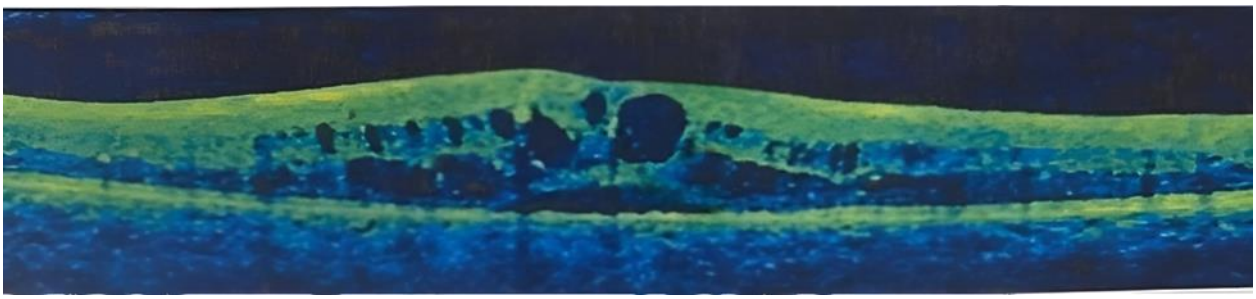


Figure 4: OCT before intravitreal dexamethasone implant in the 2nd group

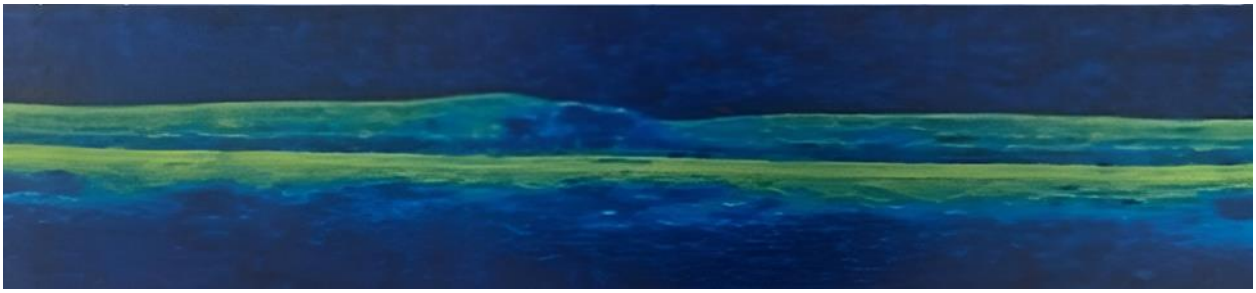


Figure 5: OCT after intravitreal dexamethasone implant in the 2nd group

In the 2nd group, a sum of twenty eyes (nine females and eleven males) was studied. The mean age of the study population was 39.5 ± 13.5 years (range: 39-63). The retina of each of the 20 study participants' eyes had a significant amount of edema prior to the intravitreal dexamethasone implant injection. At baseline, the retina's average thickness was 535.8 ± 190.56 M, and the medial BCVA was 2.27 ± 0.11. After one month, VA increased and CMT reduced marginally, but not dramatically to 2.35 ± 0.21 and 485.35 ± 180.13 µM, correspondingly. Though three months following implantation, VA improved and CMT dramatically dropped to 2.43 ± 0.45 and 335.6 ± 165.71 µM, correspondingly (Figures 4 and 5). The mean BCVA raised to 2.67 ± 0.56 (P=0.008) after 6 months of follow-up, and retinal thickness lowered to 295.5±135.15 µM (*P*=0.040) (Table 3, Figure 4 and 5). In the 3rd group, a total of twenty eyes (seven female and thirteen male) were studied. The mean age of the study population was 43.8 ± 14.1 years (range: 43-68). The retina of each of the 20 eyes of the study participants had a significant amount of edema prior to cyclosporine injection. At baseline, the medial BCVA was 3.09 ± 0.20, and the average retinal thickness was 580.7 ± 230.65 µM. After one month, VA marginally improved and CMT marginally, but not much lowered to 3.25 ± 0.29 and 545.32 ± 220.35 µM, respectively. Yet after three months, VA to some extent improved and CMT barely dropped to 3.45 ± 0.45 and 480.65 ± 210.63 µM, respectively (Figure 6). The mean BCVA raised to 3.65 ± 0.56 (P=0.075) after six months of follow-up, and retinal thickness reduced to 460.33 ± 190.35 µM (*P*=0.040) (Table 3). Unfortunately, the beneficial effects of cyclosporin did not persist after dose reduction.

Intraocular pressure

In the 1st group the pretreatment IOP was 18.8 ± 8.4; twenty eyes had intravitreal fluocinolone acetonide implants. All follow-up visits at one month showed an increase in postoperative IOP; at three months, the mean IOP was 26.47 ± 8.73 mmHg and 24.65 ± 7.89 mmHg, respectively; the patient required glaucoma medication; at six months after implanting, it significantly decreased to 18.99 ± 8.81 mmHg (Table 4) (Figure 7). In one month, 12 of the 20 eyes (60%) and 8 of the 20 eyes (40%) had an increase in IOP between 5 and 16 mmHg. However, there were no cases after six months (Table 4). In the 2nd group, twenty eyes receive corticosteroid implants. In this group, the preoperative intraocular pressure was 18.57 ± 7.3. Postoperative IOP increased dramatically.

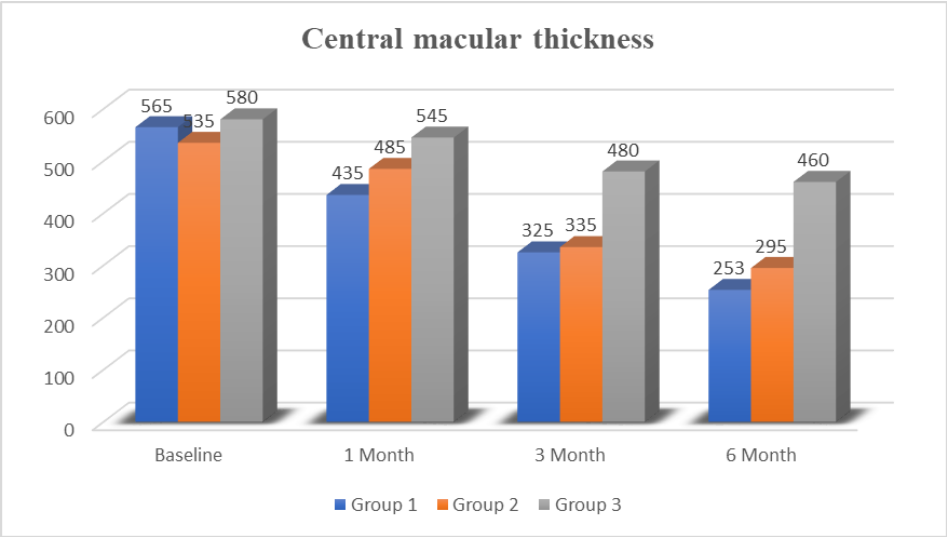


Figure 6: Central macular thickness analysis in baseline and follow-up visit in 3 groups

Table 4: Intraocular pressure variations between three groups at baseline and subsequent visit

	The 1st Group	The 2nd Group	The 3rd Group
Baseline			
IOP (mm Hg)	18.8 ± 8.4	18.57 ± 7.3	18.65 ± 8.36
1 month			
IOP (mm Hg)	26.47 ± 8.73	28.44 ± 10.21	18.58 ± 9.56
3 months			
IOP (mm Hg)	24.65 ± 7.89	21.25 ± 8.72	18.35 ± 8.58
6 months			
IOP (mm Hg)	18.99 ± 8.81	18.78 ± 7.1	18.47 ± 8.87
IOP increase in three groups as a percentage	1st Group	The 2nd Group	The 3rd Group
IOP increase in three groups as a percentage	1st Group	The 2nd Group	The 3rd Group
1 month			
From 5 to 16 mmHg	12 (60%)	14 (70%)	0
3 months			
From 5 to 16 mmHg	8 (40%)	3 (15%)	0
6 months			
From 5 to 16 mmHg	0	0	0

At one month, the mean IOP was 28.44 ± 10.21 mmHg, and the patient required antiglaucoma medicine. At three months, the mean IOP was 21.25 ± 8.72 mmHg, and at six months, it had nearly returned to average (Table 4 and Figure 7). A rise of IOP between 5 mmHg and 16 mmHg was kept in 14 of 20 eyes (70%) during the first month and was kept in 3 of 20 eyes during the third month (15%) and negative cases in the six months (Table 4).

In the 3rd group, twenty eyes receive cyclosporine injections the patients had a baseline IOP of 18.65 ± 8.36 mmHg. The mean IOPs were unchanged at the subsequent visits in one month, 3 months, and 6 months after the injection, with readings of 18.58 ± 9.56 mmHg, 18.35 ± 8.58 mmHg, and 18.47 ± 8.87 mmHg, respectively (Table 4 and Figure 7).

Safety

Serum creatinine levels were used to gauge renal function. 3 participants in the third group saw increases in sCr that was greater than 50% of the baseline value while receiving medication, 1 patient for 3 weeks straight and the others for only 30 days.

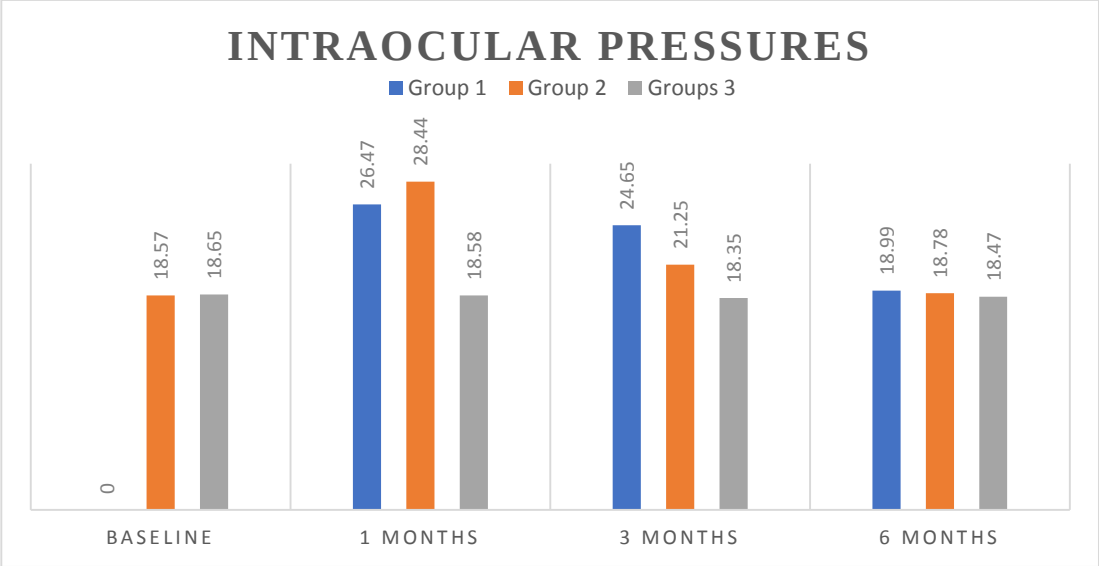


Figure 7: Intraocular pressures analysis in baseline and follow-up visit in 3 groups

It was determined that this patient had moderate uveitis. At the beginning of treatment, all liver function tests were normal, with only small changes within the normal range. Throughout the trial, the hematological parameters exhibited very small changes above or below the normal range. One patient in the cyclosporin group was the only one who did not report any adverse effects, and there was no change in the erythrocyte sedimentation rate. There were many different side effects recorded. The list of them is in Table 5. It was discovered that the most bothersome side effect was painful paraesthesias. None of the patients asked for their dose to be reduced (Table 5 and Figure 8).

Complications

In neither the first group, nor the second group were there any intraoperative problems. Moreover, neither group of patients exhibits endophthalmitis, ocular perforation, conjunctival bleeding, or cataract advancement.

Three things should be accomplished to treat non-infectious uveitis: Resolving intraocular inflammation is the initial step. The second and the third steps include maintaining eyesight and avoiding issues involving the eyes. The primary treatment for acute inflammation and non-infectious uveitis is corticosteroids [11].

To treat noninfectious uveitic macular edema, our research examined the effectiveness and safety of intravitreal fluocinolone acetonide implant, ozurdex implant, and cyclosporine injection. For this study, a total of 60 eyes from 45 uveitic patients (36 males and 24 females) were enrolled. 20 eyes from the 1st group receive intravitreal fluocinolone acetonide implants. 20 eyes in the 2nd group receive an Ozurdex implant. The 3rd group's 20 eyes receive cyclosporine injections nine times at a rate of ≤ 5 mg/kg per day, first every 2 weeks for three months and so each month for another three.

In our study, baseline ocular parameters such as VA and ME Thickness, age, sex, type of uveitis, and treatment groups were similar among all the study groups. In 75% of cases, the cause of uveitis had been determined; in 25% of groups, it had not. The main outcome factors are IOP, CMT, and BCVA. P-values were used to compute standard deviations. The baseline features of the three groups did not significantly differ from one another.

Our findings show that intravenous fluocinolone acetonide implants successfully reduce inflammation in the common of the 1st group participants, but that the implant also does so more quickly and often regarding inflammation. This result is best from Jaffe GJ *et al.* [12]. However, overall, not just in the beginning, the first group showed improved inflammation control.

Table 5: Adverse outcomes as described by the patients receiving cyclosporin injection

Side effect	Number of patients
Tremor	4
Painful paraesthesias	4
Hot flushes	4
Headache	1
Tiredness	2
Epigastric burning	4
Nausea	5

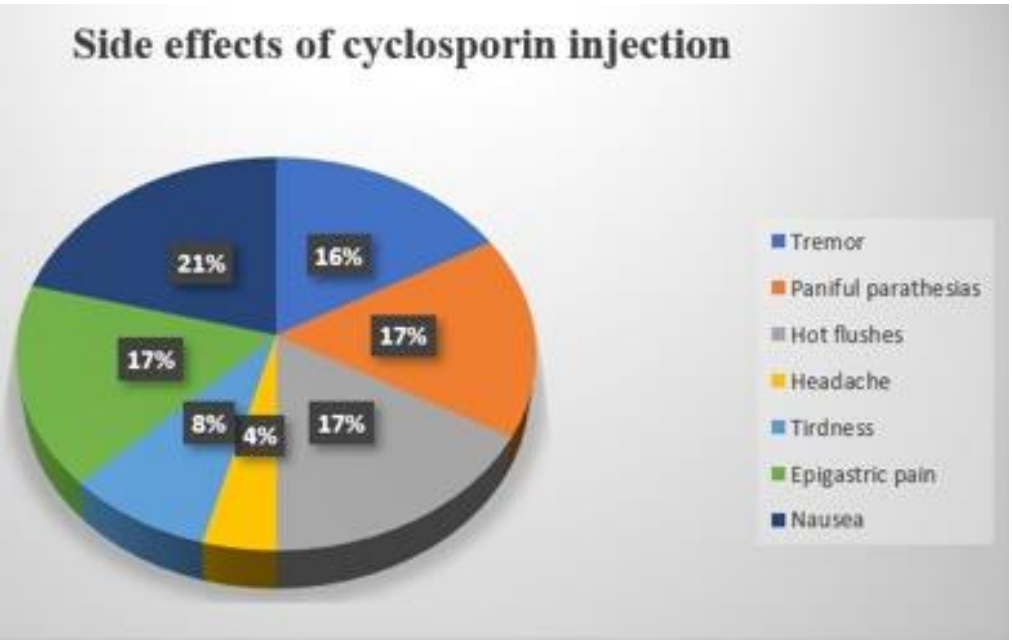


Figure 8: Side effects of cyclosporin injection

Two short series in which implant therapy was successful in decreasing inflammation that was resistant to systemic treatment were constant with the superiority of implant therapy for doing so. This is consistent with to the results of the study conducted by Jaffe GJ *et al.* [13].

In our research, we indicated that during the dexamethasone management time, marked progress in BCVA and CMT lasted for less than 3 months which was consistent with to the results of the study conducted by Singh P *et al.* [14]. Eyes in both the 1st and the 2nd groups exhibited good improvements in both BCVA and CMT, correspondingly, during the treatment period.

The benefits made possible by FAc monotherapy were quantitatively bigger in the 1st and the 2nd groups than those made possible by cyclosporine injections. Though, our research demonstrates that a single FAc implant provided significant, long-term gains in both functional and anatomical vision while removing the load during recurrent cyclosporine injections, a known impediment to providing the best possible patient care. These findings are reliable with those of Pessoa B *et al.* [15]. That recommended implies FAc might raise the bar and ease the burden of treatment.

In our study, in the 2nd group, VA increased and CMT reduced to 2.35 ± 0.21 after one month, and this group's decrease in CME was larger than that of the third group (P=0.01). This is consistent with what Callanan *et al.* found [16]. Though three months after the implantation, the VA increased to 2.43 ± 0.45, which is an improvement above the findings of Kuppermann *et al.* [17]. At 1, 3, and 6 months from the implants, a dexamethasone implant caused progress in VA, as determined by ETDRS. This matches the findings of the research by Haller *et al.* [18].

The maximum effectiveness of dexamethasone is attained during the first 3 months, according to Meyer *et al.* [19]. Later, its therapeutic effectiveness gradually declines; however, this impact is more noticeable in CMT assessments than in BCVA data. These results are consistent with recent studies demonstrating that dexamethasone's anti-inflammatory activity is quick and may result in positive outcomes within the 1st week of management.

Concerning the dexamethasone protection, there were no specific issues related to the implant or the medication, except a rise in IOP occurs as per Kuppermann *et al.* study [20]. Our study demonstrates that patients in the first and the second groups had similar functional and anatomical results. Our research, however, revealed that ozurdex implants also result in appreciable improvements in eyes with good baseline BCVA (> 60 letters). This outcome is in a good agreement to that of Alfaqawi F *et al.* study [21].

According to our research, to eliminate the essential aimed at additional clinic visits and to achieve the greatest results, we switched directly to FAc or ozurdex implants for those patients who do not respond to cyclosporine injections after four months. In our investigation, cyclosporine reduced uveitic inflammation and treated endogenous uveitis. By the third month, the majority of the 3rd group's patients had experienced these results. In comparison to our investigation, Kacmaz RO *et al.* [22] observed comparable or inferior efficiency of cyclosporine for ocular inflammatory illness.

The findings of our study show that cyclosporin has oppressive result on the progression of a continuing immune response manifested as severe idiopathic posterior uveitis, Panuveitis, or intermediate uveitis, although this outcome is transient and disappears after the 3rd month of dose reduction. This finding is consistent with Graham EM *et al.* [23] which managed 9 participants with marked refractory inflammation of the posterior uvea. After a dose decrease, the uveitis relapsed in five patients.

Eleven Bechet's disease patients were given three-month treatments of cyclosporin by Mfiftfioglu AD *et al.* [24]. With the exception of one patient, they all had a rebound effect once the medicine was stopped.

The preoperative IOP in the 1st group of our study's 20 eyes that received intravitreal fluocinolone acetonide implants was 18.8 ± 8.4 mm Hg. All postoperative IOPs increased at the one-month follow-up appointment and at three months, the mean IOPs were 26.47 ± 8.73 mmHg and 24.65 ±7.89 mmHg, respectively. The patient required glaucoma medication. Six months when implantation was done, the mean IOP dramatically decreased to 18.99 ± 8.81 mmHg. This outcome matches that of Kidde *et al.* [25].

Preoperative intraocular pressure in our study in the 2nd group 2 was 18.57 ±7.3, and postoperative IOP dramatically increased. After one month, the patient's IOP was 28.44± 10.21 mmHg, necessitating the use of an antiglaucoma drug. At three months, the mean IOP was 21.25± 8.72 mmHg, and at six months, it had practically returned to normal.

A rise of IOP among 5 mmHg and 16 mmHg was preserved in 14 of 20 eyes (70%) at one month and was preserved in 3 of 20 eyes at three months (15%), and there were no cases in the six months. The incidence of OHT in 116 consecutive newly diagnosed cases of uveitis who were observed for 6 weeks was 20%, primarily due to corticosteroids; this is similar to the result of Shrestha *et al.* [26].

While the 1st and the 2nd groups were equal in their capacity to stop the recurrence of non-infectious uveitis, enhance VA, and decrease inflammation, the 2nd group had more constructive side effects.

Conclusion

To reduce the negative outcomes of corticosteroids and other hazardous medications, this research showed cyclosporin injection could remain as a solitary treatment to manage uveitic ME related to noninfectious uveitis. Tiny subset of individuals, though, cannot tolerate the cyclosporine toxicity; therefore; it must be carefully monitored. The final management must be customized established regarding severity of illness, the risk/benefit ratio of each treatment, and the participant preferences. In this study,

various intravitreal therapeutic agents (intravitreous fluocinolone acetonide implant and corticosteroid implants) were available for the treatment of uveitic ME. The mainstay of management continues to be corticosteroids, either implanted or injected.

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Authors' Contributions

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