DOI: https://doi.org/10.53350/pjmhs22165164

**ORIGINAL ARTICLE**

# Visual Outcome after Suprachoroidal Injection of Triamcinolone Acetate in Cystoid Macular Edema of Different Pathology

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## ABSTRACT

**Aim:** To analyze visual outcome after suprachoroidal injection of triamcinolone acetate in cystoids macular edema of different pathology.
**Study design:** Prospective interventional study.
**Place and duration of study:** Department of Ophthalmology, Niazi Medical & Dental College Sargodha from 1st July 2021 to 31st December 2021.
**Methodology:** Fifty patients were suffering from uveitis (Intermediate uveitis) most common, diabetic macular edema resistant to other treatments like maximum anti-vascular endothelial growth factor injections, vascular occlusion disorders were included. All participants were followed-up at 1-week, 1-month 3 and 6 months and best corrected visual acuity and intraocular pressure was also recorded. All procedure done in the main operation theatre under full sterilization condition and consider it as a part of major procedure.
**Results:** Females appeared to be more in number than to males. In mostly patients the cause of cystoids macular edema was uveitis (Intermediate type) (n=30) followed by vascular disorder (n=10). There was a significant improvement after treatment on visual acuity according to the given results.
**Conclusion:** Common cause of cystoids macular edema in the present study was uveitis followed by vascular disorders. There was a significant improvement after treatment on visual acuity according to the given results. Most patients achieve good visual activity after treatment.
**Key words:** Uveitis, Supra-choroidal injection, Cystoid macular edema, Treatment

## INTRODUCTION

Uveitis is the 5th most common cause of cystoid macular edema (CME) and visual loss in the developed world.[1] It affect both children and adults and accounts 10-15% of all cases of total blindness in the United States[2,3]. Uveitis is classified anatomically as anterior, intermediate, posterior and panuveitis, according to the primary site of inflammation.[4] In clinical practice we mostly encountered with patients of intermediate uveitis. In such patients attack as are reluctant and visual loss due to CME is very common other causes like diabetes mellitus CME is very common. In patients have severe diabetic nephropathy have refractory type of edema difficult to treat it. Many other treatment methods are present other than the laser therapy for diabetic macular edema (DME). 1) Currently three drugs are present for DME treatment, 2). Nonetheless, efficacy of this drug varies from person to person and its effectiveness is still low in few patients, 3) Cost effectiveness is an either issue due to repetition of injections. Intravitreal-triamcinolone-acetonide (IVTA) is proved to be better drug in non-responsive cases to anti-vascular endothelial growth factor (VEGF) agents. Intravitreal-triamcinolone-acetonide also showed better result in the treatment of macular edema but it has many undesirable effects like cataract formation and glaucoma[5].

Cystoid macular edema is very common in ischemic central retinal vein occlusion (CRVO), branch retinal vein occlusion (BRVO) pseudophakic edema is also present in a significant number of cases. Although due to increasing phacoemulsification surgery its percentage is decreased now. Traumatic CME is also seen in few cases the treatment of choice for us is systemic steroid, periocular steroid, Topical steroid and intravitreal rout. Almost drugs are also come in front line called Immunomodulation, like cyclosporin, methotraxate, cyclophosphamide etc[6-9].

These all pharmacological intervention has indirectly assessed to the retina and have many side effects. There is a long list of their adverse effect all these things decrease the benefits and compliance of patients. Most of systemic diseases have recurrent attacks and causing CME, again and again so very difficult to give such drugs for a long time. In this situation a new route of drug delivery is emerged which is called suprochoroidal space for drug deliver.

So our study focuses on this route in all cases of CME of different pathology.

Received on 05-01-2022
Accepted on 11-04-2022

## MATERIALS AND METHODS

This prospective interventional study was conducted at Department of Ophthalmology, Niazi Medical & Dental College Sargodha from 1st July 2021 to 31st December 2021 after permission from IRB. A total of 50 patients were included. They were suffering from uveitis (intermediate uveitis) most common, diabetic macular edema resistant to other treatments like maximum anti-VEGF injections, vascular occlusion disorders. Patients of anterior uveitis, neuroretinitis, neurological disorders, ischemic maculopathy confirmed on FFA, patients of primary and secondary glaucoma and malignancies were excluded from this study. Refractory macular edema is defined as failure to respond VEGF injections. Response failure was decided by WHO criteria of vision or betterment of vision after anti-VEGF treatment. All study participants under-went complete examination including steroid responsiveness, IOP measurement and anterior/posterior-segment examination. All participants were followed-up at 1-week, 1-month 3 and 6 months and BCVA and IOP was also recorded. All procedure done in the main operation theatre under full sterilization condition and consider it as a part of major procedure.

We use local anesthetic (procaine) and instill one to two drops into the eye of patient then putting 5% pyodine drops in his eye. After 5 minutes we paint the periocular area with 10% pyodine when it dry we clean it further with swab. So that opsite can easily stick with it. We measure the parsplanaarea with the help of measuring clipper and mark it at 3.5mm. Then with the help of 30G 1cc insulin syringe, we inject 0.1ml of triamcinolone acetonide 40mg/ml, in the suprachoroidal space and tiny dose of drug was delivered. All patients were dilated before injecting SCTA.

The method was injecting the drug in the suprachoroidal space, we push the Syringe straight at 90 degree angle at the parsplana (3.5mm from limbus) upto1mm in the sclera measured by clipper and drug delivered, pointing bevel of needle backward. Then take the patient to the slit lamp and see the retina for any spillage of drug in Vitreous cavity. The drug was delivers in correct space. In all patients we give antibiotics steroid combination for 1 week and call the patients after one week then after 1 month and then 3 months and then again after 3 months. The data entered and analyzed through SPSS-25.

## RESULTS

There were 28 males and 32 were females. Females appeared to be more in number than to males. In consideration of total number of cases it was observed that females had higher number of presentation

in regards to males with almost 64% in comparison to 56% males (Table 1). In mostly patients the cause of CME was uveitis (intermediate type) (n=30) followed by vascular disorder (n=10). Diabetic CME also appeared in 8 patients (Table 2).

There was a significant improvement after treatment on visual acuity according to the given results. Betterment was observed with each passing week. Most patients achieve good visual activity after treatment (Table 3). Intraocular pressure was observed highest post 6 months in 11-15mmHg cases while post a month in 16-20 mmHg cases (Table 4).

Table 1: Distribution according to gender (n=50)

| Gender | No. | %age |
|---|---|---|
| Male | 28 | 56.0 |
| Female | 32 | 64.0 |

Table 2: Distribution according to the cause of CME

| Type of disease (pathology ) | No. of patients |
|---|---|
| Intermediate Uveitis (most common) | 30 |
| Connective tissue disorder (Scarcidosis) | 1 |
| Vascular disorder (Ischemic, CRVO, BRVO) | 10 |
| Diabetic CME | 8 |
| Pseudophakic edema | 1 |

Table 3: Effect of treatment on the visual acuity

| Visual acuity | Visual acuity at present | Visual acuity after 1 week | Visual acuity after 1 month | Visual acuity after 3 months | Visual acuity after 6 months |
|---|---|---|---|---|---|
| 6/60 | 35 | | | | |
| 6/36 | 15 | 33 | | | |
| 6/24 | 5 | 11 | 25 | 20 | 10 |
| 6/18 | - | 6 | 23 | 25 | 35 |
| 6/12 | - | - | 2 | 5 | 5 |
| 6/9 | - | - | - | - | - |
| 6/6 | - | - | - | - | - |

Table 4: Effect of treatment on the intraocular pressure (IOP)

| Intraocular Pressure | Intraocular Pressure at presentation | Intraocular Pressure after 1 week | Intraocular Pressure after 1 month | Intraocular Pressure after 3 months | Intraocular Pressure after 6 months |
|---|---|---|---|---|---|
| 11-15mmhg | 28 | 22 | 20 | 25 | 35 |
| 16-20mmhg | 22 | 28 | 30 | 23 | 15 |
| 21-25mmhg | - | - | - | 2 | - |
| 26-30mmhg | - | - | - | - | - |

## DISCUSSION

Anti-VEGF treatment method is considered as standard regimen and time tested protocol for macular edema treatment. But its use in recent time is reduced due to its cost, lengthy treatment protocol, follow-ups and requirement of injections. Ozurdex is now considered a better drug for macular edema but it raised IOP[10-12]. IVTA benefit has been widely proven all over the world but studies also report high incidence rate of cataract formation.[13]

Injection in the supra choroidal space (SCS) is developed as a new, Novel and more targeted approach to deliver drug with the potential to achieve chorioretinal concentrations 10 times more than that seen with traditional intravitreal injections.[14] This precise drug delivery help to treat both retinal and choroidal pathology with minimum adverse effect to eye and rest of body. It has a potential future in the applications of gene therapy and ocular oncology.[15] By this technique we can treat different pathology causing CME. In the past we inject triamcinolone by periocular and intravitreal rout. Both route increase the IOP in most cases particularly steroid responder. In few cases, early cataract formation also started. In this study we have a follow up of six months. The raise of IOP is less in our study the mean IOP at baseline 13.50±2 mmHg and after 6 months of treatment, 13.75±2.25 mmHg result was recorded. In another study, no increase in IOP was recorded after SCTA.[16] We think that regarding IOP important factor is during injecting triamcinolone the direction of tip of needle opening side is posterior and mostly of drug goes posteriorly in macular area and circumferentially very minor amount reach the anterior segment. So it provides very safety for IOP variations. In this technique IOP is easily controlled by antiglaucoma therapy while in other route of delivery in some patients you cannot control pressure even after maximum antiglaucoma therapy.

Another important thing which we noted in this technique the Visual acuity improved too much and maintained the patient satisfaction level is much higher as compared to the other routes. In our study most patients had vision from 6/60 to 6/36. After injection most patients achieve good visual activity with median value around 6/18 which WHO visual criteria[15,16].

## CONCLUSION

Common cause of CME in the present study was uveitis followed by vascular disorders. There was a significant improvement after treatment on visual acuity according to the given results. Most patients achieve good visual activity after treatment.

**Conflict of interest:** Nil

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