

DOI: <https://doi.org/10.33314/jnhrc.v19i3.2292>

An Experience with Intravitreal Dexamethasone Implant for Uveitic Macular Oedema

Ranju Kharel (Sitaula),¹ Saurav Man Shrestha¹

ABSTRACT

Intravitreal steroid implants are the latest trend for uveitis macular oedema treatment. Dexamethasone intravitreal implants are new in our contexts but we report 2 cases of uveitic cystoid macular oedema where this implant proved very useful in the treatment of recalcitrant macular oedema where other treatment modality fails.

Two cases of non-infectious uveitis and intermediate uveitis with recalcitrant uveitic macular oedema underwent dexamethasone intravitreal implantation. Their central macular thickness & central macular volume reduced significantly with the implant. With the reduction in macular parameters, the best-corrected visual acuity also improved and visual rehabilitation was achieved.

Thus, dexamethasone intravitreal implant helps in sustained drug delivery inside the vitreous leading to resolution of uveitic macular oedema in recalcitrant cases.

Keywords: Macular oedema; ozurdex; steroid; uveitis; vision

INTRODUCTION

Uveitis is responsible for 10% to 15% of blindness in the developed world and upto 25% in the developing countries.¹⁻³ One of the important cause of uveitic blindness is the uveitic macular edema. There have been significant advances in uveitis treatment with the antibiotics or corticosteroids or immunosuppressives. The corticosteroids remain the mainstay during the active stage of non-infectious disease.^{2,4,5} Dexamethasone (DEX) has potent anti-inflammatory properties with a minimal side-effects.^{6,7} DEX Intravitreal Implant 0.7 mg (Ozurdex) is a biodegradable intravitreal dexamethasone implant approved by the FDA for treatment of macular edema in noninfectious posterior uveitis.^{2,5} Herein, we describe the first experience of long-term outcome of DEX implant in the treatment of cystoid macular edema (CME) secondary to anterior and intermediate uveitis in Nepal.

CASE REPORT

Two cases, one of anterior uveitis and another of intermediate uveitis with macular edema not responding with topical, oral and periocular steroid injection were included. Infectious cause was ruled out with tailored lab investigations. DEX implant was inserted into the vitreous cavity of the affected eye through the pars

plana region in accordance with the manufacturer's instructions using a customized, single-use, 22-gauge applicator under topical anesthesia by a single uveitis specialist after obtaining written consent.

The outcomes analyzed were best corrected visual acuity (BCVA) which was measured with Snellen visual acuity charts converted to logarithm of the minimum angle of resolution (logMAR) units for statistical purpose, vitreous haze (VH) score graded according to National Institute of Health (NIH) grading system. The central macular thickness (CMT) and central macular volume (CMV) was assessed by optical coherence tomography (Heidelberg Spectralis® OCT). All the investigations were performed at baseline to rule out infectious etiology and patients were assessed postoperatively at day 1 and at 2, 4, 8, 12, 24 and 52 weeks. Follow-up was done upto 2 years.

Case 1: A 44-year-old-female diagnosed as chronic anterior uveitis had persistent CME in right eye since 6 months which was not resolved with posterior subtenon and oral steroid. Her BCVA was 6/36;N10 and 6/9;N6. In right eye (RE), anterior chamber had 0.5+ cells & 1+ flare; lens had grade I posterior capsular cataract and vitreous haze was 2+. The CMT was 431µm & 206 µm and CMV was 0.34 & 0.16 in each eye respectively. (Figure 1)

Uveitis work-up was negative and infectious causes were

Correspondence: Dr Ranju Kharel (Sitaula), B. P. Koirala Lions Centre for Ophthalmic Studies, Department of Ophthalmology, Maharajgunj Medical Campus, Tribhuvan University, Institute of Medicine, Kathmandu, Nepal. Email: helloranju50@gmail.com.

ruled out; the patient was diagnosed with idiopathic ocular inflammation. DEX implant was inserted into the vitreous cavity of right eye. At 1st month follow-up, BCVA improved to 6/18p and VH decreased from 2+ to 1+ and CMT decreased to 206 μm and CMV to 0.16. (Figure 1A) At 3 months, her BCVA was 6/12, CMT further decreased to 204 μm and CMV to 0.16. The cystoid spaces were resolved completely and finally by 6th month of the implant, her BCVA was stable at 6/12;N8, vitreous was clear; CMT was maintained at 199 μm and CMV at 0.15. (Figure 1B) Posterior subcapsular cataract increased to grade II and the patient subsequently underwent cataract surgery after 1 year of implant and the BCVA is maintained as 6/6,N6 in 2 years follow-up.

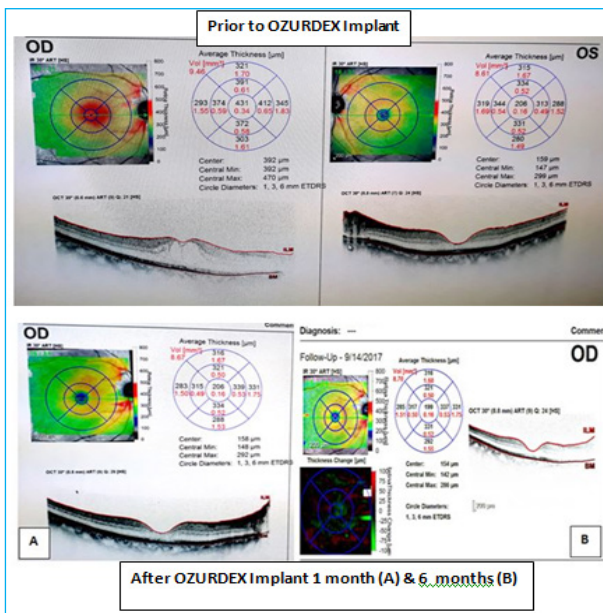


Figure 1. Pre treatment OCT showing edematous macula (431 μm) with cystoid spaces in RE (Upper photo) & OCT after 1 month of OZURDEX implantation showing resolved cystic spaces and decreased in CMT to 206 μm (Lower Photo A) and CMT maintained at 199 μm at the end of 6 months (Lower Photo B).

Case 2: A 32-year-old-female was diagnosed as a case of intermediate uveitis with CME in right eye since 4 months. The uveitis work-up revealed the diagnosis of sarcoidosis and was on oral corticosteroid. Her BCVA was 6/18;N10 and 6/6;N6 respectively. The right eye vitreous had 1+ cell and 2+ haze and macula had multiple cystic spaces, the largest cyst diameter was 173 μm . The CMT was 367 μm and 262 μm in each eye and CMV was 0.29 and 0.21 respectively. (Figure 2) The DEX implant was administered in the right eye. At 1st month, her BCVA in right eye improved to 6/18. The vitreous haze disappeared and CMT decreased to 288 μm and CMV to

0.23 and the cystic spaces resolved completely with no residuals within first month.(Figure 2A) At 3 months, her BCVA was 6/9p, CMT further decreased to 279 μm and CMV to 0.22. Finally, by 6th month of implant, her BCVA was stable at 6/6; CMT was maintained at 268 μm and CMV at 0.21.(Figure 2B). No episodes of recurrent macular edema identified during 2 years follow-up.

The first case was the case of chronic anterior uveitis with macular edema but the second case was of intermediate uveitis with macular edema. Though the intraocular site of inflammation was different in these cases, DEX implant led to the mean average reduction of central macular thickness by 157 μm (SD -59 μm) at 3 months and 152 μm (SD -37 μm) at 6 months in both cases. The average gain of 11 letters was achieved by 3 months and 20 letters by 6 months. Decreased inflammation during the follow-up period was manifested by reduced anterior chamber cells, vitreous haze, central subfield thickness and total macular volume on OCT and absence of inflammation recurrences in the study eye. The CMT was maintained and intraocular pressures remained unchanged in both cases during 2 years follow-up and vision was also maintained. The implant was also identified in vitreous in situ till 4 months.

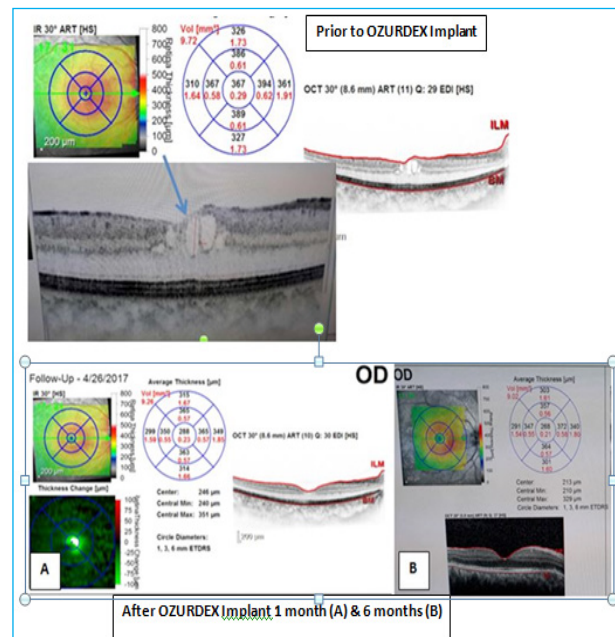


Figure 2. Pretreatment OCT showing macular edema with 367 μm CMT and multiple cystic spaces in RE (Upper photo), the largest cyst measuring to be 173 μm & Post OZURDEX implantation OCT showing decrease in CMT to 288 μm with resolved cysts after 1 month (Lower Photo A) and maintained CMT to 268 μm at the end of 6 months (Lower Photo B).

DISCUSSION

Dexamethasone implant is effective for treating recalcitrant macular edema with anterior, intermediate and posterior uveitis.⁶ CME secondary to uveitis is difficult to treat and may persist despite multiple interventions.⁸ In this report of two different variant of uveitic cases, DEX implant was successful to control inflammation and improve CME in for a longer duration. The common side-effects of DEX implant are raised ocular pressure and cataract. None developed ocular hypertension but the cataract in the first case progressed and was later cured with cataract surgery. However, progression of cataract cannot be explained solely on the effects of this implant because that patient had been treated before with local and oral steroid too. Gupta et al have suggested safe use of combine dexamethasone implant insertion along with phacoemulsification and intraocular lens implantation in uveitic cataract.⁹

The favored intravitreal steroid implant for non-infectious posterior uveitis for longer duration of 30 months action is fluocinolone acetonide (FA) which is very expensive compared to DEX implant. The risk of subsequent cataract and ocular hypertension being lowest following placement of the DEX implant and highest following surgical placement of an FA implant.¹⁰

Thus intravitreal DEX implant is the best newer option for treatment of persistent uveitic cystoid macular edema in Nepalese context. It can be equally effective in the management of uveitic edema due to anterior uveitis or intermediate uveitis.

CONCLUSIONS

DEX intravitreal implant can be effective for treating macular edema of noninfectious anterior as well as intermediate uveitis.

Author Affiliations

¹B. P. Koirala Lions Centre for Ophthalmic Studies, Department of Ophthalmology, Maharajgunj Medical Campus, Tribhuvan University, Institute of Medicine, Kathmandu, Nepal

Competing interests: None declared

REFERENCES

1. Darrell RW, Wagener HP, Kurland LT. Epidemiology of uveitis: incidence and prevalence in a small urban community. *Archives of ophthalmology*. 1962;68(4):502-14. [\[Article\]](#)
2. Lowder C, Belfort R, Lightman S, Foster CS, Robinson MR, Schiffman RM, et al. Dexamethasone intravitreal implant for noninfectious intermediate or posterior uveitis. *Archives of ophthalmology*. 2011;129(5):545-53. [\[Article\]](#)
3. Durrani O, Tehrani N, Marr J, Moradi P, Stavrou P, Murray P. Degree, duration, and causes of visual loss in uveitis. *British Journal of Ophthalmology*. 2004;88(9):1159-62. [\[Article\]](#)
4. Couch SM, Bakri SJ. Intravitreal triamcinolone for intraocular inflammation and associated macular edema. *Clinical ophthalmology*. 2009;3:41. [\[Article\]](#)
5. Haller JA, Bandello F, Belfort R, Blumenkranz MS, Gillies M, Heier J, et al. Randomized, sham-controlled trial of dexamethasone intravitreal implant in patients with macular edema due to retinal vein occlusion. *Ophthalmology*. 2010;117(6):1134-46. e3. [\[Article\]](#)
6. Kuppermann BD, Blumenkranz MS, Haller JA, Williams GA, Weinberg DV, Chou C, et al. Randomized controlled study of an intravitreal dexamethasone drug delivery system in patients with persistent macular edema. *Archives of ophthalmology*. 2007;125(3):309-17. [\[Article\]](#)
7. Williams GA, Haller JA, Kuppermann BD, Blumenkranz MS, Weinberg DV, Chou C, et al. Dexamethasone posterior-segment drug delivery system in the treatment of macular edema resulting from uveitis or Irvine-Gass syndrome. *American journal of ophthalmology*. 2009;147(6):1048-54. e2. [\[Article\]](#)
8. Karim R, Sykakis E, Lightman S, Fraser-Bell S. Interventions for the treatment of uveitic macular edema: a systematic review and meta-analysis. *Clinical Ophthalmology*. 2013;7:1109. [\[Article\]](#)
9. Gupta A, Ram J, Gupta A, Gupta V. Intraoperative dexamethasone implant in uveitis patients with cataract undergoing phacoemulsification. *Ocular immunology and inflammation*. 2013;21(6):462-7. [\[Article\]](#)
10. Cunningham Jr ET, De Smet MD, Yeh S, Albin TA, Zierhut M. Sustained-release corticosteroids for uveitis. Taylor & Francis; 2015. [\[Article\]](#)