

**EFFECT OF MODIFIED POSTERIOR SUB-TENON STEROIDS INJECTION ON
MACULAR EDEMA*****Rihab Ghanma MD, FRCS**

Ophthalmology Consultant In King Hussein Medical City/Jordanian Royal Medical Services.

***Corresponding Author: Dr. Rihab Ghanma MD, FRCS**

Ophthalmology Consultant In King Hussein Medical City/Jordanian Royal Medical Services.

Article Received on 04/11/2023

Article Revised on 25/11/2023

Article Accepted on 15/12/2023

INTRODUCTION

Local steroid injection is a common route for management of posterior segment ocular diseases, including vascular retinal diseases with macular edema and inflammatory conditions.^[1] The later indication was originally used for to avoid systemic immune suppressants.^[2] Although the periocular steroid injection is less invasive than the intraocular injections, it has many complications including raised intraocular pressure (IOP) and cataract formation.^[3] The implantable steroids are effective in the above-mentioned conditions, however, the cost and availability can restrict their use in our clinic.

METHODS

This is a prospective short study, conducted in the medical retina clinic at Al-Hussein hospital. We included random patients with macular edema above 300 micrometers of central macular thickness (CMT), who has been treated before with either orbital floor injection or intravitreal anti vascular endothelial growth factors (Anti-VEGF) in the last two months before presentation. Over two months (August and September, 2023), total of 21 patients with various etiologies of macular edema were treated with modified posterior Subtenon of 20 mg triamcinolone acetonide injection in the superior fornix. After instillation of one drop of lidocaine, a 26-gauge needle was used to introduce the medication under vision in the farthest reachable point of the superior-temporal fornix targeting the Subtenon layer. Seventeen of the patients (81%) included in the study had a previous orbital floor injection with unsatisfactory results, defined as CMT reduction of less than 10%. The base line of vision, CMT and intraocular pressure (IOP) were compared to same parameters after one month of injection.

RESULTS

The collected patients were divided according to etiology of macular edema into 3 groups. The diabetic maculopathy patients were 11 (52%), central and branch vein occlusion (CRVO/BRVO) patients were 7 (33%), and the remaining 4 (19%) were uveitis patients. The age range was 14 – 65 years (average 50.5 years). The average CMT improvement after one month was 24.5%, ranging between 9% - 40%. The group with the highest percentage of improvement was the inflammatory/uveitis

followed by CRVO/BRVO etiology and last was the diabetics. The average gain of vision was 9 letters, ranging between 4 - 20 letters. Only one patient developed high IOP of 29 mmHg and was controlled by two antiglaucoma medications. This patient was a uveitis young male patient aged 14 years.

DISCUSSION

Macular edema resulting from diabetic retinopathy and CRVO/BRVO has been treated with Anti-VEGF as the first line in management.^[4,5,6] However, in some patients, there is persistent macular edema estimated to be in 40% of diabetic maculopathy, despite monthly injections of anti-VEGF.^[4,5] According to protocol I and Protocol U in DRCR.net, steroids have a role in the management of diabetic macular edema, especially in resistant cases.^[7]

Periocular steroid is a famous route to manage uveitis, especially in unilateral cases, or to avoid the use of systemic steroids and immune suppressants.^[2] Steroids, being anti-inflammatory agents, were not surprising to be mostly effective in the group with ocular inflammation/uveitis induced macular edema in our group of patients. However, the diabetic macular edema as well as the resultant edema after retinal venous occlusion, both have elements of inflammation in their pathogenesis.^[4] That is why steroids can be a valuable adjuvant to anti-VEGF particularly in resistant cases.

The systemic level of periocular steroids remains low despite reaching all ocular tissue in 30 days of periocular injection.^[1] Having said that, it can result in local complications, including the high intraocular pressure and cataract formation.^[1] However, in our limited group,

all those adults (above 14years) didn't encounter the problem of high IOP, while only the 14-year-old patient had it.

Many studies have illustrated the significant improvement in macular edema, and resultant better vision in patients with diabetes and BRVO/CRVO after Dexamethasone implant (0.7 mg).^[8,9] Nagpal et al demonstrated how effective and durable the Dexamethasone implant can be.^[9] Although we cannot compare it to our limited data, but it is inspiring to conduct a study observing the effect of both medications and routes. The downside of Dexamethasone implant is being given intraocularly, risking the occurrence of more complications, including retinal detachment and endophthalmitis; beside being way more expensive the triamcinolone acetonide.

CONCLUSION

Triamcinolone acetonide modified posterior Subtenon injection can be considered an affordable, effective, fast and safe route of steroid therapy for various macular edema etiologies. However, a larger group with wider spectrum and longer follow up period is needed. Furthermore, a comparative study can be conducted using more than one route of ocular steroid therapy to manifest the advantages of this route.

REFERENCES

1. Fung AT, Tran T, Lim LL, Samarawickrama C, Arnold J, Gillies M, Catt C, Mitchell L, Symons A, Buttery R, Cottee L, Tumuluri K, Beaumont P. Local delivery of corticosteroids in clinical ophthalmology: A review. *Clin Exp Ophthalmol*, Apr., 2020; 48(3): 366-401. doi: 10.1111/ceo.13702. Epub 2020 Jan 22. PMID: 31860766; PMCID: PMC7187156.
2. Riordan-Eva P, Lightman S. Orbital floor steroid injections in the treatment of uveitis. *Eye (Lond)*, 1994; 8(Pt 1): 66-9. doi: 10.1038/eye.1994.12. PMID: 8013721.
3. Gaballa, S.A., Kompella, U.B., Elgarhy, O. *et al*. Corticosteroids in ophthalmology: drug delivery innovations, pharmacology, clinical applications, and future perspectives. *Drug Deliv. and Transl. Res.*, 2021; 11: 866–893. <https://doi.org/10.1007/s13346-020-00843-z>
4. Weinberg, T., Loewenstein, A. The role of steroids in treating diabetic macular oedema in the era of anti-VEGF. *Eye*, 2020; 34: 1003–1005. <https://doi.org/10.1038/s41433-019-0739-x>
5. Bressler SB, Ayala AR, Bressler NM, Melia M, Qin H, Ferris FL, et al. Persistent macular thickening after ranibizumab treatment for diabetic macular edema with vision impairment. *JAMA Ophthalmol*, 2016; 134: 278–85.
6. Mohammed Ashraf, Ahmed A. R. Souka. Steroids in Central Retinal Vein Occlusion: Is There a Role in Current Treatment Practice? 2015; 594615. <https://doi.org/10.1155/2015/594615>
7. <https://www.aao.org/education/audio/drcr-net-protocol-u-steroids-persistent-dme>. Accessed in Dec 2023.
8. Jirarattanasopa, Pichai MD*; Jiranoppasakdawong, Sakunjanut MD; Ratanasukon, Mansing MD; Bhurayanontachai, Patama MD; Dangboon, Wantanee MD. Results of intravitreal dexamethasone implant (Ozurdex®) for retinal vascular diseases with macular edema: An observational study of real-life situations. *Medicine*, July 8, 2022; 101(27): e29807. | DOI: 10.1097/MD.0000000000029807
9. Nagpal M, Mehrotra N, Juneja R, Jain H. Dexamethasone implant (0.7 mg) in Indian patients with macular edema: Real-life scenario. *Taiwan J Ophthalmol.*, Jul-Sep, 2018; 8(3): 141-148. doi: 10.4103/tjo.tjo_62_17. PMID: 30294527; PMCID: PMC6169328.