المؤتمر السنوي الدولي للجمعية المصرية
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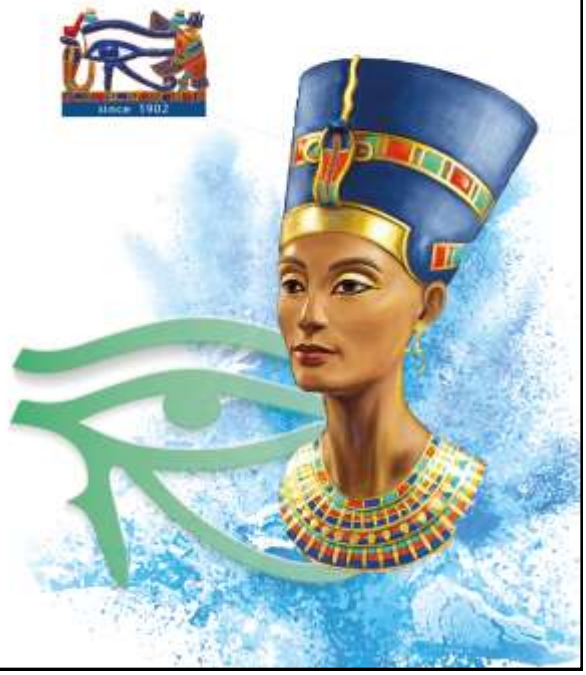
The Additive Effect of Topical Dorzolamide-Timolol with Intravitreal Ranibizumab Injection in Diabetic Macular Edema



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- Diabetic macular edema (DME) can occur at any stage of DR. Overall, the prevalence of DME is estimated to be 4.2 - 7.9% among patients with Type 1 diabetes and 1.4 to 12.8% among Type 2 diabetics [(1)].

- There is a major concern in patients who are resistant to anti-VEGF and those who have recurrent or chronic DME for which anti-VEGF therapy is often unsatisfactory [(2)].

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- Studies have suggested that outflow through the anterior chamber may play a role in clearance of intravitreal anti-VEGF drugs and decreasing aqueous production and outflow could slow drug clearance [3].

- Dorzolamide itself can reduce ME, as carbonic anhydrase inhibition could modulate Müller cell activity and retinal pigment epithelial cells, to pump fluid from the retina to the choroid [4].

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- Dorzolamide was found to be effective in the treatment of CME caused by postoperative inflammation, retinitis pigmentosa, X-linked RS macular changes, enhanced S cone disease, and choroideremia [5].

- **Byeon et al.,** [6] first reported using dorzolamide- timolol in patients receiving bevacizumab for ME in RVO. Mean central retinal thickness was lower in the dorzolamide-timolol group compared with those receiving no drops 5Ws after injection.

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- Topical dorzolamide– timolol was applied to nAMD patients with persistent exudation, despite fixed-interval anti-VEGF therapy resulted in anatomical improvement [3,7].
- Adjuvant topical dorzolamide– timolol with intravitreal bevacizumab (IVB) resulted in improvement of BCVA and CMT in DME [5].

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Objective

The present study aimed to evaluate the effect of topical dorzolamide–timolol with intravitreal ranibizumab injection on anatomical and functional outcomes in patients with diabetic macular edema (DME).

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Patients and Methods

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This prospective interventional study included 30 patients with NPDR, DME (central macular thickness ≥ 300 μm) measured by OCT, age ranged from 45-60 years.

The patients were divided into two groups according to treatment protocol:

- Group 1: 15 patients (15 eyes) received intravitreal ranibizumab injection (three monthly injections of 0.5 mg/0.05 ml) and adjuvant topical dorzolamide-timolol (twice daily).
- Group 2: 15 patients (15 eyes) received intravitreal ranibizumab injection only (three monthly injection of 0.5 mg/0.05 ml).

Exclusion criteria:

- History of cardiac diseases or diabetic nephropathy.
- HbA1c > 8.5 or fasting blood sugar > 250.
- Other ocular diseases as glaucoma, significant cataract, ERM, PDR.
- History of retinal photocoagulation.
- History of allergy to beta blockers or CAI compounds.

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Results

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		Group 1 (N=15)	Group 2 (N=15)
Age	Mean ± SD	55.73 ± 4.96	**56 ± 4.42**
	Range	45-60	**46-60**
Sex	Male	4 (26.67%)	**6** (40%)
	Female	11 (73.33%)	**9** (60%)
Eye	OD	7 (46.67%)	**5** (33.33%)
	OS	8 (53.33%)	**10** (66.67%)

Demographic data of the two study groups

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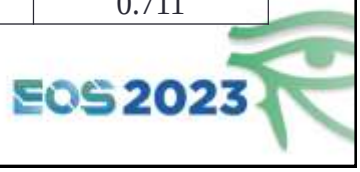
Baseline Characteristics

	Group 1 Mean ± SD	Group 2 Mean ± SD	P-value (Student t-test)
Age (Years)	55.73 ± 4.96	56 ± 4.42	0.878
DM duration (years)	16.80 ± 5.85	14.07 ± 4.30	0.156
HTN duration (years)	10.14 ± 3.29	10.78 ± 3.03	0.695
Hb A1c %	6.28 ± 0.62	6.51 ± 0.54	0.295
Cholesterol level (mg/dl)	180.33 ± 17.57	182.8 ± 18.49	0.711



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Ophthalmological Evaluation: group 1

	Pre-treatment Mean ± SD	Post-treatment Mean ± SD	P-value (Paired t-test)
BCVA (log MAR)	0.93 ± 0.23	0.73 ± 0.27	**< 0.001**
IOP (mmHg)	16.87 ± 3.00	15.07 ± 3.61	**< 0.001**
CMT (µm)	568.67 ± 145.76	384.00 ± 110.63	**< 0.001**

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Ophthalmological Evaluation: group 2

	Pre-treatment Mean ± SD	Post-treatment Mean ± SD	P-value (Paired t-test)
BCVA (log MAR)	0.93 ± 0.30	0.80 ± 0.33	**0.001**
IOP (mmHg)	17.07 ± 2.58	16.27 ± 2.55	**0.017**
CMT (µm)	513.40 ± 114.54	387.87 ± 119.52	**< 0.001**

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Ophthalmological Evaluation Post-treatment; comparison between the two study groups

	Group 1	Group 2	*P*-value (Student *t*-test)
BCVA (log MAR)	0.73 ± 0.27	0.80 ± 0.33	0.549
IOP (mmHg)	15.07 ± 3.61	16.27 ± 2.55	0.302
CMT (µm)	384.00 ± 110.63	387.87 ± 119.52	0.927

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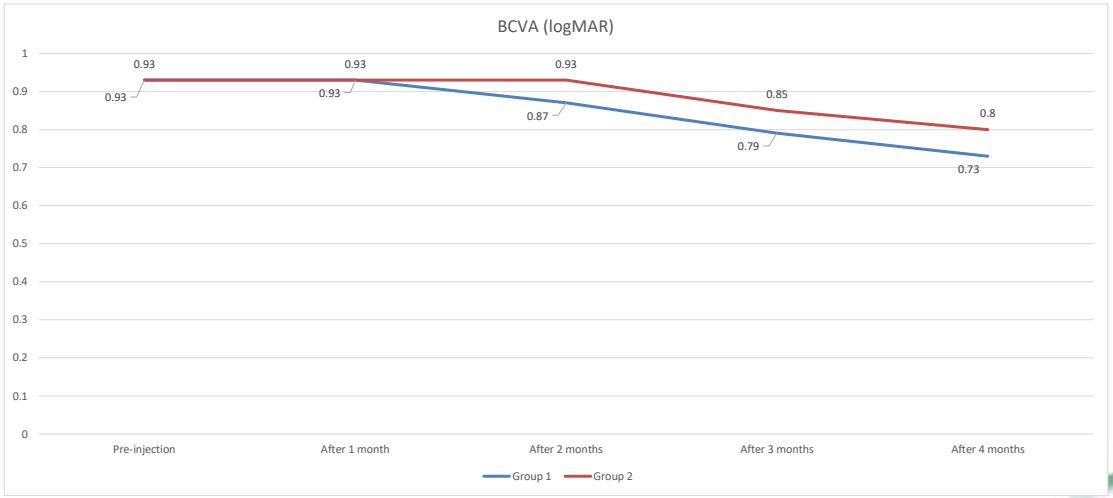
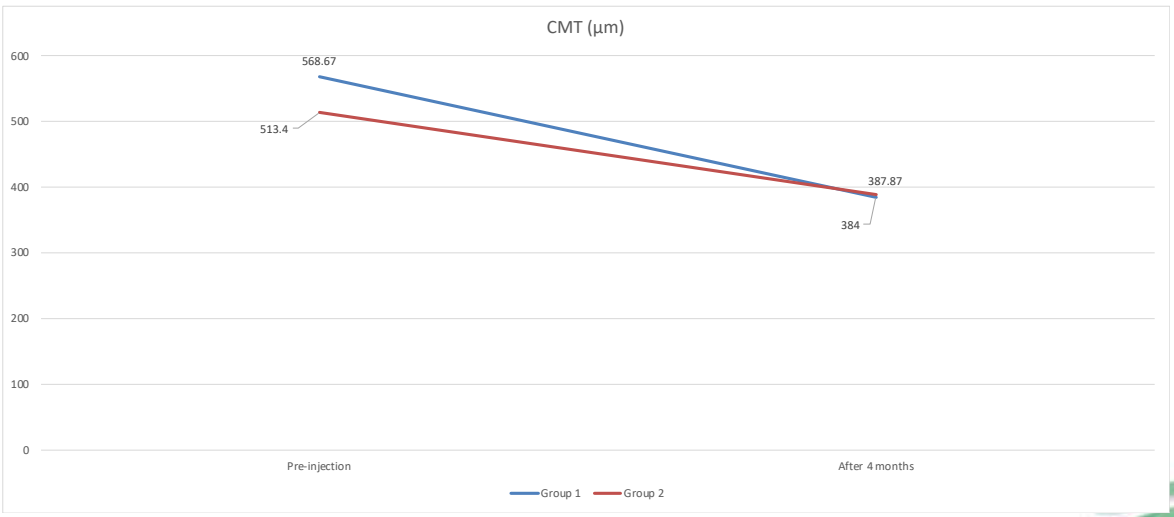

BCVA (logMAR)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.93
0.93
0.93
0.93
0.93
0.87
0.85
0.79
0.8
0.73
Pre-injection
After 1 month
After 2 months
After 3 months
After 4 months
Group 1
Group 2

15


CMT (µm)
600
500
400
300
200
100
0
568.67
513.4
387.87
384
Pre-injection
After 4 months
Group 1
Group 2

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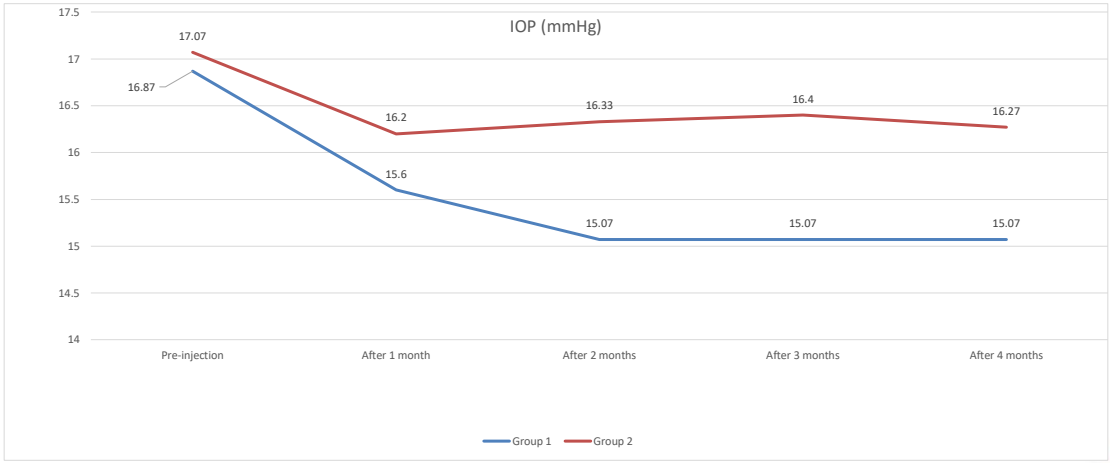

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Conclusions

- By comparing group 1 and group 2 from baseline to the last visit: mean change in BCVA was 0.2 *vs* 0.13, mean change in CMT was -184.67µm *vs* -125.53µm but the differences between the 2 groups were not statistically significant.

- This study demonstrated that adjuvant topical dorzolamide-timolol with intravitreal ranibizumab injection had additional effects, but not a statistically significant, on IVR in the treatment of DME over a 4-month-course.

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References

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Thank You

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