

The Baseline Ocular Coherence Tomography Morphology of Diabetic Macular Edema as a Prognostic Factor for Response to Anti-Vascular Endothelial Growth Factor

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Purpose: Diabetic retinopathy is a major complications of diabetes mellitus and remains a leading cause for visual loss in working-age populations. This work aims to evaluate the difference in response to anti-vascular endothelial growth factor agents based on the baseline ocular coherence tomography in patients with diabetic macular edema.

Methods: In this retrospective case-control study, the study population was evaluated and divided based on their baseline ocular coherence tomography(OCT) morphological features into cystoid, diffuse and mixed groups. Furthermore, changes in ganglionic cell- inner plexiform layer thickness, nerve fiber layer thickness, and central macular thickness and visual acuity in patients who received intravitreal injections of anti- vascular endothelial growth factor (anti-VEGF) agents for diabetic macular edema were measured. The difference in these outcome measures were studied before and after commencement of treatment for an average follow-up period of 1-year.

Results: Fifty-six eyes were included in this study. The mean age was 60.55 ± 10.47 years (Range (25-81) years); there were 35 males (62.5%) and 21 females (37.5%). The mean duration of follow up was 13.8 months (Range 12.0- 22.0 months) with a mean number of 4.38 ± 2.15 injections throughout follow up. The ocular coherence tomographic morphology of diabetic macular edema was cystoid (42.9%), diffuse (48.2%), and mixed (8.9%). Post hoc comparisons using the Tukey HSD test showed that the mean changes in central macular thickness in the cystoid group ($93.21 \pm 145.82 \mu\text{m}$) was significantly different from the mean differences in thickness in either diffuse group ($15.26 \pm 140.36 \mu\text{m}$) or mixed group (34.4 ± 89.71) ($p=0.02$).

Conclusion: Eyes with baseline cystoid diabetic macular edema treated with intravitreal injections of anti-VEGFs were associated with significantly more reduction in central macular thickness after treatment when compared to diffuse or mixed morphology. This finding may indicate that patients who present with cystoid macular edema have a favorable response to anti- VEGFs.