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The effect of axial length on intraocular vascular endothelial derived growth factor levels

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Purpose: There has been uncertainty in the possible mechanism behind the myopia-diabetic retinopathy (DR) protective nature relationship. In this study, we investigated the effect of axial length on intraocular Vascular Endothelial Growth Factor (VEGF) levels in normal subjects, in those with diabetes without retinopathy and also in patients of nonproliferative diabetic retinopathy and thereby evaluating the possible mechanism of its protective nature based on cytokine levels.

Methods: Forty-eight eyes of 48 patients were enrolled in this study. Aqueous humor was obtained from the eyes either during cataract surgery or prior to anti-VEGF therapy. The patients were divided into three groups. The first group comprised of Normal subjects without Diabetic Retinopathy (DR). The second group had diabetic patients without retinopathy. Patients with DR were included in the third group. There were 16 patients in each group which were further divided into those with AL<=23.30 mm and in those with AL>23.30 mm. The levels of VEGF were evaluated using bead-based flow-cytometric analysis. The levels of this cytokine were compared with AL in each of the groups. They were also correlated to the age, gender, duration of DM and severity of DR. HbA1c, MRSE, Central Macular Thickness (CMT).

Results: A strong statistically significant negative correlation (P<0.05) was found to be present between the levels of aqueous VEGF and AL when eyes in patients with AL<=23.30 mm were compared with those with AL>23.30 mm in normal subjects (P=0.001), in diabetics without DR (P=0.002) and in patients of DR (P=0.025). Also, the levels of VEGF showed a negative correlation in all the groups. However, there was no significant correlation between this cytokine level and other parameters (age, gender, duration of DM, the severity of DR, HbA1c, MRSE, CMT).

Conclusion: Our findings suggest that although the mean VEGF value is more in eyes with DR as compared to normal subjects, there is a decrease in the secretion of VEGF as the eye elongates irrespective of the systemic status of the patient which might lead to the observation that axial myopia is protective against DR.

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