

Macular Pigment Optical Density Measured by Dual Wavelength Autofluorescence Imaging in Diabetic and non-Diabetic Patients: a Comparative Study

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Abstract

Purpose: To compare macular pigment optical density (MPOD) values in type 2 diabetic and non-diabetic patients using dual wavelength autofluorescence imaging and to investigate the relationship between those values and glycosylated hemoglobin (HbA1C) and serum lipid levels. **Methods:** Forty-three patients were divided into groups 1 (controls, n=14), 2 (diabetic without retinopathy, n=17) and 3 (diabetic with mild non-proliferative retinopathy, n=12). MPOD was measured using a modified confocal scanning laser ophthalmoscope and compared among groups (analysis of variance). HbA1C and serum lipid (HDL, LDL, total cholesterol and triglycerides) levels were correlated with MPOD values for each group (linear regression analysis). **Results:** Mean \pm SD age in groups 1 (56.2 \pm 11.7 years), 2 (58.6 \pm 11.5 years) and 3 (62.8 \pm 9.8 years) was similar (p=0.324). Mean MPOD values averaged in a 2° diameter circle around the fovea were significantly different between the 3 groups [1 (0.29 \pm 0.07 DU), 2 (0.22 \pm 0.09 DU) and 3 (0.14 \pm 0.05 DU); p<0.001]. For mean MPOD levels at 0.5°, there was a significant difference between groups 1 (0.51 \pm 0.12 DU) and 2 (0.24 \pm 0.11 DU; p<0.001), but not between groups 2 and 3 (0.33 \pm 0.15 DU; p>0.05). A significant inverse correlation was observed between HbA1C levels and MPOD mean values averaged at 2° around the fovea for all patients (r=-0.63, p<0.001). No significant correlations were found between values of MPOD and serum lipid or age. **Conclusions:** Type 2 diabetic patients with and without retinopathy had reduced MPOD levels when compared to non-diabetic patients. In addition, a significant inverse correlation between MPOD and HbA1C levels was observed.