Factors associated with macular pigment optical density in young and healthy myopic Hong Kong Chinese

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Purpose:

To investigate the relationship between macular pigment optical density (MPOD) and gender, age, axial length (AL), spherical equivalent refraction (SER), foveal thickness, and foveal choroidal thickness (FCT) in young and healthy myopic Hong Kong Chinese.

Methods:

Seventy-two healthy myopic Chinese (33 males, 39 females), 18 to 37 years old, free from color vision deficiency and ocular abnormalities, were recruited. MPOD was determined by a heterochromatic flicker photometry (MPSII, Elektron Technology) using the detailed test mode. Foveal thickness, including minimum foveal thickness (MFT) at foveal pit and average foveal thickness (AFT) over the central 1 mm of fovea, and FCT were measured by SD-OCT (Spectralist, Heidelberg Engineering). AL was measured by IOL Master (Carl Zeiss Meditec). Only the right eyes were measured for this study.

Results:

The mean age of subjects was 25.3±5.0 years with SER of -4.98±2.65 D (ranged -0.75 to -11.5D) and AL of 25.74±1.15 mm (23.33-29.58 mm). MPOD was 0.52±0.17 (0.12-0.94). MFT was 221.2±17.3 um (193-271 um) and AFT was 268.2±18.0 um (234-326 um). Multiple linear regression was used to predict MPOD based on gender, age, SER, AL, MFT, AFT and CHT. MPOD was only found significantly correlated with age and MFT (adjusted R square = 0.20, F (2, 69) = 9.763, p < 0.001) but not with others. MPOD was positively correlated with MFT (standardized beta = -0.246, p = 0.026) and inversely correlated with age (standardized beta = 0.356, p = 0.002).

Conclusions:

The results of this study are in agreement with most of the previous studies that MPOD was decreased with age. MPOD was positively associated with the foveal pit dimension. In the normal young myopic Chinese, thicker foveal pit may possibly accommodate more macular pigment and thus results in higher MPOD.