

Volume 6, No. 1 (Supplement)

June 2011

ISSN 1823-2140

The
National University
with an
INTERNATIONAL REACH



UNIVERSITI
KEBANGSAAN
MALAYSIA
National University of Malaysia

MEDICINE & Health

The Official Journal of The Faculty of Medicine UKM

7th Malaysia Indonesia Brunei Medical Sciences Conference "TOWARDS A HOLISTIC AND INTEGRATIVE APPROACH IN HEALTHCARE"



22nd - 24th July 2011

Equatorial Hotel, Bangi, Selangor,
MALAYSIA

officiated by

Y.B Datuk Rosnah Haji Abdul Rashid Shirlin
Deputy Minister of Health Malaysia

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PERIPAPILLARY RETINAL NERVE FIBRE LAYER THICKNESS MEASURED BY IN VIVO IMAGING IN RELATION TO DEGREE OF MYOPIA AND AXIAL EYEBALL LENGTH IN MALAY SUBJECTS

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Background:

The study aimed to determine the relationships between peripapillary retinal nerve fibre layer (RNFL) thickness and first, spherical equivalent refraction (SER) and secondly, axial length of the eyeball (AL) in young Malay subjects.

Materials and Methods:

Sixty three Malay subjects (age range: 19 to 24 years old) with mean SER of -1.79 ± 2.24 D (range: $+0.50$ D to -8.00 D) and mean AL of 24.26 ± 1.35 mm (range: 21.88mm to 30.14mm) were included in this clinical cross-sectional study. In vivo imaging technique by Stratus optical coherence tomography was used to determine the average thickness of the RNFL at the peripapillary optic nerve head (ONH) area, and also to record RNFL thickness at 4 specific locations of the peripapillary ONH area i.e. temporal, superior, nasal and inferior quadrants.

Results:

Positive correlation was found between the average RNFL thickness and SER ($R=0.28$, $p<0.05$). RNFL thickness was also positively correlated with SER at the nasal ($R=0.29$, $p<0.05$) and inferior ($R=0.25$, $p<0.05$) quadrants. Negative correlation was found between RNFL thickness and AL at the nasal ($R=-0.26$, $p<0.05$) quadrant. No significant correlations were found between RNFL thickness and SER at the temporal and superior quadrants. There was also no significant correlation between average RNFL thickness and AL, neither were there any correlations between RNFL thickness and AL at all quadrants, except at the nasal quadrant.

Conclusion:

This study shows that the degree of myopia, as well as elongation of the globe, is associated with thinning of RNFL at the peripapillary ONH area in certain locations. Because of these anatomical changes, as found by in vivo imaging in the present study, any interpretation of thinning of the nerve fibre layer around the ONH will require the consideration of refractive status before any decisions could be made in regard to the presence of ocular pathology, such as glaucoma.

Keywords:

retinal nerve fibre layer, spherical equivalent refraction, axial length, myopia