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The association between relative peripheral refraction and myopia

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Objective: To evaluate the relation between relative peripheral refraction and myopia by studying the characteristics of retinal peripheral relative refraction in children with emmetropia,low myopia or moderate myopia.

Method: 90 Children (with 165 eyes included) at the age of 7 -12 years old ,who have attended to Pediatric ophthalmology clinic, Renmin hospital of Wuhan university in September 2016 to February 2017,were included in the study. Axial dimensions and peripheral refraction are measured to children. The 90 subjects with 165 eyes included were divided into three refractive categories according to the spherical equivalent based on objective retinoscopic findings under cycloplegia: emmetropia group(>-0.5 and $\leq+0.50D$,n=27),low myopia group($>-3.00D$ and $\leq-0.50D$,n=112)and moderate myopia group($>-6.00D$ and $\leq-3.00D$,n=26). Peripheral refraction were measured in uncorrected state along 15 degrees and 30 degrees from central fixation in both nasal and temporal fields. The relative peripheral refraction (RPRE) is described as the difference between peripheral refraction and central refraction.

Results: (1)There is significant difference in RPRE among the three refraction groups ,the RPRE is increased from emmetropia,low myopia to moderate myopia($p<0.05$). (2)As changing of fixation angles, it decreases progressively from temporal 30 degrees,nasal30 degrees,temporal 15 degrees to nasal 15 degrees ($p<0.05$).The RPRE shows relative hyperopia in low and moderate myopia, which is greater at the surrounding retina than Macular center($p<0.05$) and is greater at the temporal fixating angles than nasal's($p>0.05$). (3)The axial length is negatively relative with spherical equivalent refraction($r=-0.564$($p=0.001$) and is positively relative with RPRE, which is more strongly to the temporal fixation angles ,as the correlation coefficient in T30 °s' ,T15 °s', N15 °s' and N30 °s' RPRE are ($r=0.347$, $p=0.001$), ($r=0.341$, $p=0.001$), ($r=0.199$, $p=0.004$), and ($r=0.199$, $p=0.001$) respectively.

Conclusions: Peripheral retinal relative refraction statu shows relatively hyperopic that increases vary from emmetropia, low myopia to moderate myopia .Occurrence and progress of myopia may have intimate connection with total field retinal hyperopic defocus,but it will play a greater role in the the temporal retina.

Biography

Lianhong Zhou has completed her PhD at the age of 36 years from Wuhan University. She is the Professor Tutor for graduate of Renmin Hospital of Wuhan University or People's Hospital of Wuhan University, teaching undergraduate/postgraduate student clinic technique and research and is majoring in Chinese Medical Association Ophthalmology Branch of strabismus and pediatric ophthalmology group member. She has published more than 85 papers in reputed journals so far.

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