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ASSOCIATION BETWEEN BLOOD PRESSURE AND RETINAL ARTERIOLAR AND VENULAR DIAMETERS IN CHINESE EARLY ADOLESCENT CHILDREN, AND WHETHER THE ASSOCIATION HAS GENDER DIFFERENCE: A CROSS-SECTIONAL STUDY

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Background: To establish the independent association between blood pressure (BP) and retinal vascular caliber, especially the retinal venular caliber, in a population of 12-year-old Chinese children.

Methods: We have examined 1501 students in the 7th grade with mean age of 12.7 years. A non-mydriatic fundus camera (Canon CR-2, Tokyo, Japan) was used to capture 45° fundus images of the right eyes. Retinal vascular caliber was measured using a computer-based program (IVAN). BP was measured using an automated sphygmomanometer (HEM-907, Omron, Kyoto, Japan).

Results: The mean retinal arteriolar caliber was 145.3 μm (95% confidence interval [CI], 110.6–189.6 μm) and the mean venular caliber was 212.7 μm (95% CI, 170.6–271.3 μm). After controlling for age, sex, axial length, BMI, waist, spherical equivalent, birth weight, gestational age and fellow retinal vessel caliber, children in the highest quartile of BP had significantly narrower retinal arteriolar caliber than those with lower quartiles (P for trend< 0.05). Each 10 mmHg increase in BP was associated with narrowing of the retinal arterioles by 3.00 μm (multivariable-adjusted P<0.001), and the results were consist in three BP measurements. The association between BP measures and retinal venular caliber did not persist after adjusting for fellow arteriolar caliber. And there was no significant interaction between BP and sex, age, BMI, and birth status.

Conclusions: In a large population of adolescent Chinese children, higher BP was found to be associated with narrower retinal arterioles, but not with retinal venules. Sex and other confounding factors had no effect on the relationship of BP and retinal vessel diameter,.

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