

Plasma level of fibroblast growth factor 21 is independently related to blood pressure

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Introduction: Fibroblast growth factor 21 (FGF21) plays an important role in glucose and lipid metabolism. Elevated blood FGF21 level is associated with obesity, diabetes and atherosclerosis. We therefore investigated its relationship with blood pressure.

Methods: We measured FGF21 in the plasma of 1921 participants (891 men, 1030 women; 52±12 years) taken at the start of the Hong Kong Cardiovascular Risk Factor Prevalence Study (CRISPS) using an enzyme-linked immunosorbent assay (Antibody & Immunoassay Services, University of Hong Kong). The log of FGF21 level was analysed for relationship with systolic and diastolic blood pressure (BP) at baseline and at the 5-year follow-up.

Results: Plasma FGF21 level was 224.3±7.4 in men and 214.1±7.1 pg/ml in women. It correlated significantly ($p<0.001$) with age ($r=0.30$), waist circumference ($r=0.31$), systolic BP ($r=0.32$), diastolic BP ($r=0.22$), triglyceride ($r=0.41$), HDL-C ($r=-0.27$), fasting blood glucose ($r=0.27$) and hsCRP ($r=0.27$). In multivariate analysis, FGF21 was related to systolic and diastolic blood pressure at baseline ($\beta=0.076$, $p<0.001$ and $\beta=0.074$, $p=0.001$ respectively) and to diastolic blood pressure at follow-up ($\beta=0.06$, $p=0.025$).

Conclusions: FGF21 level in blood is related to systolic and diastolic blood pressure, independent of age, obesity, lipids and blood glucose. FGF21 is related to the components of the metabolic syndrome and may have a pathophysiological role in hypertension.

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