GW52-e3238
Effect of the combined increase of C-reactive protein and uric acid level on metabolic syndrome and its components

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Objectives: The combined effect of C-reactive protein (hs-CRP) and uric acid on progression of metabolic syndrome (MS) is inadequately defined. The aim of this study is to evaluate the effect of the combined increase of high-sensitivity C-reactive protein (hs-CRP) and uric acid (UA) on metabolic syndrome and its components.

Methods: A total of 21936 subjects who took well-man or -woman check up in our hospital were enrolled. Hs-CRP, uric acid, fasting plasma glucose, lipid profile, waist circumference and blood pressure were measured to analyze the relationship between metabolic syndrome and its components with hs-CRP and uric acid in three groups (low-risk group: hs-CRP<1 mg/dL, uric acid<3 md/dL; mid-risk group: hs-CRP 1-3 mg/dL, high-risk group: hs-CRP>3 mg/dL).

Results: (1) As hs-CRP values increased, waist circumference, uric acid, triglycerides, fasting plasma glucose, systolic blood pressure, diastolic blood pressure and high-density lipoprotein increased among the three groups. F values were 86.38, 41.11, 23.37, 18.56, 19.22, 17.88 and 12.23 separately (P<0.01). (2) Mid and high-risk groups of hs-CRP with hyperuricemia were closely related to waist circumference, triglycerides and systolic blood pressure. OR values were 3.26, 3.27, 1.59 and 3.77, 3.38, 1.64 separately (P<0.05). (3) The incidence of metabolic syndrome increased gradually with the combined increases of hs-CRP and uric acid, they were 49.06% and 55.59% in the mid and high-risk groups of hs-CRP with hyperuricemia (P<0.01).

Conclusions: With increased values of both hs-CRP and uric acid, metabolic disorders tended to be worse and the incidence of metabolic syndrome was increased. hs-CRP and uric acid can be used as a clinical predicting or monitoring item for MS.

GW52-e0837
Effects of tea intake on blood pressure: a meta-analysis of 21 randomized controlled trials

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Objectives: The effect of tea intake on blood pressure (BP) is controversial. We undertook a meta-analysis of randomized controlled trials to determine changes in systolic and diastolic BP due to the intake black and green tea for at least 1 week. The weighted mean difference was calculated for net changes in BP by using fixed-effects or random-effects models. Previously defined subgroup analyses were performed to explore the influence of study characteristics.

Results: 21 eligible randomized controlled trials with 1323 subjects were enrolled. After the tea intake, the pooled mean systolic and diastolic BP were ~1.8 mmHg (95% confidence interval [CI], ~2.4 ~1.1 mmHg) and ~1.4 mmHg (95% CI, ~2.2 ~0.6 mm Hg) lower, respectively, compared with the tea-free controls. Subgroup analysis showed that the BP-lowering effect was apparent in the subjects who consumed a tea over a median of 12 weeks (systolic/diastolic BP, ~2.6/2.1 mmHg, both P<0.001). Stratified by type of tea, green tea significantly reduced systolic and diastolic BP of ~2.1 (95% CI, ~2.9 ~1.2) and ~1.7 (95% CI, ~2.9 ~0.5) mm Hg, and black tea significantly reduced systolic and diastolic BP of ~1.4 (95% CI, ~2.4 ~0.4) and ~1.1 (95% CI, ~1.9 ~0.2) mm Hg, respectively. The benefits of tea intake were not influenced by ethnicity, treatment dose of tea catechins, individual health status, or caffeine intake.

Conclusions: The meta-analysis showed that long-term (≥2 weeks) ingestion of a tea (green and black tea) resulted in a significant reduction in systolic and diastolic BP.

Diabetes

GW52-e527
Relationship between plasma muscle levels and insulin resistance in patients with type 2 diabetes mellitus

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Objectives: Muscle is a skeletal muscle-derived secretory factor documented in 2004. A limited number of studies has addressed the relationship between muscle levels and the alterations of endogenous muscle in type 2 diabetes mellitus (T2DM). To fill this blank, this study examined the changes of muscle levels in plasma and therefore indicated the association between muscle levels and T2DM.

Methods: In this hospital-based case-control study, 38 newly diagnosed T2DM subjects who never received anti-diabetic therapy, 41 T2DM subjects under insulin treatment were enrolled from outpatient department of the Second Affiliated Hospital of Harbin Medical University, and the 41 normal subjects with no medical history were recruited from the health check-up population of our hospital. Fasting plasma glucose (FPG), serum insulin, high-density lipoprotein cholesterol (HDL-C), triglycerides and blood pressure were measured using commercially available diagnostic reagents at the clinical biochemical laboratories. Plasma muscle levels were measured by radioimmunoassay.

Results: Plasma muscle levels were significantly higher in the newly diagnosed T2DM group compared with the normal group (83.07 ±16.16 mg/dL vs 93.18 ±15.5 mg/dL, P<0.01) and were significantly decreased in T2DM patients with insulin therapy (93.18 ±15.50 mg/dL vs 83.74 ±19.12 mg/dL, P<0.05). Muscle levels in plasma of newly diagnosed T2DM patients were positively correlated with FPG (r=0.467, P<0.01), triglycerides (r=0.452, P<0.01) and were negatively correlated with HDL-C levels (r=-0.339, P<0.05).

Conclusions: An upregulation of plasma muscle levels increase the risk of T2DM. There might be a connection between muscle and the pathogenesis of T2DM.

GW52-e580
Impact of blood glucose variability on heart rate variability in patients with type 2 diabetes mellitus

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Objectives: The atherosclerosis risk in communities (ARIC) study have demonstrated that lower heart rate variability (HRV) is associated with the development of coronary heart disease (CAD) in individuals with diabetes. However, the relationship between blood glucose variability and HRV remains unclear. The present study aimed to explore the impact of glucose variability on HRV in patients with type 2 diabetes mellitus (T2DM).

Methods: According to glucose variability, assessed by mean amplitude of glycemic excursions (MAGE) obtained from continuous glucose monitoring systems (CGMS), 68 consecutive type 2 diabetic patients without CAD were divided into two groups: subjects with non-glucose fluctuation (MAGE<3 mmol/L, n=32) and subjects with glucose fluctuation (MAGE≥3.9 mmol/L, n=36). Thirty healthy controls (NC) were also enrolled. HRV was assessed by dynamic electrocardiogram examination. HRV analysis included time domain parameters such as SDNN, SDNNi, rMSSD and pNN50, and total spectral power (TP) of HRV, which mainly consists of VLF, LF and HF component along with L/HF ratio, was also obtained.

Results: Compared with NC, all the time domain measures were significantly lower in T2DM: SDNN: 92.2±23.1 vs 121.7±27.4, P<0.05; SDNNi: 78.7±22.9 vs 106.2±22.5, P<0.05; mSSD: 27.5±10.2 vs 35.7±10.1, P<0.05; and pNN50: 6.0±7.1 vs 8.8±7.8, P<0.05. For frequency domain, LF and HF were significantly lower in T2DM (LF: 300.2±237.8 vs 379.9±277.5, P<0.05; HF: 141.8±121.5 vs 186.5±171.5, P<0.05) whereas VLF and LF/HF ratio were comparable (P=0.05). In cases with glucose fluctuation, SDNNi: 71.2±22.1 vs 100.8±24.1, P<0.05; SDNN: 61.3±23.8 vs 88.7±20.9, P<0.05; mSSD: 23.1±10.5 vs 29.3±11.5, P<0.05; pNN50: 4.9±6.6 vs 6.5±6.1, P<0.05; TP (1290.8±902.3 vs 1727.0±1131.5, P<0.05) and HF (102.1±110.7 vs 139.8±122.4, P<0.05) were all significantly lower than those in non-glucose fluctuation subjects. No significant differences in VLF (1190.4±861.6 vs 1285.6±858.0, P>0.05) and LF (274.9±223.0 vs 1062±222.5, P>0.05).