**Diabetes**

**GW52-c237**

Relation 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 discovered 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, and 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, hemoglobin A1c (HbA1c) and blood lipid profile were determined using commercially available diagnostic reagents at the clinical biochemical laboratories. Plasma muscle levels were measured by radioimmunossay.

Results: Plasma muscle levels were significantly higher in the newly diagnosed T2DM group compared with the normal group (83.07 ± 16.16 ng/mL vs 93.18 ±15.50 ng/mL, P < 0.01) and were significantly decreased in T2DM patients under insulin therapy (93.18 ±15.50 ng/mL vs 83.74±19.12 ng/mL, P < 0.05). Muscle levels in plasma of newly diagnosed T2DM patients were positively correlated with FPG (r = 0.467, P < 0.01), HbA1c (r = 0.383, P < 0.05), serum insulin (r = 0.551, P < 0.01), total cholesterol (r = 0.452, P < 0.01) and homoeostasis model assessment of insulin resistance (HOMA-IR) (r = 0.388, P < 0.05). High-density lipoprotein cholesterol (HDL-C) levels were negatively correlated with muscle levels (r = -0.339, P < 0.05).

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

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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 blood glucose variability and HRV remains unclear. The present study aimed to explore the relationship between blood glucose variability and 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 system (CGMS), 68 consecutive type 2 diabetic patients without CAD were divided into two groups: subjects with non-glucose fluctuation (MAGE<3.9 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, SD1, SD2, SD1/SD2 and pNN50, and total spectral power (TP) of HRV, which mainly consists of VLF, LF and HF component along with LF/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; SDAN: 78.7±22.9 vs 106.2±22.5, P<0.05; mSDSS: 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 399.7±275.7, 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, SDNN(71.2±22.1 vs 100.8±24.1, P<0.05), SDAN(61.3±23.8 vs 88.7±20.9, P<0.05), mSDSS(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 (101.2±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...