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Relationships of insulin resistance and high-sensitivity C-reactive protein with metabolic abnormalities in patients with type 2 diabetes mellitus

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Objectives: We conducted this single-center, retrospective, cohort study to examine whether insulin resistance and high-sensitivity C-reactive protein (hsCRP) have a relationship with metabolic abnormalities in patients with type 2 diabetes mellitus (T2DM).

Methods: In a total of 3,758 patients (n=3,758) with T2DM, we performed a retrospective analysis of medical records and thereby evaluated their baseline characteristics such as age, sex, duration of T2DM, systolic blood pressure (SBP), diastolic blood pressure (DBP), waist circumference, body mass index (BMI), visceral fat thickness (VFT), insulin levels, C-peptide levels, glycated hemoglobin (HbA1c), fasting plasma glucose (FPG), postprandial plasma glucose (PPG), homeostatic model assessment of insulin resistance (HOMA-IR), homeostatic model assessment of b-cell function (HOMA-b), aspartate aminotransferase (AST), alanine aminotransferase (ALT), total cholesterol (TC), triglyceride (TG), high-density lipoprotein (HDL), low-density lipoprotein (LDL), albuminuria, intima-media thickness (IMT) and high-sensitivity C-reactive protein (hsCRP). The patients were stratified according to the tertile of KITT or hsCRP. Thus, they were divided into the lowest (≥2.37), middle (1.54-2.36) and highest tertile (0-1.53) of KITT and the lowest (0.00-0.49), middle (0.50-1.21) and highest tertile (≥1.22) of hsCRP. Moreover, correlations of KITT and hsCRP with metabolic abnormalities, such as fatty liver, metabolic syndrome, albuminuria, diabetic retinopathy and carotid atherosclerosis, were also analyzed.

Results: There was a significant positive correlation between the prevalence of fatty liver, metabolic syndrome, albuminuria and diabetic retinopathy and KITT ($P<0.001$). Moreover, there was a significant positive correlation between the prevalence of fatty liver, metabolic syndrome and albuminuria and hsCRP ($P<0.001$).

Conclusions: In conclusion, our results indicate that clinicians should consider relationships of insulin resistance and hsCRP with metabolic abnormalities in the management of patients with T2DM. But further large-scale, prospective, multi-center studies are warranted to establish our results.