Association of serum adipose triglyceride lipase levels with obesity and diabetes

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ABSTRACT. The aim of this study was to detect the serum adipose triglyceride lipase (ATGL) levels in obesity and newly diagnosed type 2 diabetes patients, and to explore the association between ATGL with glucose and lipid metabolism. We enrolled 66 patients with type 2 diabetes and 48 patients with normal glucose regulation, who were divided into an overweight or obese subgroup and a normal weight subgroup according to body mass index (BMI) ≥ 25 kg/m². The enzyme-linked immunosorbent assay was used to detect fasting blood glucose, blood lipids, fasting insulin, and ATGL levels. The serum ATGL level in the overweight or obese subgroup was lower than that in the non-obese group including patients with type 2 diabetes and normal glucose regulation: 239 ± 61 vs 355 ± 54 μg/L and 242 ± 60 vs 383 ± 58 μg/L, respectively (t = 22.53, t = 8.23, P < 0.05). The Pearson correlation analysis showed that fasting serum ATGL was negatively correlated with body fat content, BMI, waist-to-hip ratio,
triglycerides, and the homeostatic model assessment-insulin resistance level ($r = -0.271$, $r = -0.238$, $r = -0.375$, $r = -0.313$, and $r = -0.164$, respectively, $P < 0.05$). The stepwise regression analysis showed that the waist-to-hip ratio and body fat content were independently associated with the serum ATGL level. Our results indicated that the ATGL level may be closely related to obesity.

**Key words:** Diabetes; Obesity; Lipase