

Relation of adiponectin to glucose tolerance status, adiposity and cardiovascular risk factor load.

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Background: Adiponectin has insulin-sensitizing properties and might play a protective role in the development of metabolic syndrome, diabetes mellitus and subsequent cardiovascular disease. We investigated the influence of adiponectin on glucose tolerance status, adiposity and cardiovascular risk factors (CVRFs).

Design and patients: The study consisted of 107 subjects: 55 with normal glucose tolerance (NGT Group) and 52 with impaired glucose regulation (IGR) who were divided into two groups: 24 subjects with impaired fasting glucose (IFG Group) and 28 patients with type 2 diabetes mellitus (DM Group). In additional analysis, study participants were divided into two groups, according to CVRFs: low and high risk.

Measurements: Patients were evaluated for glucose, HbA1C, insulin, lipids, CRP, HOMA-IR and adiponectin.

Results: All three groups were similar in terms of age, sex and BMI. Fasting glucose and HbA1C differed between the groups: lowest in NGT group and highest in DM, as expected. Significant across-group differences were detected for triglycerides, insulin and HOMA-IR. Adiponectin was significantly higher in NGT group than in IFG and DM groups. Adiponectin was significantly, positively associated with HDL and significantly inversely associated with glucose, HbA1c, ALT, AST, TG, insulin, HOMA-IR, and marginally inversely associated with CRP. In stepwise multiple regression analysis HbA1C and ALT were independent determinants of adiponectin levels. No association between adiponectin and BMI was found. Patients with higher CVRFs load have lesser adiponectin compared to patients with low cardiovascular risk (6755.6 ± 3492.2 vs. 13701.1 ± 7051.5 ng/ml, $p < 0.0001$). Adiponectin was significantly inversely associated with the number of risk factors ($r = -0.430$, $p = 0.0001$).

Conclusions: Circulating adiponectin was significantly lower in subjects with different degree of IGR compared to subjects with normal glucose homeostasis. Adiponectin was significantly lower in high risk group than low risk group and decreased concurrently with increased number of CVRFs. Thus, hypoadiponectinemia is more intensively related to glucose intolerance and CVRFs load than to adiposity.