Past obesity influences current adiponectin level and mortality risk in diabetic patients

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Background/Aims: Adiponectin, a hormone primarily secreted by adipocytes, generally shows an inverse relationship with body mass index (BMI), but some studies show a linear relationship instead. This observational study investigated the relationship between past obesity and present adiponectin levels in diabetes mellitus (DM).

Methods: A cross-sectional cohort analysis was conducted on 323 DM patients who visited Kyungpook National University Hospital, either as inpatients or outpatients, after excluding patients who used thiazolidinediones, had acute hyperglycemia, or had type 1 DM. From the cohort, 236 patients were divided into non-obese (BMI < 25kg/m^2) or obese (BMI $\geq$ 25kg/m^2) groups. The currently non-obese group was further divided into two subgroups: previously obese but currently non-obese (ON, n=46) and consistently non-obese (NN, n=117) (figure 1A).

Results: Adiponectin levels of the ON group were significantly lower than those of the NN group (median 8.8 vs. 7.0 μg/ml, p=0.027) (figure 1B). There were no other significant differences in other characteristics or laboratory markers between the two groups. Regression analysis shows a positive correlation between adiponectin and current BMI and body weight (p=0.013 and 0.017, respectively) and a strong negative correlation between adiponectin and past maximum BMI and body weight (p<0.001 and p=0.001, respectively) (figure 1C), with a significant odds ratio (OR) for adiponectin between the ON and NN groups (OR=0.90, 95% CI=0.82 to 1.00). These correlations remained significant after adjusting for age, sex, current BMI, and propensity score matching. Kaplan-Meier Survival analysis showed that the ON group still retained a significantly higher all-cause mortality rate than the NN group (p=0.01) (figure 1D).

Conclusions: In conclusion, the past history of obesity is an independent factor that influences present adiponectin levels even when the patient is no longer obese and affects their mortality from all causes.

Figure 1.