Baseline Glycemic Status and Risk of Mortality in 241,499 Asian Metropolitan Subjects

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Background: Diabetes and prediabetes subjects have increased risk for mortality. We analyzed the mortality risk due to all-causes, cardiovascular disease (CVD) and cancer in Korean subjects participating in a health-screening program according to baseline glycemic status and HbA1c levels.

Methods: Among 241,499 participants of a health-screening program, the risk of death from all causes, CVD, and cancer was calculated based on the baseline glycemic status and HbA1c levels. Vital status and confirmation of the cause of death were based on the analysis of death certificate records from the National Death Index.

Results: During 923,343.1 person-years of follow-up, 877 participants died. The multivariable-adjusted hazard ratios (HR) of subjects with controlled and uncontrolled diabetes to normoglycemic subjects for all-cause mortality were 1.58 (95% CI 1.24-2.03) and 2.26 (95% CI 1.78-2.86), respectively. The HRs of subjects with controlled and uncontrolled diabetes to normoglycemic subjects for mortality due to cancer were 1.75 (95% CI 1.23-2.48) and 1.67 (95% CI 1.13-2.45). However, glycemic status was not significantly associated with the risk of mortality due to CVD.

Conclusions: Mortality risk from all causes and cancer significantly increased in diabetes subjects regardless of the glucose control status. In subjects not taking anti-diabetic medications, both high and low HbA1c resulted in increased risk for all-cause mortality.

Soluble EGFR as a potential biomarker for diabetes mellitus

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Background: The soluble form of epidermal growth factor receptor (sEGFR) has been used as a biomarker for a variety of diseases and may be inhibited through the use of tyrosine kinase inhibitors (TKI). Recently, many TKIs have been shown to affect glucose and lipid metabolism; however, the relationship between diabetes mellitus and serum sEGFR levels remains poorly understood. Here, we investigated this relationship to determine the usefulness of sEGFR level as a biomarker for diabetes mellitus.

Methods: We enrolled newly diagnosed, drug-naive type 2 diabetes mellitus patients (n = 74), as determined using a 75-g oral glucose tolerance test, and compared them with healthy controls with no history of prediabetes or diabetes (n = 15). Levels of sEGFR were measured in fasting samples using sandwich quantitative ELISA. Results: Body mass index (BMI), glycated hemoglobin (HbA1c) level, fasting and postprandial serum glucose levels, and homeostatic model assessment-insulin resistance (HOMA-IR) were significantly different between the two groups. The mean sEGFR level was 83.96 ± 15.04 ng/mL in the diabetes mellitus group versus 68.34 ± 26.16 ng/mL in the control group (p = 0.002). Univariate linear regression revealed numerous factors associated with sEGFR levels, including diabetes status (p = 0.002), history of smoking (p = 0.014), HbA1c (p = 0.001), fasting and postprandial 2-hour serum glucose (p = 0.001 for both), serum hemoglobin (p = 0.011), low density lipoprotein and total cholesterol (p = 0.043 and p = 0.002), and serum creatinine level (p = 0.010). The most significant factors influencing soluble EGFR levels were HbA1c (p = 0.001), smoking history (p = 0.026), and total cholesterol (p = 0.024) in a multivariate analysis.

Conclusions: sEGFR was significantly higher in patients with type 2 diabetes relative to controls. These findings suggest the possibility of sEGFR as a useful diagnostic marker for diabetes mellitus. Further prospective studies are required to validate the efficacy of soluble EGFR as a biomarker.