
Diabetes and the risk of sudden cardiac death: Atherosclerosis Risk in Communities (ARIC) Study

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Objective: Association of diabetes with increased risk of sudden cardiac death has been indicated by several studies, however limitations in study design underscore the need for confirmatory prospective studies. In the current study we used data from the ARIC cohort to examine the association of prediabetes and type 2 diabetes with the risk of sudden cardiac death as compared to the risk of non-fatal myocardial infarction (MI) during follow-up from 1987 through 2001.

Methods: Diabetes was defined as either a physician's diagnosis of diabetes, use of hypoglycemic medications, fasting blood glucose level >126 mg/dL, or nonfasting glucose level >200 mg/dL. Prediabetes was defined as fasting blood glucose level of 100-126 mg/dL. Sudden cardiac death (n=304) was defined as death adjudicated by a physician panel to be a sudden, pulseless condition without a known non-cardiac cause. Non-fatal MI (n=930) was defined as incident definite or probable MI that did not result in a fatal outcome within 28 days.

Results: In analyses adjusted for age, gender, race/ARIC center, hypertension, anti-hypertensive medication, and smoking, the Cox proportional hazard ratio of the association of diabetes with sudden cardiac death was 2.53 (95% CI 1.97, 3.25) and it was 2.51 (95% CI 2.15, 2.92) for non-fatal MI. Those effect estimates were not changed by censoring of non-fatal MI cases that subsequently died of sudden cardiac death. We observed a higher risk of sudden cardiac death and non-fatal MI among women with diabetes as compared to men with diabetes; however, adjustment for covariates eliminated gender differences. Stratification by baseline prevalent coronary heart disease, or prevalent heart failure revealed a larger hazard ratio of the association of diabetes with sudden cardiac death among those without these prevalent conditions. A similar pattern was seen for non-fatal MI. The association for prediabetes was stronger with sudden cardiac death than with non-fatal MI in analyses adjusted for age and race; adjustment for the remaining covariates eliminated the statistical significance of those associations.

Conclusions: Diabetes is associated with an increased risk of both sudden cardiac death and non-fatal MI. The strength of association is similar for both endpoints.