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Metabolic Aspects and Mechanisms

9.29 Diabetes and Incident Heart Failure: the Strong Heart Study

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Introduction. Although diabetes is widely accepted as a potential cause of heart failure (HF), few data exist concerning the association of diabetes with HF independent of clinically overt coronary heart disease (CHD). This study was designed to assess whether diabetes increases incidence of HF independently of prevalent and incident CHD.

Methods. We studied 2740 participants (1781 women) free of prevalent CV disease or severe kidney disease at the 1st exam of the Strong Heart Study cohort. Diabetes was present in 1206 individuals (44%), and impaired fasting glucose (IFG) in 391 (14%). We evaluated 12-year incident HF. Follow-up HF was ascertained by End-Point Committee. Hazard of HF was evaluated using Cox regression, forcing diabetes at the end of all other covariates and treating incident myocardial infarction as a competing risk event.

Results. Diabetic participants more frequently had hypertension and central obesity (both $p<0.0001$). During follow-up, 64 cases of incident HF were ascertained in participants with normal fasting glucose (NFG, 6%), 26 (7%) with IFG and 201 with diabetes (17%, OR=3.8 vs. NFG; $p<0.0001$). Incidence of myocardial infarction (MI, n=221) was 1.2-fold greater in diabetic vs. non-diabetic participants ($p=0.17$). In a Cox model with MI as a competing risk event, with control for effects of age, sex, central obesity, hypertension, antihypertensive treatment, GFR and urinary albumin/creatinine ratio, diabetes maintained a 1.4-fold greater risk of HF than NFG (1.1-1.9, $p<0.03$), in addition to significant effect of age, hypertension, male gender and high urinary albumin/creatinine ratio.

Conclusions. Diabetes is a strong risk factor for HF, independent of incident MI and other associated risk factors.