Sex-specific pattern of left ventricular hypertrophy and diastolic function in patients with type 2 diabetes mellitus

Authors:
M.Z. Wu¹, Y. Chen¹, Y.J. Yu¹, H.F. Tse¹, K.H. Yiu¹, ¹Queen Mary Hospital, Medicine - Hong Kong - Hong Kong,

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Background: Few prospective studies have evaluated sex-specific pattern, natural progression of left ventricular (LV) remodeling and diastolic dysfunction in patients with type 2 diabetes (T2DM).

Purpose: The aim of this study was to study the sex-specific prevalence, longitudinal changes of LV remodeling and diastolic dysfunction in patients with T2DM. Further the prognostic value of diastolic function in women and men was also evaluated.

Methods: A total of 386 patients with T2DM (mean age 61±11 years; women, 48.2%) was recruited. Detailed echocardiography was performed and LV geometry, systolic and diastolic function were measured at baseline and follow-up. A major adverse cardiovascular event (MACE) was defined as cardiovascular death, heart failure hospitalization or myocardial infarction. Multivariable cox-regression adjusted for age, hypertension, LVEF and HbA1c was used to assess the association between sex-specific diastolic function and the development of a MACE.

Results: Despite a similar age, prevalence of hypertension and body mass index, women had a higher prevalence of LV hypertrophy and diastolic dysfunction at baseline and follow-up compared with men. A total of 26 patients developed a MACE (4 cardiovascular death, 14 hospitalization for heart failure, 8 myocardial infarction) during follow-up. Women with diastolic dysfunction had a higher incidence of MACE than those with normal diastolic function but this association was neutral in men. Multivariable Cox-regression analysis indicated that diastolic dysfunction was associated with MACE in women (hazard ratio 6.35, 95% confidence interval 1.18–34.19, P<0.05) but not men (hazard ratio 1.85, 95% confidence interval 0.58–5.92, P=0.30).

Conclusions: LV hypertrophy and diastolic dysfunction, both at baseline and follow-up, were more common in women than men. Pre-clinical diastolic dysfunction was independently associated with MACE only in women with T2DM but was neutral in men.