DURATION OF DIABETES IS A SIGNIFICANT INDEPENDENT PREDICTOR OF ELEVATED LEFT VENTRICULAR MASS

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Background: Adverse consequences of type 2 diabetes mellitus (T2DM) include an increase in left ventricular mass (LVM). Whether the underlying mechanisms of this association are due to the hyperglycaemic state per se, or to other risk factors is unclear. We explored the association between diabetes duration, an index of the chronicity of the hyperglycaemic state, with LVM.

Methods: The Medical Research Council National Survey of Health and Development is a birth cohort of men and women born in Britain in one week in March 1946. When study members were 60-64 years of age, 1700 underwent echocardiography according to ASE guidelines and LVM indexed to height2.7 (LVMI) was calculated. Date of diagnosis of T2DM by a doctor was obtained in the 175 cohort members reporting T2DM through information supplied on postal questionnaires and at interview. Linear regression models were fitted to estimate the effects of presence and of duration of diabetes on LVMI at age 60-64 years.

Results: In a linear regression model adjusted for sex, current body mass index (BMI), and current systolic blood pressure (SBP), LVMI increased by 0.78 g/m² for every year increase in diabetes duration. When diabetes duration was divided into categories, this same trend was observed. Compared with those with no diagnosis of diabetes, LVMI was 3.82 g/m² (95% CI 0.73 - 6.93, p=0.02) higher for 0-10 years duration of diabetes, 7.46 g/m² (95% CI -1.94 - 16.87, p=0.12) higher for 10-20 years duration, and 17.28 g/m² (95% CI 1.01 - 33.56, p=0.04) higher for 20-30y duration of diabetes.

Conclusions: LVMI increases significantly with diabetes duration, even when other major risk factors are accounted for. As T2DM is increasingly being diagnosed at younger ages, this duration effect has important implications for the future burden of associated cardiac disease, and indicates that hyperglycaemia per se plays a key role in the adverse consequences of T2DM on the left ventricle. This also has implications for current treatment and prevention strategies.