BIHS
British and Irish Hypertension Society
Committed to preventing cardiovascular disease
Annual Scientific Meeting
The Technology and Innovation Centre
University of Strathclyde, Glasgow
11th - 13th September 2017

Relationship between aortic stiffness and cardiac remodelling in younger adults with type 2 diabetes

William H Hunt[1], Eylem Levelt[1,2], Gaurav S Gulsin[1,2], Daniel J Swarbrick[1,2], Thomas Yates[3], Melanie Davies[3], Dr Emma G Wilmott[3], Anvesha Singh[1,2], Matthew P Graham-Brown[1,2], Sherna F Adenwalla[1], Gerry P McCann[1,2]

[1]Department of Cardiovascular Sciences, University of Leicester, Glenfield Hospital, Leicester, United Kingdom, [2]NIHR Leicester Cardiovascular Biomedical Research Unit, Glenfield Hospital, Leicester, United Kingdom, [3]UK Diabetes Research Unit, University of Leicester, Leicester Diabetes Centre, Leicester General Hospital , Leicester, United Kingdom

Introduction: Heart Failure is now the commonest and most deadly complication of type 2 diabetes (T2D). Diabetic cardiomyopathy is well recognized but the main aetiological causes are uncertain. Aortic stiffness (AoS) is frequently observed in patients with T2D and is associated with adverse cardiovascular events. Cardiovascular magnetic resonance (CMR) imaging can quantify AoS directly as aortic distensibility (AD), or indirectly with aortic pulse-wave velocity (aPWV). We hypothesised that AoS would be independently associated with cardiac remodeling in younger adults with T2D.

Methods: Eighty patients with uncomplicated T2D (median age 44 years [32-57]) and no prior cardiovascular disease underwent comprehensive CMR scanning. Blinded scans were analysed for ascending aortic distensibility (AAD), descending aortic distensibility (DAD), aPWV and left ventricle (LV) remodelling (LVmass/volume and LV mass index [LVMI]). Multivariate linear regression assessed whether AoS independently predicted LV remodelling.

Results: We show for the first time that, when adjusted for age, systolic blood pressure (BP), body mass index (BMI), heart rate, diabetes duration and hemoglobin (Hb) A1c, AAD and DAD, but not aPWV independently predicted LVMI and LVM/volume (Table 1).

Conclusions: AD is independently associated with cardiac remodelling in T2D. This suggests that ventricular/arterial interactions may play a significant role in cardiac risk in T2D. AoS may be a potential therapeutic target, independent of blood pressure control, to prevent heart failure in T2D.

Disclosure: None declared.

Table 1 [O – 6]: Pearson correlations and multivariate regressions.

LVM/volume	Univariate	Multivariate	LVMI	Univariate	Multivariate
AAD ($x10mmHg^{-3}$)	r=-0.417, p<0.001	β=-0.344, p=0.003	**AAD ($x10mmHg^{-3}$)**	r=-0.424, p<0.001	β=-0.264, p<0.001
DAD ($x10mmHg^{-3}$)	r=-0.425, p<0.001	β=-0.349, p=0.005	**DAD ($x10mmHg^{-3}$)**	r=-0.437, p<0.001	β=-0.281, p<0.001

AAD = ascending aortic distensibility; DAD = descending aortic distensibility; LVM = left ventricle remodelling; LVMI = left ventricle mass index.