016

THE GENETICS OF GLYCAEMIC CONTROL AND HEART FAILURE ARE INTER-TWINED

H M P Parry, L D Donnelly, N V Z Van Zuydam, D E Elder, A M Morris, A D Doney, C N A P Palmer, C C L Lang *University of Dundee, Ninewells Hospital*

doi:10.1136/heartjnl-2013-304019.16

Background Hyperglycaemia is associated with increased risk of cardiovascular events in diabetic individuals. The relationship between glycaemic control and the development of chronic heart failure (CHF) is undefined and may have a genetic component. In this study, we aim to assess the relationship between glycaemic control and the development of CHF and examine whether genes predicting glycosylated haemoglobin levels also predicted time to development of CHF.

Methods This study was carried out in the Go-DARTS population of Tayside, Scotland, using demographic, echocardiographic and prescribing data maintained by the University of Dundee. CHF incidence, determined during the study period October 1999 to August 2011, was identified by either the presence of a hospital discharge code for CHF or echocardiogram showing left ventricular systolic dysfunction and prescription of a loop diuretic. CHF cases and non-CHF controls were matched for gender and age at diabetes diagnosis. Development of CHF was modelled using conditional logistic regression using updated mean HbA1c during the study period, using age, gender and duration of diabetes as covariates. Proportional hazard regression analysis was used to determine whether published single nucleotide polymorphisms (SNPs) associated with glycaemic control predicted time to development of CHF in this population.

Results Out of 8890 diabetic individuals, 759 developed CHF during the study period (mean age at diagnosis 74.2±9.6 years, 60.6% males). The adjusted OR for developing CHF in those with updated mean HbA1C greater than 6.9 was 2.14 (95% CI 1.64 to 2.8, p<0.01). Three SNPs previously associated with glycaemic control predicted time to CHF development rs6474359 (p=1.67×10–4, HR 1.90, 95% CI 1.36 to 2.67), rs7800094 (p=9.46×10–3, HR 1.23, 95% CI 1.05 to 1.45) and rs10885122 (p=0.02, HR 1.34, 95% CI 1.05 to 1.70).

Conclusions These data suggest that glycaemic control is an independent risk factor for incident CHF in individuals with T2DM. Since SNPs associated with glycaemic control were also associated with CHF development this increased risk may have a genetic component.