Abstract

Aim: Our aim was to investigate in a large population-

based cohort study whether

increased arterial stiffness and subclinical atherosclerosis in the coronary arteries

differ at different stages of dysglycaemia.

Methods: Data were obtained from SCAPIS, a population-based cohort of par-

ticipants 50–64 years. The study population of 9379 participants was categorised

according to glycaemic status: normoglycaemic, pre- diabetes (fasting glucose: 6.1–

6.9 mmol/L and/or HbA1c 6%–6.4%) and diabetes. Pulse wave velocity (PWV) was

measured by the SphygmoCor XCEL system and arterial stiffness was defined by

PWV ≥10 m/s. Coronary artery calcium score (CACS) was assessed by coronary

computed tomography and coronary artery calcification was defined by CACS ≥100.

Results: We identified 1964 (21%) participants with dysglycaemia, out of which

742 (7.9%) had diabetes mellitus. PWV ≥10 m/s was present in 808 (11%), 191 (16%),

200 (27%) and CACS ≥100 in 801 (11%), 190 (16%), 191 (28%) participants with nor-

moglycaemia, pre-diabetes and diabetes, respectively, all, p < 0.001. The overlap

between PWV ≥10 m/s and CACS ≥100 within each glycaemic category was 188

(2.5%), 44 (3.6%) and 77 (10) respectively. There was an association between glycae-

mic status and increased PWV in the fully adjusted models, but not for glycaemic

status and CACS ≥100, where there was no difference for pre-diabetes compared to

normoglycaemia, OR 1.2 (95% CI 0.98– 1.4). In the total study population, there was

an association between HbA1c and PWV after adjustment, p < 0.001.

Conclusions: Our results show that increased arterial stiffness and subclinical

coronary artery atherosclerosis are present in the early stages of dysglycaemia,

but the overlap between markers of major subclinical vascular damage was small

in all glycaemic categories. This could be explained by different pathways in the

pathogenesis of arterial stiffness or atherosclerosis in the coronary arteries.

K E Y W O R D S

arterial stiffness, coronary artery calcium score, pre-diabetes, pulse wave velocity