# Cardiovascular journals

## New tools to detect subclinical coronary artery disease – increased prevalence in South Asians

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It is widely reported that South Asian people in Western society have a higher prevalence of type 2 diabetes, as well as an increased risk of coronary artery disease (CAD), resulting in increased mortality rates compared with white people. Roos et al (their study summarised alongside) compared coronary atherosclerosis in South Asian people with type 2 diabetes and matched white controls. All participants were asymptomatic with respect to CAD. The study revealed that significant CAD was more frequent in the asymptomatic South Asian participants.

With the increase in availability of imaging such as coronary computed tomography angiography, this study provides preliminary data that may result in changes in the practice of evaluating certain groups of people with type 2 diabetes who are asymptomatic for CAD, particularly those with an increased frequency of cardiovascular complications, such as South Asians. This is particularly applicable to people with type 2 diabetes, in whom symptoms of CAD may not be as eloquent as in people without diabetes. Such assessments will, therefore, need to be incorporated into the management of CAD in diabetes treatment algorithms. ■

> *"This study provides preliminary data that may result in changes in the practice of evaluating certain groups of people with type 2 diabetes who are asymptomatic for coronary artery disease."*

## Heart

### Peripheral neuropathy predicts cardiovascular events in T2D

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| Readability | ✓✓ |
| Applicability to practice | ✓✓ |
| WOW! Factor | ✓✓✓ |

1 The authors evaluated the association between peripheral neuropathy and incident cardiovascular (CV) events in people with T2D enrolled in a large primary care cohort.

2 Over a 30-month follow-up, among 13 043 participants, there were 407 deaths from any cause and 399 non-fatal CV events.

3 After adjustment for age, gender, ethnicity, systolic blood pressure, cholesterol levels, BMI, $HbA_{1c}$ level, smoking and use of statins or antihypertensives, peripheral neuropathy was significantly associated with incident CV events (hazard ratio, 1.33; $P$=0.04).

4 The addition of neuropathy to a model based on classic risk factors slightly improved discriminative power and resulted in reclassification of 6.9% of the cohort into higher- or lower-risk categories, with 56.7% being classified correctly.

5 This study was limited by lack of information on diabetes duration and a short follow-up (30 months compared with the 10 years that most models judge CV risk by). Nonetheless, peripheral neuropathy is a simple and routine check that appears to be an independent predictor of CV risk.

Brownrigg JR, de Lusignan S, McGovern A et al (2014) Peripheral neuropathy and the risk of cardiovascular events in type 2 diabetes mellitus. *Heart* **100**: 1837–43

## Am J Cardiol

### Increased prevalence of CAD in South Asian versus white people with T2D

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| Readability | ✓✓✓✓ |
| Applicability to practice | ✓✓✓✓ |
| WOW! Factor | ✓✓✓✓ |

1 The authors used coronary computed tomography angiography to compare the prevalence of coronary artery disease (CAD) in South Asian and white people with T2D.

2 In total, 120 asymptomatic (no chest pain) South Asian people were matched with the same number of asymptomatic white people in terms of age, gender and diabetes duration. As the risk of insulin resistance occurs at lower BMIs in South Asians, they were matched to whites with a higher BMI.

3 South Asian participants had a significantly higher prevalence of peripheral arterial disease (21% vs 10%; $P$=0.04).

4 The prevalence and extent of coronary artery calcium was higher in South Asians, as was the prevalence of significant CAD (≥50% stenosis; 41% vs 28% of participants; $P$=0.008).

5 In South Asians, any CAD (≥30% stenosis) was more frequent in proximal coronary artery segments, especially the left main and left anterior descending (LAD) coronary arteries. This proximal distribution of CAD is associated with increased risk of coronary events and worse outcomes.

6 One-, two- and three-vessel CAD was more common in the South Asians, particularly in the LAD coronary artery.

7 As local environment affects cardiovascular risk, the authors caution that these findings may not be generalisable to South Asians in other parts of the world.

Roos CJ, Kharagjitsingh AV, Jukema JW et al (2014) Comparison by computed tomographic angiography – the presence and extent of coronary arterial atherosclerosis in South Asians versus Caucasians with diabetes mellitus. *Am J Cardiol* **113**: 1782–7

## Circulation

### Association between pre-diabetes and myocardial damage

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| Readability | ✓✓✓✓ |
| Applicability to practice | ✓✓✓✓ |
| WOW! Factor | ✓✓✓✓ |

1 The authors evaluated the effects of physician-diagnosed diabetes and pre-diabetes (diagnosed according to an $HbA_{1c}$ of 39–46 mmol/mol [5.7–6.4%]) on subclinical myocardial damage and its progression over 6 years' follow-up.

2 A total of 9331 people with diabetes were recruited from the community-based ARIC (Atherosclerosis Risk in Communities) study and underwent high-sensitivity cardiac troponin T (hs-cTnT) assessment. This assay is a marker of chronic, subclinical myocardial injury of a non-atherosclerotic origin.

3 In the population who remained free of cardiovascular disease over the follow-up ($n$=8165), the cumulative probability of elevated hs-cTnT (≥14 ng/L) was 3.7%, 6.4% and 10.8% in people with no diabetes, pre-diabetes and diabetes, respectively.

4 Compared with normoglycaemic people, the relative risk of incident elevated hs-cTnT was 1.38 for those with pre-diabetes and 2.46 for those with diabetes.

5 People with elevated hs-cTnT were at higher risk of heart failure (hazard ratio [HR], 6.37), death (HR, 4.36) and coronary heart disease (HR, 3.84) than those with normal hs-cTnT levels and no diabetes.

6 The authors conclude that pre-diabetes, in addition to increasing the risk of diabetes, increases the risk of myocardial damage and subsequent cardiac events. They argue that the prevention of atherosclerotic disease in people with diabetes by using statins, for instance, may not fully mitigate the cardiac risk.

Selvin E, Lazo M, Chen Y et al (2014) Diabetes mellitus, prediabetes, and incidence of subclinical myocardial damage. *Circulation* **130**: 1374–82

## Am J Cardiol

### Effect of intensive glycaemic control on atrial fibrillation in people with T2D

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| Readability | ✓✓✓✓ |
| Applicability to practice | ✓✓✓✓ |
| WOW! Factor | ✓✓✓✓ |

1 The effects of intensive glycaemic control on the incidence of atrial fibrillation (AF) in people with T2D were evaluated in an analysis of the ACCORD (Action to Control Cardiovascular Risk in Diabetes) study cohort.

2 A total of 10 082 people without AF at baseline were analysed. Over a median follow-up of 4.68 years, 159 (1.58%) developed AF according to electrocardiography.

3 People with new-onset AF had an increased risk of all-cause mortality (hazard ratio [HR], 2.65), myocardial infarction (HR, 2.10) and heart failure (3.80).

4 The incidence of AF was 5.9 per 1000 patient-years in the intensive treatment group and 6.37 per 1000 patient-years in the standard treatment group ($P$=NS). The authors conclude that intensive glycemic control did not affect the rate of new-onset AF.

Fatemi O, Yuriditsky E, Tsioufis C et al (2014) Impact of intensive glycemic control on the incidence of atrial fibrillation and associated cardiovascular outcomes in patients with type 2 diabetes mellitus (from the Action to Control Cardiovascular Risk in Diabetes Study). *Am J Cardiol* **114**: 1217–22

## Am J Cardiol

### Effect of diabetes on outcomes in people with acute MI

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| Readability | ✓✓✓✓ |
| Applicability to practice | ✓✓✓✓ |
| WOW! Factor | ✓✓✓✓ |

1 In this retrospective analysis of a large cohort of people presenting with acute myocardial infarction (MI), the effect of diabetes on in-hospital outcomes was evaluated.

2 Of 93 569 people with ST elevation MI (STEMI) and 150 292 with non-STEMI, 23% and 35%, respectively, had a diagnosis of diabetes.

3 In-hospital death was more common in people with diabetes in both the non-STEMI (odds ratio [OR], 1.14) and the STEMI groups (OR, 1.17).

4 When dividing people with diabetes into those who required insulin and those requiring oral medications, the former had a higher risk of mortality (OR, 1.12), regardless of the type of MI.

5 In general, people with insulin-requiring diabetes were younger, more obese and had more cardiac risk factors. They were also more likely to have three-vessel coronary artery disease, reflecting a higher burden of atherosclerosis.

Rousan TA, Pappy RM, Chen AY et al (2014) Impact of diabetes mellitus on clinical characteristics, management, and in-hospital outcomes in patients with acute myocardial infarction (from the NCDR). *Am J Cardiol* **114**: 1136–44

## Stroke

### eGFR and stroke outcomes in people with diabetes

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| Readability | ✓✓✓✓ |
| Applicability to practice | ✓✓✓✓ |
| WOW! Factor | ✓✓✓✓ |

1 The authors sought to determine the interaction between diabetes, estimated glomerular filtration rate (eGFR) and outcomes after acute stroke.

2 A cohort of 17 280 people with acute stroke were followed up for 1 year. Of these, 4782 had diabetes.

3 An eGFR of <45 mL/min/1.73 $m^2$ was associated with all-cause mortality, stroke recurrence and stroke disability both in people with diabetes and those without the condition.

4 High eGFR (≥120 mL/min/1.73 $m^2$) was associated with mortality alone in people without diabetes, but with all three outcomes in those with diabetes.

Luo Y, Wang X, Matsushita K et al (2014) Associations between estimated glomerular filtration rate and stroke outcomes in diabetic versus nondiabetic patients. *Stroke* **45**: 2887–93

> *"The authors conclude that pre-diabetes, in addition to increasing the risk of diabetes, increases the risk of myocardial damage and subsequent cardiac events."*