Clinical DIGEST 3

Cardiovascular journals

High burden of heart failure in older people with diabetes

Jiten Vora, Professor of Diabetes, Royal Liverpool University Hospital, Liverpool

Roy et al (2011) examine the development of heart failure in a large group (n=5464) of community-dwelling adults of over 65 years of age without baseline heart failure, of whom 862 had diabetes.

The authors found that 31% and 26% of those matched with and without diabetes developed heart failure over 13 years of follow-up. Multivariable adjusted hazard ratios for incident heart failure associated with diabetes were 2.22 (95% confidence interval [CI], 1.94–2.55; P<0.01) and 1.52 (95% CI, 1.3–1.78; P<0.001), respectively. Furthermore – and as would be expected – those participants with diabetes also demonstrated increased hazard ratios for peripheral artery disease, acute myocardial infarction and incident stroke (2.5 [95% CI, 1.45–4.53; P=0.01]; 1.37 [95% CI, 0.97–1.93; P=0.072]; and 1.1 [95% CI, 0.81–1.85; P=0.527], respectively).

The key findings of this study are that incident heart failure is common in community-dwelling adults over the age of 65 years with diabetes. Also, among people with diabetes the incidences of heart failure and all-cause mortality were not associated with major traditional baseline cardiovascular risk factors.

> ***"These findings indicate the need for vigilance in community-based older people with diabetes who currently do not have heart failure but may develop this condition."***

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INTERNATIONAL JOURNAL OF CARDIOLOGY

Higher in-hospital mortality among those with T2D and acute heart failure

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 The authors undertook an in-hospital observational survey that included 4953 inpatients admitted for acute heart failure (AHF) from six European countries, Mexico, and Australia; secondary analysis of the survey evaluated differences in clinical phenotype, treatment regimens and in-hospital outcomes in people with diabetes and without diabetes.

2 People with diabetes (n=2229; 45%) presented more frequently with acute pulmonary oedema (P<0.001) than people without diabetes, and more often had acute coronary syndrome (P<0.001) as precipitating factors of AHF, and had multiple comorbidities such as renal dysfunction (P<0.001), arterial hypertension (P<0.001), anaemia (P<0.001) and peripheral vascular disease (P<0.001).

3 All-cause in-hospital mortality of people with diabetes was higher compared with those without diabetes (11.7% vs 9.8%; P=0.01).

4 Multivariate analysis revealed that older age (P=0.032), systolic blood pressure <100 mmHg (P<0.001), acute coronary syndrome, history of arterial hypertension (P=0.022), and absence of life-saving therapies such as antihypertensive agents (P<0.001) and beta-blockers (P=0.014) at admission were independently associated with adverse in-hospital outcome.

5 The authors concluded that people with diabetes experience higher in-hospital mortality than people without diabetes, despite their intensive treatment regimens.

Parissis JT, Rafouli-Stergiou P, Mebazaa A et al (2012) Acute heart failure in patients with diabetes mellitus: clinical characteristics and predictors of in-hospital mortality. *Int J Cardiol* **157**: 108–13

AMERICAN JOURNAL OF CARDIOLOGY

Diabetes associated with HF independent of baseline CV risk factors

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 The extent to which the known association between diabetes and incident heart failure (HF) is independent of other cardiovascular (CV) risk factors remains unclear and is the subject of this investigation.

2 Of 5464 community-dwelling adults (age, ≥65 years) without baseline HF, 862 had diabetes (fasting plasma glucose, ≥126 mg/dL or treatment with insulin or oral antidiabetes agents). Propensity scores for diabetes were used to assemble a cohort of 717 pairs of participants with and without DM who were matched for 65 baseline characteristics.

3 During >13 years of follow-up, incident HF occurred in 31% and 26% of matched participants with and without diabetes, respectively (hazard ratio [HR], 1.45; 95% confidence interval [CI], 1.14–1.86; P=0.003); participants with diabetes were at increased risk of incident peripheral arterial disease, acute myocardial infarction and stroke (P=0.001; P=0.072; P=0.527, respectively).

4 All-cause mortality occurred in 57% and 47% of matched participants with and without diabetes, respectively (HR, 1.35; 95% CI, 1.13–1.61; P=0.001)

5 The authors concluded that the association between diabetes and incident HF and all-cause mortality in community-dwelling older adults without baseline HF is independent of traditional, major baseline CV risk factors.

Roy B, Pawar PP, Desai RV et al (2011) A propensity-matched study of the association of diabetes mellitus with incident heart failure and mortality among community-dwelling older adults. *Am J Cardiol* **108**: 1747–53

AMERICAN JOURNAL OF HYPERTENSION

Decreasing sleep-time BP independent predictor of event-free survival in T2D

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 The impact of the alteration over time of ambulatory blood pressure (BP) on cardiovascular risk has never been investigated and the authors sought in this study to determine whether reduced cardiovascular risk is more related to the progressive decrease in awake versus asleep BP in people with T2D.

2 An evaluation of a subgroup (n=607 with T2D) drawn from the MAPEC (Monitorización Ambulatoria para Predicción de Eventos Cardiovasculares) study was undertaken, with a median follow-up of 5.4 years.

3 Those with hypertension at baseline (74%) were randomised to ingest all prescribed hypertension medications either on awaking up, or ≥1 of them at bedtime. BP was measured for 48 hours at baseline, and again annually in all patients, or more frequently (quarterly) after adjustments in treatment.

4 Analyses of changes in BP during follow-up revealed a 20% cardiovascular risk reduction for each 5 mmHg decrease in asleep systolic BP mean (P<0.001), independently of changes in clinic or any other ambulatory BP parameter.

5 The authors concluded that night-time BP was the most significant independent prognostic marker of cardiovascular events in people with diabetes in the present study, making decreasing sleep-time BP a possible important therapeutic target.

Hermida RC, Ayala DE, Mojón A, Fernández JR (2012) Sleep-time blood pressure as a therapeutic target for cardiovascular risk reduction in type 2 diabetes. *Am J Hypertens* **25**: 325–34

AMERICAN JOURNAL OF HYPERTENSION

Increased CV risk following early medication discontinuation

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 In the present study the authors aimed to quantify early discontinuation of medicines for hypertension, dyslipidemia or diabetes, and to assess their clinical characteristics and incidence of cardiovascular (CV) outcomes.

2 Using healthcare databases of people aged 40–79 years (n=203 302) who received their first prescription in 2003, rates of hospitalisation for CV outcomes were recorded until 2008.

3 Compared with individuals with no prescription, the authors found that those with single and multiple prescriptions, respectively, had increased rate of 7% and 48% for antihypertensive drugs (37.8, 40.4 and 56.0 events/10 000 person-years), 18% and 36% for lipid-lowering drugs (51.0, 60.3 and 69.4), and 21% and 81% for antidiabetes drugs (51.3, 62.3 and 93.0).

Corrao G, Zambon A, Parodi A et al (2012) Incidence of cardiovascular events in Italian patients with early discontinuations of antihypertensive, lipid-lowering, and antidiabetic treatments. *Am J Hypertens* **25**: 549–55

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY

Multiple at-risk alleles raise genetic susceptibility to CHD

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 The authors genotyped 15 genetic markers of 12 loci in three studies of people with T2D.

2 Five single-nucleotide polymorphisms showed directionally consistent associations with coronary heart disease (CHD), with combined odds ratios (ORs) ranging from 1.17 to 1.25 (P=0.03–0.0002) across the studies.

3 A genetic risk score (GRS) was created by combining the risk alleles of the five loci; individuals with a GRS ≥8 (19% of total cohort) had almost a two-fold increase in CHD risk (OR, 1.94; 95% confidence interval, 1.60–2.35) as compared with individuals with GRS ≤5 (30% of total cohort).

4 The authors concluded that prediction of CHD was significantly improved (P<0.001) when the GRS was added to a model including clinical predictors in the combined samples.

Qi L, Parast L, Cai T et al (2011) Genetic susceptibility to coronary heart disease in type 2 diabetes: 3 independent studies. *J Am Coll Cardiol* **58**: 2675–82

AMERICAN JOURNAL OF HYPERTENSION

Ambulatory, rather than office, BP better correlate for chronic T2D complications

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

1 The authors aimed to investigate the associations between office and ambulatory (A) blood pressures (BPs) and the chronic complications of T2D.

2 In a cross-sectional design, clinical, laboratory, and 24-hour ABP data were obtained in 550 people with T2D.

3 Ambulatory systolic BPs were found to be more strongly associated with microvascular complications of T2D than office BPs (P<0.01).

4 The authors concluded that the optimal threshold ABP values were 125/75 mmHg for daytime, 110/65 mmHg for night-time and 120/75 mmHg for a 24-hour period; lower BP cut-offs might be considered in people with T2D.

Cardoso CR, Leite NC, Muxfeldt ES, Salles GF (2012) Thresholds of ambulatory blood pressure associated with chronic complications in type 2 diabetes. *Am J Hypertens* **25**: 82–8

"Night-time blood pressure was the most significant independent prognostic marker of cardiovascular events in people with diabetes ... making decreasing sleep-time blood pressure a possible important therapeutic target."