Clinical *DIGEST 2*

Diabetes journals

Post-load hyperglycaemia can predict CV events

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

1 This paper discusses the problematic association between cardiovascular disease and type 2 diabetes, which is largely the result of the confused variety of diagnostic criteria and methods used in former studies.

2 The issue of whether asymptomatic hyperglycaemia is a risk factor for cardiovascular disease is discussed.

3 Over the last 20 years, a sharper picture of these issues has evolved due to the adoption of the criteria for diagnosing diabetes from the National Diabetes Data Group and the World Health Organisation.

4 Recent research indicating that post-load hyperglycaemia could be of importance is discussed.

5 Evidence from analysis of the DECODE population is outlined; 2 h blood glucose is a better predictor for all-cause mortality than HbA_{1c} or fasting glucose concentrations.

6 The authors relay the point that although evidence shows that post-load hyperglycaemia is an important risk predictor for future cardiovascular events, the question of whether this is a causal relationship is still open.

Qiao Q, Tuomilehto J, Borch-Johnsen K (2003) Post-challenge hyperglycaemia is associated with premature death and macrovascular complications. *Diabetologia* 46 (Supp 1): M17–M21

The relationship between post-prandial hyperglycaemia and cardiovascular events

Jiten Vora, Consultant Physician, Royal Liverpool University Hospitals

Considerable attention has focused on the contribution of post-prandial hyperglycaemia to cardiovascular events and death. Controversy has reined, predominantly due to a multiplicity of diagnostic criteria and the methodology utilised. Improvement in these, particularly the standardisation of methodology and appropriate risk analysis, has provided important information regarding the relative contribution of risk factors for the development and progression of macrovascular disease.

Qiao and colleagues summarise information accumulated from several large scale epidemiological and interventional studies. They suggest the presence of a strong indication that hyperglycaemia (and specifically post-load/prandial hyperglycaemia) is a major risk factor associated with increasing risks of morbidity and mortality in type 2 diabetes.

Some studies such as DECODE (2001) and the Diabetes Intervention Study (Hanefield et al, 1996) have increased the evidence for the importance of post-prandial glycaemia, compared with fasting glucose levels, in developing cardiovascular disease. Qiao and colleagues suggest that post-prandial hyperglycaemia is an independent risk factor for atherosclerosis which also exerts an atherogenic effect indirectly through the clustering of a number of risk factors for atherosclerosis.

However, the paper focuses little on the major issue of whether the relationship between post-load hyperglycaemia and the risk of cardiovascular events is causal; this is still not known.

DECODE Study Group (2001) Glucose tolerance and cardiovascular mortality: comparison of the fasting and 2 year diagnostic criteria. Archivers of Internal Medicine. 161: 397–404

Hanefield M, Fischer S, Julius U et al. The DIS group. Risk factors for myocardial infarction and death in newly detected NIDDM: the Diabetes Intervention Study 11-year follow-up. Diabetologia 39:1577–93

Genetic predisposition to diabetes may increase risk of CHD

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

1 The intima-media thickness of the common carotid artery (IMT-CCA) is a surrogate marker of coronary atherosclerosis in glucose-tolerant young adults.

2 This study aimed to evaluate the effect of a first-degree family history of type 2 diabetes on the IMT-CCA.

3 A total of 401 people aged 18–45 years and with normal glucose tolerance took part in the study. Of these, 213 had no family history of type 2 diabetes until the third generation, and 188 had a family history of diabetes (one or both parents had type 2 diabetes).

4 IMT-CCA and 1 h and 2 h postchallenge glucose concentrations were significantly higher in people who had a family history of diabetes than those who did not.

5 Following a multivariate analysis, IMT-CCA had a significant association with family history of type 2 diabetes, BMI, waist circumference, HDL cholesterol, diastolic blood pressure and fasting glucose.

6 The study indicates that a genetic predisposition to type 2 diabetes (probably in association with slightly elevated glucose levels) may accelerate the development of atherosclerosis and potentially increase the risk for coronary heart disease in people who are glucose tolerant.

Pannacciulli N, De Pergola G, Ciccone M et al (2003) Effect of family history of type 2 diabetes on the intima-media thickness of the common carotid artery in normal-weight, overweight, and obese glucose-tolerant young adults. *Diabetes Care* 26: 1230–34

'Although recent studies have helped to guide patient management, progress is needed to develop optimal strategies to reduce high mortality and morality associated with coronary artery disease in people with diabetes.'

CURRENT DIABETES REPORTS

Strategies are needed to reduce CAD

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

1 This article reviews recent information that may help clinicians in the appropriate use of cardiac testing in people with diabetes.

2 Approaches for the detection of coronary artery disease (CAD) in asympomatic patients with diabetes are discussed.

3 Evidence about people with diabetes who are at risk of asymptomatic ischaemia, and the long-term prognosis associated with asymptomatic myocardial ischaemia is included.

4 Recommendations are outlined with regards to preoperative cardiac assessment, and research about evaluating symptomatic patients and patients with diabetes with known or suspected CAD is summarised.

5 The article concludes that although recent studies have helped to guide patient management, progress is needed to develop optimal strategies to reduce high mortality and morality associated with CAD in people with diabetes.

Young LH, Jose P, Chyun D (2003) Diagnosis of CAD in patients with diabetes: who to evaluate. *Current Diabetes Reports* 3: 19–27

'People who developed peripheral arterial occlusive disease in follow-up had higher serum LDL and lower HDL concentrations and were older than those who remained free.'

DIABETES CARE

Non-fatal CVD is a strong predictor of mortality

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

1 This study reports long-term risks for total, CVD and CHD mortality associated with incident diabetes and/or incident non-fatal CVD events.

2 A total of 11 645 people from the Multiple Risk Factor Intervention

DIABETES CARE

CV events affected by insulin resistance

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

1 This study assessed the effect of insulin resistance (IR) and the benefit of gemfibrozil on the incidence of major cardiovascular (CV) events in people with low HDL cholesterol and a broad range of triglyceride values.

2 The 2283 participants were men with known CHD, treated with placebo or gemfibrozil and subdivided into groups: diabetes with IR; diabetes without IR; IR with no

DIABETES CARE

PAOD is associated with CV death

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

1 This investigation examined the occurrence and development of new peripheral arterial occlusive disease (PAOD), its risk factors and the outcomes in people with type 2 diabetes.

2 The 130 participants had type 2 diabetes and were examined at baseline and at a mean follow-up of 11 years.

3 PAOD was diagnosed in 16% of participants at baseline; during follow-up 24% developed PAOD.

Trial were grouped by during-trial incident diabetes and/or non-fatal CVD events.

3 Of 3859 total deaths, 1846 were from CVD and 1277 were from CHD.

4 Multivariate-adjusted hazard ratios for total mortality were 2.75 for people with non-fatal CVD and diabetes, 1.92 for those with non-fatal CVD only and 1.49 for those with diabetes only, relative to neither diabetes nor non-fatal CVD.

5 Non-fatal CVD was associated with a higher hazard of death than diabetes for total, CVD and CHD mortality.

diabetes; and no diabetes or IR.

3 People who had IR had a higher risk of a CV event whether they had diabetes or not, than people without IR.

4 The rate of new CV events and the reduction of events with gemfibrozil was greater in people with IR than without IR, throughout lower and higher ranges of HDL cholesterol and triglycerides.

5 The occurrence of new CV events and the benefit of fibrate therapy was less dependent on levels of HDL cholesterol or triglycerides than on the presence or absence or IR.

Robins SJ, Bloomfield Rubins H, Faas FH et al (2003) Insulin resistance and cardiovascular events with low HDL cholesterol. *Diabetes Care* 26: 1513–17

4 Of the 29 people who died, 72% died from CV disease. People with PAOD were more likely to die than those without PAOD (58% vs 16%).

5 Baseline PAOD was associated with age, diabetes duration, smoking and urinary albumin excretion rate. People who developed PAOD in follow-up had higher serum LDL and lower HDL concentrations and were older than those who remained free.

6 PAOD presents the early signs of atherosclerosis and is strongly associated with CV death. The risk factor pattern differs at baseline and after a follow-up period of 11 years.

Kallio M, Forsblom C, Groop PH, Groop L, Lepantalo M (2003) Development of new peripheral arterial occlusive disease in patients with type 2 diabetes during a mean follow-up of 11 years. *Diabetes Care* 26: 1241–45

6 Only the subgroup of participants on hypoglycaemic agents showed an equivalent risk of total mortality relative to participants with non-fatal CVD.

7 The study confirms and extends previous observations of the importance of increased risk associated with incident diabetes on total, CVD and CHD mortality, independent of incident non-fatal CVD. Non-fatal CVD was more strongly predictive of mortality.

Eberly LE, Cohen JD, Prineas R, Yang L (2003) Impact of incident diabetes and incident nonfatal cardiovascular disease on 18-year mortality. The Multiple Risk Factor Intervention Trial experience. *Diabetes Care* 26: 848–54