Management & prevention of type 2 diabetes

Gestational diabetes: overfamiliarity may breed contempt, but at least take a decent history

Kenneth MacLeod, Consultant Physician, Exeter Postgraduate Medical Centre/ Senior Lecturer in Medicine, University of Exeter

The article by Williams et al (2003) underlines the message that a relevant and focused clinical history is the key to making the diagnosis. In a large study of gestational diabetes (GDM) the finding was that a family history of diabetes strongly predicts gestational diabetes.

Compared with no parental history of diabetes, women with a family history of diabetes had a significantly increased risk of gestational diabetes. A maternal-only family history of diabetes was associated with an odds ratio of 2.00, a paternal-only history with an odds ratio of 2.3, and where there was both a maternal and paternal history of diabetes the odds ratio was 3.8. The presence of a positive history for diabetes and hypertension in a parent increased the odds ratio to 2.6. Women with a sibling with diabetes had an 8.4-fold increased risk of GDM.

There is clearly a familial aggregation of type 2 diabetes and chronic hypertension in women with GDM which suggests that routine questions for pregnant women should include: 'does your mother, father, brother or sister suffer from type 2 diabetes or hypertension?'.

GDM seems to be becoming a non-disease. The recent clinical guideline on antenatal care – routine care for healthy pregnant woman concludes: 'the evidence does not support routine screening for gestational diabetes' (NICE, 2003). It all depends on what we mean by routine.

GDM is a complication of pregnancy with long-term and short-term morbidity. Adverse infant outcomes include macrosomia, hypoglycaemia, hypocalcaemia, polycythaemia, jaundice, respiratory distress syndrome, birth trauma and time in the neonatal intensive care unit. Children of women with GDM are at an increased risk of obesity, glucose intolerance and diabetes in adolescence and early adult life. Maternal morbidity includes pregnancy induced hypertension and pre-eclampsia, and type 2 diabetes in later life. In the absence of better evidence I agree with Waugh's summary (2002):

'There are clearly some women whose glucose levels rise sufficiently in pregnancy to cause harm to their babies. However, there are also many women with lower levels of glucose intolerance whose babies are not at risk, but who may suffer anxiety and inconvenience as a result of being classified as abnormal. On balance, the present evidence suggests that we should not have universal screening, but a highly selective policy based on age and overweight.'

To this we could now add a family history of diabetes.

NICE (2003) *Antenatal care – routine care for the healthy pregnant woman. National Collaborating Centre for Women's and Children's Health*. NICE, London

Scott DA, Loveman E, MacIntrye L, Waugh N (2002) Screening for gestational diabetes: a systematic review and economic evaluation. *Health Technology Assessment* **6**(11)

DIABETES CARE

Type 2 reduced by antioxidants

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

1 This study investigated whether the intake of antioxidants predicts type 2 diabetes.

2 A total of 2285 men and 2019 women aged 40–69 years who were free of diabetes at baseline were studied.

3 Food consumption during the previous year was estimated in a dietary history interview.

4 The intake of vitamin C, four tocopherols, four tocotrienols and six carotenoids was calculated.

5 During the follow-up time of 23 years,164 male and 219 female incident cases occurred.

6 Vitamin E was significantly associated with a reduced risk of type 2 diabetes. The relative risk of type 2 diabetes between the extreme quartiles of the intake was 0.69.

7 Intakes of α-tocopherol, γ-tocopherol, δ-tocopherol and β-tocotrienol were inversely related to a risk of type 2 diabetes.

8 Among single carotenoids, β-cryptoxanthin intake was significantly associated with a reduced risk of type 2 diabetes. No association was evident between intake of vitamin C and type 2 diabetes risk.

9 The development of type 2 diabetes may be reduced by the intake of dietary antioxidants.

Montonen J, Knekt P, Jarvinen R, Reunanen A (2003) Dietary antioxidant intake and risk of type 2 diabetes. *Diabetes Care* **27**: 362–66

THE JOURNAL OF REPRODUCTIVE MEDICINE

Genetics play a role in gestational diabetes

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

1 The aim of this case-control study was to assess the extent to which women with a positive parental history of type 2 diabetes and/or chronic hypertension experienced an increased risk of developing gestational diabetes.

2 Participants (133 women with gestational diabetes and 373 controls) were interviewed and provided information on first-degree family history of type 2 diabetes and chronic hypertension and other covariates of interest.

3 Odds ratios were devised from logistic regression procedures and 95% confidence intervals adjusted for confounding by maternal age, race/ethnicity and prepregnancy adiposity.

4 Women with a maternal-only (odds ratio = 2.0), paternal-only (odds ratio = 3.8) or both maternal and paternal history of diabetes (odds ratio = 3.8%) had a statistically significant increased risk of gestational diabetes than women with no parental history of diabetes.

5 The odds ratio for women with a positive parental history of diabetes and hypertension was 2.6, and women who had a sibling with diabetes had an 8.4-fold increased risk of gestational diabetes.

6 First-degree family history of chronic hypertension was predictive of gestational diabetes risk, but only when hypertension was associated with a diagnosis of diabetes.

7 Family history of diabetes reflects genetic and behavioural factors whereby women may be predisposed to an increased risk of gestational diabetes.

Williams MA, Qiu C, Dempsey JC, Luthy DA (2003) *Journal of Reproductive Medicine* **48**(12): 955–62

DIABETES CARE

Rosiglitazone can treat endothelial dysfunction

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

1 This study investigated if therapy for insulin resistance ameliorates any endothelial dysfunction.

2 A double-blind cross-over trial of 12 people newly diagnosed with type 2 diabetes was performed.

3 Participants received 4 mg rosiglitazone for 12 weeks and 60 mg of nateglinide for the same number of weeks in random order.

4 Glycaemic control was comparable under rosiglitazone and nateglinide. Rosiglitazone ameliorated insulin resistance by 60% compared with nateglinide.

5 Acetylcholine response was significantly increased after rosiglitazone treatment, but did not attain the level of healthy controls.

6 Insulin is a major contributor toward endothelial dysfunction in type 2 diabetes. Both endothelial dysfunction and insulin resistance are amenable to treatment by rosiglitazone.

Pistrosch F, Passauer J, Fischer et al (2004) In type 2 diabetes, rosiglitazone ameliorates endothelial dysfunction independent of glucose control. *Diabetes Care* **27**(2):484–90

DIABETES CARE

Insulin resistance: racial differences

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

1 Two National Heart, Lung and Blood Institute Growth and Health Study centres examined the associations of obesity, puberty and race with fasting insulin, glucose and the homeostasis model assessment of insulin resistance (HOMA-IR) measured in 9–10-year-old children and 10 years later.

2 Black girls had a greater BMI at baseline and at 10 years old than white girls, and had more obesity 10 years later.

3 Insulin and HOMA-IR were higher in the prepubertal period, increased more during puberty and decreased less with its completion in black girls than white girls.

4 Baseline BMI predicted glucose at 10 years old and the development of impaired fasting glucose in black girls.

5 The development of IFG could be a function of the rate of increase of BMI in white girls and early obesity in black girls. Black-white differences in insulin resistance precede the pubertal divergence in BMI.

Klein DJ, Friedman LA, Harlan WR et al (2004) Obesity and the development of insulin resistance and impaired fasting glucose in black and white adolescent girls. *Diabetes Care* **27**: 378–83

DIABETES CARE

Low cardio fitness and elevated CRP in type 2 diabetes

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

1 This study examined differences in novel markers of cardiovascular disease (CVD) in women with type 2 diabetes stratified according to cardiorespiratory fitness.

2 A total of 28 women with type 2 diabetes who were free from overt CVD were grouped into low cardiorespiratory fitness (LCF) or average cardiorespiratory fitness (ACF) groups based on an exercise test.

3 BMI was significantly greater in the LCF group, but no differences were observed in age, lipid profile or resting haemodynamics. C-reactive protein (CRP) was 3.3-fold higher in the LCF group, but other novel markers of CVD did not significantly differ.

4 Low cardiorespiratory fitness is associated with elevated CRP and reduced fasting glucose in women with type 2 diabetes.

McGavock JM, Mandic S, Vonder Muhll I et al (2004) Low cardiorespiratory fitness is associated with elevated C-reactive protein levels in women with type 2 diabetes. *Diabetes Care* **27**: 320–25