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Focus

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Gestational diabetes

Définition

Gestational diabetes (or gestational diabetes mellitus, GDM) is defined as carbohydrate intolerance resulting in hyperglycaemia of varying severity with onset or first recognition during pregnancy. This definition applies irrespective of the necessary treatment or whether GDM persists after pregnancy.

This definition is accepted by all but encompasses two different situations:

- pre-existing type 2 diabetes (T2D), i.e. diabetes which exists prior to pregnancy but is not diagnosed until sometime during the first trimester or at the start of the second trimester of pregnancy and which persists after delivery;
- true GDM, which is detected much later on and is by a return to normal blood glucose levels following delivery.

Prévalence

The estimations of GDM prevalence vary widely from one region of the world to another (0.56% to 15.7%) on account of the heterogeneity of the population under consideration and the absence of a consensus on diagnostic criteria. According to the DIAGEST study (two-step universal screening in a Caucasian population in northern France), the prevalence of GDM is estimated to be 6%.

How is GDM screened ?

There is currently no international consensus on screening for GDM.
All the diagnosis strategies are based on glucose load tests involving blood glucose assays of venous plasma samples (capillary glucose, glycosuria and HbA1c are not possible).

- Either in one step: OGTT with 75 g of glucose followed by assays at T0, ± T1h, T2h;
- Or in two steps: OGTT with 50 g of glucose (screening glucose challenge test) followed by an assay at T1h. GDM is excluded for a blood glucose level below 1.30 g/l and confirmed for a blood glucose level of 2 g/l or higher. If the blood glucose level measured is between 1.3 and 2 g/l, it is recommended to perform an OGTT with 100 g of glucose followed by assays at T0h, T1h, T2h, ± T3h.

Who should be screened and when?

- Some authors consider that screening should be targeted and oriented toward risk factors for GDM: maternal age of over 30, BMI of over 27 kg/m^2, proven family history of diabetes, ethnic background (lower incidence in Caucasian women), personal history of GDM, of giving birth to macrosomic infants weighing over 4 kg, intrauterine fetal death, pre-eclampsia, polyhydramnios, congenital malformations. Screening must be performed at the onset of pregnancy and be repeated if the results are negative.
- Other authors argue that, because half of the women with GDM do not have any risk factors for the disease, all pregnant women should be systematically screened between the 24th and 28th week of pregnancy.

Recommendations for screening and diagnosis

	WHO 1999	ALFEDIAM 1996
Screening	Universal one-step	Universal two-step 50 g glucose challenge test
One-hour threshold value (g/l)		1,30
Diagnosis	75 g OGTT	100 g OGTT
OGTT criteria Fasting (g/l) 1 hour (g/l) 2 hour (g/l) 3 hour (g/l)	WHO 1.26 - 1.40 -	Carpenter and Coustan 0,95 1,80 1,55 1,40
GDM diagnosis	At least one value greater than or equal to the specified values	Two values greater than or equal to the specified values

Why screen for GDM?

GDM screening should be performed in order to identify pregnancies at risk of perinatal complications rather than to identify women at risk of developing T2D outside of pregnancy. The benefits of such screening are reduced short-term risks for the expectant mother and foetus during pregnancy and at delivery (perinatal mortality, risks related to macrosomia and pregnancy-induced hypertension) and reduced long-term risks for the mother and child.

Maternal and foetal morbiditye

Maternal complications

Maternal complications with a frequency related to hyperglycaemia are pregnancy-induced hypertension and pre-eclampsia (two to three times more frequent but without a scientifically proven causal relationship), the Caesarean section rate (higher) and a risk of T2D outside of pregnancy, estimated at around 30% at 10 years and which is a function of fasting hyperglycaemia during pregnancy (however, the role of the mother's BMI is yet to be defined).

The risk of T1D is also high in women who test positive for anti-GAD or anti-IA2 antibodies, hence the value of screening for these antibodies in women who develop GDM although they have no family history of the disease and, all the more, are not overweight.

Foetal and neonatal complications

Foetal and neonatal complications are an increase in perinatal mortality (currently not found but difficult to estimate according to O'Sullivan's 1973 study), macrosomia, metabolic complications with neonatal hypoglycaemia (incidence rate of 2 to 20%) (below 0.30 g/l in term births, below 0.20 g/l in preterm births), hypocalcaemia, polycythaemia, hyperbilirubinaemia; infant respiratory distress syndrome (incidence rate of 0.6 to 8.3%), and preterm birth (incidence rate of 4.2 to 15%).

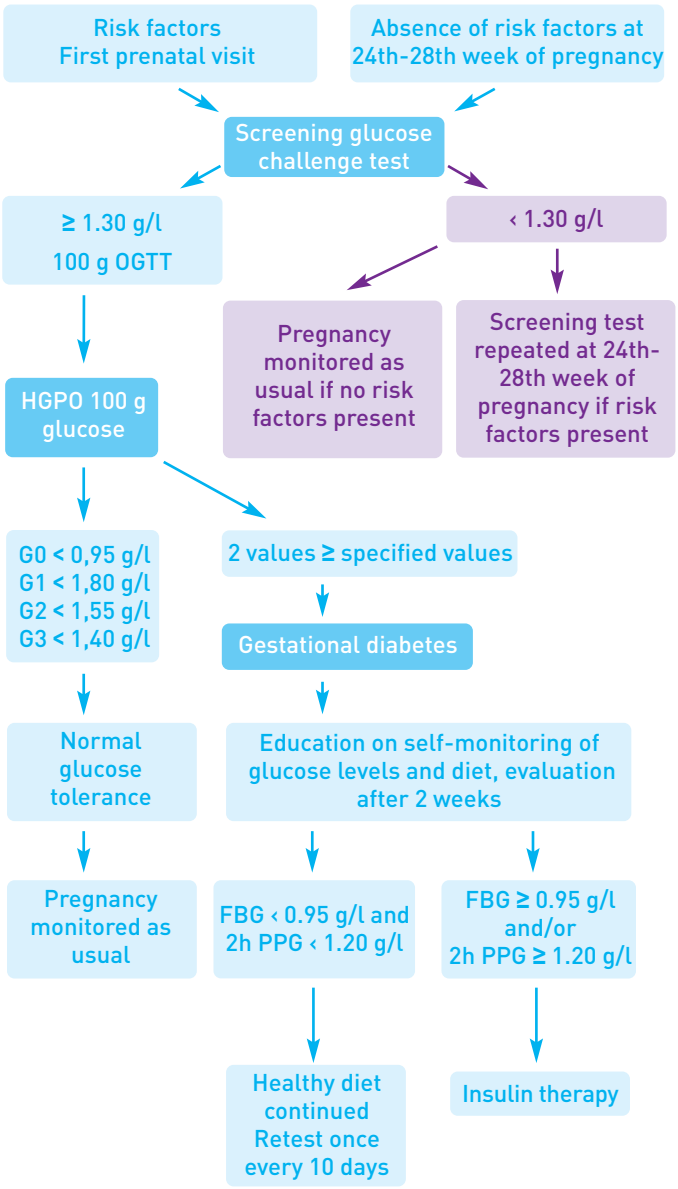
According to some authors, the risks of the newborn subsequently developing childhood-onset obesity or diabetes are higher, but this remains open to dispute.

Treatment of gestational diabetes

Gestational diabetes is treated first with a diabetic diet (personalised caloric intake of no less than 1800 kcal per day and consisting of 50% carbohydrates and low glycaemic index foods), regular exercise and self-monitoring of blood glucose.

If these measures fail to keep blood glucose within the objectives (under 0.95 g/l during fasting and under 1.20 g/l two hours after meals), insulin therapy is required. A dose of intermediate-acting insulin is injected in the evening and/or a dose of rapid-acting insulin analogue is injected before each meal. The dose of insulin is omitted on the day of delivery. Oral anti-diabetic drugs may be administered as an alternative.

Alfédiam* recommendations for gestational diabetes



Key:
FBG: fasting blood glucose level
PPG: postprandial blood glucose level

* French language association for the study of diabetes and metabolic diseases

Carole Emile based on a report by Dr Sylvie Villar-Fimbel of Fédération d'Endocrinologie at the Lyon teaching hospital.