


# GESTATIONAL DIABETES MELITUS

# INCIDENCE

*Gestational diabetes (GDM) occurs in 2-9 percent of all pregnancies*

*A proportion of women diagnosed in pregnancy will actually have previously unrecognized type 1 or 2 diabetes (20-30%)*

# PATHOPHYSIOLOGY

- Based on disorders of insulin metabolism
  - Insulin → ↑cellular uptake of glucose → ↓serum glucose level
  - Placenta produce →
    - Human Placental Lactogen (insulin antagonists)
    - Progesterone
    - cortisol
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- ↑Glucose production
- If the pancreatic  $\beta$  cells are unable to produce sufficient insulin to balance this ↑ or if there is maternal insulin resistance, then a state of hyperglycemia develops.

# RISK FACTORS

- BMI above 30kg/m<sup>2</sup>.
- Previous macrosomic baby weighing 4.5kg or above.
- Previous gestational diabetes.
- First-degree relative with diabetes.
- Family origin with a high prevalence of diabetes (South Asian, black Caribbean, and Middle Eastern).

# COMPLICATIONS

## Maternal

- UTI.
- Recurrent vulvovaginal candidiasis.
- Pregnancy-induced hypertension/pre-eclampsia.
- Obstructed labour.
- Operative deliveries: CS and assisted vaginal deliveries.
- Retinopathy.
- Nephropathy.
- Cardiac disease.

## Fetal

- Preterm labour.
- Polyhydramnios .
- Macrosomia .
- IUGR.
- Unexplained IUD.

## Neonatal

- Polycythaemia.
- Jaundice.
- Hypoglycaemia.
- Hypocalcaemia.
- Hypomagnesaemia.
- Hypothermia.
- Cardiomegaly.
- Birth trauma: shoulder dystocia, fractures, Erb's palsy, asphyxia.
- Respiratory distress syndrome.

# DIAGNOSIS

## Oral glucose tolerance test

1. Overnight fasting (8h minimum):
  - water only may be consumed during this time
  - no smoking
2. 75g Glucose load in 250-300mL water
3. Plasma glucose measured fasting and at 2h.

## *Results*

### Diabetes:

- fasting glucose  $\geq 7.0$ mmol/L
- 2h glucose  $\geq 11.1$ mmol/L

### Impaired Glucose Tolerance:

- fasting glucose  $< 7.0$ mmol/L
- 2h  $\geq 7.8 < 11.0$ mmol/L

Only one value needs to be abnormal to make the diagnosis.

# MANAGEMENT

Management by a multidisciplinary team.

Measure glucose 4-6 times/day (1h post-prandial measurements may be more effective in preventing macrosomia than pre-meal glucose).

Start/ continue Folic acid **5mg daily up-to 12 weeks** of gestation. Change to **1mg daily from 12 weeks** onwards.

Low dose Aspirin (75 mg daily) should be commenced, if there is no contraindication.

*Diet should be first-line treatment:*

- Aim for normoglycaemia and avoid ketosis.
- Weight should remain steady if diet followed
- Compliance is often poor—dietitian input may help.

# MANAGEMENT

*Start insulin if:*

Pre-meal glucose  $>6.0\text{mmol/L}$

1h post-prandial glucose  $>7.5\text{mmol/L}$ .

AC  $>95\text{th}$  centile despite apparent good control.

There is **no increased risk of miscarriage or congenital anomalies**; other fetal and neonatal risks are similar to established diabetes (IUGR is less likely).

Antenatal and intrapartum care as for established diabetes



# Antenatal Care

Dating ultrasound scan using either crown rump length or head circumference is recommended.

Women with pre-existing diabetes mellitus must be screened for diabetic end-organ damage (retinopathy, nephropathy and cardiovascular disease)

Women with serum creatinine  $>120 \mu\text{mol/litre}$  or 24 hour urinary protein excretion exceeding 300mg must be referred for renal specialist's advice.

# Antenatal Care

## Booking appointment

- Education and advice about how diabetes will affect the pregnancy, birth and early parenting
- retinal assessment for women with pre-existing diabetes unless the woman has been assessed in the last 3 months
- Arrange contact with the joint diabetes and antenatal clinic every 1-2 weeks throughout pregnancy
- Measure HbA1c levels for women with pre-existing diabetes to determine the level of risk for the pregnancy.

# Antenatal Care

16 weeks

- Retinal assessment at 16-20 weeks to women with pre-existing diabetes if diabetic retinopathy was present at their first antenatal clinic visit.

20 weeks

- Ultrasound scan for detecting fetal structural abnormalities, including examination of the fetal heart

28 & 32 weeks

- Ultrasound monitoring of fetal growth and amniotic fluid volume.
- Retinal assessment to all women with pre-existing diabetes in 28 weeks

# Antenatal Care

36 weeks

- Ultrasound monitoring of fetal growth and amniotic fluid volume
- Provide information and advice about: timing, mode and management of birth

37+0 to 38+6 weeks

- Induction of labour, or caesarean section if indicated, to women with type 1 or type 2 diabetes; otherwise await spontaneous labour.

# DELIVERY

Timing and mode of delivery should be individualized and based on EFW and obstetric factors (previous mode of delivery, gestation, glycaemic control, and antenatal complications).

Diabetes alone is **not an indication for a caesarean section.**

## Labour care

If steroids are given for threatened preterm labour, monitor glucose closely—hyperglycaemia should be anticipated.

# POSTNATAL CARE

Encourage breast feeding →  
Avoid oral hypoglycaemic drugs if breastfeeding  
(metformin and insulin are safe)

Baby needs early feeding and glucose monitoring.

stop insulin and glucose infusions

check glucose prior to discharge to ensure normal (risk of previously undiagnosed type 2 diabetes)

Arrange OGTT at 6wks post-partum

*Education —50% risk of developing type 2 diabetes mellitus over next 25yrs (this risk can be reduced by maintaining physical activity and avoiding obesity)*

# POSTNATAL CARE

For women who were diagnosed with gestational diabetes and whose blood glucose levels returned to normal after the birth:

Life style advice (including weight control, diet and exercise)

Annual HbA1c test to women who were diagnosed with gestational diabetes who have a negative postnatal test for diabetes

# CONTRACEPTION

All reliable methods of family planning can be used as appropriate for the needs of the individual woman with diabetes.

For women with BM I  $>25\text{kg/m}^2$ , DMPA is best avoided.

Women with type 2 diabetes should be advised to complete their family within 5-10 years of diagnosis of diabetes in view of possible development of complications.