University of Basrah
Al-Zahraa Medical College

Ministry of higher Education
and Scientific Research

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REPRODUCTIVE BLOCK

Lecture

Duration : 1 hour

Diabetes Mellitus in pregnancy

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GYNAECOLOGY 20th
EDITION by Ten Teachers

Learning Objectives (LO)

1.Background on Diabetes mellitus .
2- Pre pregnancy counselling for type 1&type2 diabetes .
3- Management of types 1 and 2 diabetes in pregnancy .
4- Effects of pregnancy on diabetes
5- Effects of diabetes on pregnancy
6- Gestational diabetes .
7- Antenatal care .
8.Intrapartum care.
9. Care after delivery & follow up.

LO 1
Diabetes mellitus

Diabetes may complicate a pregnancy either because a woman has type 1 or type 2 diabetes mellitus before pregnancy or because impaired glucose tolerance develops during the course of her pregnancy (GDM) .

LO 2
Prepregnancy counselling

1. **Optimization of glycaemic control to achieve an HbA1c of <42 mmol/mol without inducing hypoglycaemia.**
2. **High-dose folic acid (5 mg daily) to reduce the risk of neural tube defects.**
3. **Planning periconception adjustments to other medications such as statins and angiotensin-converting enzyme (ACE) inhibitors before pregnancy.**
4. **Poor glycaemic control is associated with a significantly increased risk of congenital anomalies, particularly neural tube defects and cardiac anomalies .**
5. **Targets for therapy prepregnancy are premeal glucose levels of 4–7 mmol/l.**
6. **Diabetic vascular complications are common in women of reproductive age and women with significant retinopathy, nephropathy and/or neuropathy benefit from multidisciplinary team review prior to pregnancy**

LO 3
Management of types 1 and 2 diabetes in pregnancy

- **Women with diabetes should be managed throughout their pregnancy by a multidisciplinary team involving diabetic specialist midwives and nurses, a dietician, an obstetrician and a physician**

- **Blood glucose monitoring is encouraged 7 times a day (before and 1 hour after meals) with targets of <5.3 mmol/l and 1-hour postprandial levels of <7.8 mmol/l.**

- **women require additional support and education regarding diet, use of oral hypoglycemic agents such as metformin where appropriate, insulin adjustments for hyperglycemia and management of hypoglycaemia, which is much more common and potentially very dangerous in pregnancy, particularly in women with reduced hypoglycemic awareness.**

- **Insulin resistance increases dramatically over the course of pregnancy and therefore women with type 1 and type 2 diabetes are usually required to increase their dose of insulin or metformin during the second half of pregnancy.**
- **Women with diabetes should be offered a fetal anomaly scan at 19–20 weeks with an assessment of the cardiac outflow tracts. Serial growth scans are also recommended to assess fetal growth and diagnose macrosomia and polyhydramnios.**
- **Timing and mode of delivery should be determined on an individual basis. In general, provided the pregnancy has gone well, the aim would be to achieve a vaginal delivery at between 38 and 39 weeks**
- **For women with type 1 diabetes and those with type 2 diabetes requiring insulin, a sliding scale of insulin and glucose should be commenced in labour, and maternal blood glucose levels maintained at 4–7 mmol/l to reduce risk of neonatal hypoglycemia .**

LO 4
Effects of pregnancy on diabetes

- **Nausea and vomiting, particularly in early pregnancy.**
- **Greater importance of tight glucose control.**
- **Increase in insulin dose requirements in the second half of pregnancy.**
- **Increased risk of severe hypoglycaemia.**
- **Risk of deterioration of pre-existing retinopathy.**
- **Risk of deterioration of established nephropathy.**

LO 5
Effects of diabetes on pregnancy

- **Increased risk of miscarriage.**
- **Risk of congenital malformation.**
- **Risk of macrosomia.**
- **Increased risk of pre-eclampsia.**
- **Increased risk of stillbirth.**
- **Increased risk of infection.**
- **Increased operative delivery rate.**

LO 6
Gestational diabetes

- **GDM complicates 10–15% of pregnancies depending on the diagnostic criteria used.**
- **Screening for diabetes in pregnancy is designed to detect previously undiagnosed type 2 diabetes and diabetes developing during pregnancy.**
- **Woman who develop GDM are at increased risk of type 2 diabetes in later life .**

Risk factors for GDM

- BMI > 30 kg/m2
- Previous macrosomic baby >4.5 kg
- Previous GDM
- Family history of diabetes (first-degree relative)
- Family origin with a high prevalence of diabetes:

#South Asian

#Black Caribbean

#Middle Eastern specifically gulf area, Jordan, Syria, Lebanon or Egypt

Screening, diagnosis and treatment for GDM

- If any of the 5 risk factors for gestational diabetes:
  - ➢2-hour 75 g oral glucose tolerance test (OGTT) at 24 to 28 weeks
  - ➢If previous GDM:
  - ➢early self-monitoring of blood glucose or 75 g 2-hour OGTT at booking
  - ➢If at booking OGTT normal, - 75 g 2-hour OGTT at 24–28 weeks .
- Diagnosed if:

- The UK National Institute for Health and Care Excellence (NICE) guidelines (2015) recommend a diagnosis of GDM with a fasting glucose ≥5.6 mmol/l and/or a 2 hour (post-75 g glucose load) of 7.8 mmol/l.

- The WHO guidelines (2013) recommend a diagnosis with a fasting glucose of 5.1 mmol/l and/or a 1 hour (post 75 g glucose load) of 10.0 mmol/l or 2 hour of 8.5 mmol/l.

Interventions

- **If fasting plasma glucose level below 7 mmol/litre:**

#Trial of diet and exercise

#Metformin - if no target level within 1–2 weeks with diet, exercise

#insulin – if metformin is contraindicated or unacceptable to the woman

- **If fasting plasma glucose level of 7.0 mmol/litre or above:**

#immediate treatment with insulin

LO 7
Antenatal care

- Management of diabetes during pregnancy

➢**Women on insulin should be:**

- **advised of the risks of hypoglycaemia.**
- **provided with a concentrated glucose solution and glucagon if type 1 diabetes.**
- **offered continuous S.C insulin infusion if uncontrol by multiple daily injections.**
- **Maintain their capillary plasma glucose fasting: <5.3 mmol/litre and 1 hour after meals: < 7.8 mmol/litre or 2 hours after meals: < 6.4 mmol/litre.**

. Timetable of antenatal appointments

- **Offered immediate contact with a joint diabetes and antenatal clinic.**
- **contact with the diabetes care team for assessment of glycaemic control every 1–2 weeks throughout pregnancy .**

. Preterm labour in women with diabetes

- **Diabetes should not be considered a contraindication to antenatal steroids or tocolysis.**
- **Women with insulin-treated diabetes who are receiving steroids for fetal lung maturation should have additional insulin and should be closely monitored.**
- **Betamimetic drugs should not be used for tocolysis in women with diabetes**

. Intrapartum care

- **GDM - birth no later than 40+6 weeks, by induction or CS.**
- **Consider elective birth before 40+6 weeks - if metabolic or any other maternal or fetal complications.**
- **Diabetes is not a contraindication for VBAC.**
- **Diabetic women with ultrasound macrosomia fetus should be informed of the risks and benefits of vaginal birth, IOL and CS.**

. Analgesia and anaesthesia

- **Offer anaesthetic assessment in the 3rd trimester if there is comorbidities such as obesity or autonomic neuropathy.**

- **If GA is used, blood glucose should be monitored every 30 minutes from induction of general anaesthesia until after birth and the woman is fully conscious.**

. Glycaemic control during labour and birth

- **During labour and birth, capillary blood glucose should be monitored hourly and maintained between 4-7 mmol/litre.**
- **If not maintained between 4-7 mmol/litre start IV dextrose and insulin infusion.**
- **Women with type 1 diabetes should receive IV dextrose and insulin infusion from the onset of labour**

. follow-up after birth

- **GDM – Offer a fasting plasma glucose test 6–13 weeks after birth**

- **offer a fasting plasma glucose test, or An HbA1c test if a fasting plasma glucose test is not possible, after 13 weeks**

THANK YOU