DM EPIDEMIOLOGY & SCREENING

FLAME LECTURE: 26B

STELLER 3.24.19

LEARNING OBJECTIVES

- To describe the different diabetic classifications
- To understand how diabetes complicates a pregnancy
- To describe the epidemiology and diagnosis of diabetes
- Prerequisites:
  - NONE
- See also – for closely related topics
  - FLAME LECTURE 26A: GDM Epidemiology & Screening
  - FLAME LECTURE 29A/B: GDM & DM Antepartum/Partum/Postpartum Mgmt

DIABETES IN PREGNANCY

- **Epidemiology**:
  - 3.1-6.8% of reproductive age women have DM
  - 1-2% of pregnancies are complicated by Type 1 or Type II DM
- **Diabetes Mellitus:**
  - **Type I:** autoimmune-mediated destruction of pancreatic beta-cells, leading to absolute insulin deficiency
  - **Type II:** progressive decrease in insulin secretion in the setting of insulin resistance
  - **LADA** (Latent Autoimmune Diabetes in Adults): similar to Type 1 DM, there is late-onset autoimmune attack of the pancreas

WHITE CLASSIFICATION OF DM

Gestational Class			
A1	Diet controlled, no medications to control blood sugar		
A2	Requires medication (oral or injected insulin) for control		
Pre-Gestational Class	**Onset Age (years)**	**Duration (years)**	**Complications**
B	≥ 20	< 10	None
C	10-19	10-19	None
D	< 10	> 20	± benign retinopathy, or other vascular complications
F	Any	Any	Nephropathy
H	Any	Any	Heart
R	Any	Any	Proliferative retinopathy
T	Any	Any	Renal transplant

DIAGNOSOIS

- Diabetes mellitus can be diagnosed in the first trimester or early second trimester by:
  - HgbA1c ≥ 6.5%
  - Fasting glucose ≥ 126 mg/dL
  - 2-hr glucose ≥ 200 mg/dL on 2 hr OGTT
- If any of the following are found during the second or third trimesters, it is still diagnosed as likely gestational DM until proven otherwise postpartum

PATHOPHYSIOLOGY

- During pregnancy, placental secretion of diabetogenic hormones lead to worsening insulin resistance in the 2nd-3rd trimesters and can exacerbate previously well controlled diabetes
  - Growth Hormone
  - Corticotropin-Releasing Hormone
  - Placental Lactogen
  - Progesterone
- However, in the 1st trimester, increased estrogen may transiently enhance insulin sensitivity

MATERNAL COMPLICATIONS OF DM

- Pregnancy exacerbates many diabetic-related risks, and the longer DM has been present, the higher the risks:
  - Progression of retinopathy (25%)
  - Progression of nephropathy
  - Cardiovascular Disease (including acute MI)
  - Gastroparesis and Hyperemesis Gravidarum
  - Diabetic Ketoacidosis (5-10%)
  - Cesarean section (17-25%)
  - Infection (pyelonephritis, influenza)
  - Venous Thromboembolism
  - Pre-eclampsia (15-50%)
- The risks of the above are all increased further if the patient also has chronic hypertension

FETAL COMPLICATIONS OF DM

- Congenital malformations occur in 6-12% of pts
  - Especially if hyperglycemic during organogenesis (5-8 wks)
  - Complex cardiac defects & CNS anomalies (anencephaly and spina bifida) are most common
- Spontaneous abortion (SAB)
- Preterm delivery
- Intrauterine fetal demise/stillbirth
- Macrosomia and fetal growth restriction
- Polyhydramnios

NEONATAL COMPLICATIONS OF DM

- Birth Injury commonly in the setting of shoulder dystocia and/or operative vaginal delivery
  - Brachial plexus injury
  - Facial nerve injury
  - Humerus or clavicle fracture
  - Cephalohematoma
- Neonatal hypoglycemia and electrolyte abnormalities
- Neonatal respiratory distress syndrome
- Neonatal hyperbilirubinemia and polycythemia
- Long term increased risks of obesity, metabolic disease, cardiac disease, and autism in infant

RESOURCES

- ACOG Practice Bulletin #201: Diabetes Mellitus (2018)