

# **Assessment of high risk pregnancy**

## **1- Cardiac disease in pregnancy**

### **Introduction**

The incidence of heart disease with pregnancy world is between 0.2 and 3.7 % Rheumatic heart disease accounts for about half of the cases while congenital heart defects are responsible for most of the remaining half. Maternal mortality in pregnant cardiac patients is 10% world wide and 12.8 % in Egypt.

### **Classification of heart disease:**

The classification of heart disease is based on function not diagnosis different individuals with the same diagnosis may be in different functional classification, and individual with various diagnoses will be in each functional classification:

**Class 1:** no limitation of physical activity.

**Class 2:** slight limitation of physical activity, fatigue, dyspnea, palpitation occurring with ordinary activity.

**Class3:** moderate to marked limitation of physical activity. Excessive fatigue, dyspnea, palpitation or anginal pain occurring with less than ordinary activity.

**Class4:** in ability to carry on physical activity .Dyspnea at rest.

### **Effects of pregnancy on heart disease:**

1. Pregnancy deteriorates patient one clinical grade, but acute heart failure may occur:
  - a. Between 28-32 weeks maximum increase blood volume and cardiac output and hem dilution).

- b. During labor ( contraction increase load on the heart ) usually second stage more than first stage.
  - c. During third stage and immediately post partum because following placenta delivery 500-900 ml blood pass to right ventricle + ↓IVC compression →double cardiac output and volume overload on the heart Acute heart failure may be sudden →acute pulmonary edema with maternal mortality rate 70%.
2. Arrhythmias as arterial as fibrillation (pregnancy ↓threshold for arrhythmias).
  3. Bacterial endocarditic in pregnancy
  4. Thrombembolic complication commonest vascular complication of pregnancy.
  5. Rheumatic activation and chorea.

### **Effects of heart disease on pregnancy women:**

#### **1- Maternal complication:**

- a. polyhydromnious
- b. preterm labor
- c. postpartum hemorrhage
- d. abortion increase the incidence of maternal mortality.

#### **2- Fetal complication:**

- a. cyanotic heart disease abortion 70%.
- b. Congenital heart disease → increase congenital fetal malformation.
- c. IUGR up to IUFD due to chronic hypoxia and low cardiac output.
- d. Preterm labor
- e. Early neonatal death.

## 2- Diabetes mellitus

### Introduction:

The incidence of diabetes mellitus in the general population is 5% up significantly in recent decades, probably because of both genetic and environmental factors. Diabetes mellitus is now present in 2-3% of pregnant women. 90% of these have gestational diabetes. The rate of maternal mortality due to diabetes mellitus in Egypt is 0.8%.

### Definition:

Diabetes mellitus is a chronic disease resulting from a relative or absolute lack of insulin, which is required for carbohydrate metabolism. In diabetes mellitus, the pancreas does not produce sufficient amount of insulin to allow necessary carbohydrate metabolism. Within adequate amount of insulin, glucose can't enter the cells and remains in the blood.

### Etiology:

#### Insulin deficiency may be caused by:

- Damage to beta cells in the pancreas.
- Inactivation of insulin by antibodies.
- Increase insulin requirement as in obesity and pregnancy.

### Classification of diabetes mellitus:

#### 1- according to onset of DM:

<i>1) Juvenile type</i>	<i>2) adult type</i>
1- Insulin dependent DM (IDDM) a- Starts at young age less than 15 years. b- Main defect → pancreas don't secrete enough insulin. c- Predisposing factors, familial or autoimmune. d- Usually thin and underweight.	2- Non-insulin dependent DM (NIDDM) a- at old age b- main defect → insulin resistance c- may be viral infection or pumps d- less liable e- Usually obese and hypertension.

### **3- Gestational diabetes mellitus (GDM):**

- Onset of symptoms occurs during pregnancy.
- Usually disappear after delivery.
- Women with GDM are at risk for developing DM at later date.

### **4- Impaired glucose intolerance (IGT)**

Characterized by hyperglycemia at level lower than that which qualifies as a diagnosis of diabetes.

### **Symptoms of diabetes mellitus:**

1. Excessive thirst and hunger.
2. Frequent urination
3. Blurred vision
4. Weight loss.
5. Recurrent infection.

### **Influence of pregnancy on DM:**

#### **1 - During first half of pregnancy:**

Pregnancy leads to increased beta cell activity and insulin production

#### **2-During second half of pregnancy:**

- Pregnancy has a diabetogenic effect of the maternal metabolic status.
- Rising level of human placental lactogen, estrogen, progesteron. Cortisone and insulin resistance through their actions as insulin antagonists.

#### **3- Developing fetus:**

Continuously removes glucose and amino acid.

## **Influence of diabetes mellitus on pregnancy:**

### **During pregnancy:**

#### **Mother:**

- 1- Pregnancy induced hyper tension due to vascular changes.
- 2- Polyhydromnious
- 3- Pyelonephritis
- 4- Placenta previa
- 5- Abortion
- 6- Incidence of cesarean section.

#### **Fetus:**

1. IUGR
2. IUFD
3. Congenital fetal malformation.
4. Abnormal presentation.

### **During labor:**

#### **A) Mother:**

1. prolonged or obstructed labor

#### **B) Fetus:**

- 1- prematurely
- 2- neonatal hypoglycemia
- 3- respiratory distress.
- 4- macrosomia

### **During postpartum:**

- 1- Infection
- 2- Postpartum hemorrhage.

## **Women at risk:**

### **1- Obstetric history:**

- a. previous macrosomia
- b. Previous unexplained still birth.
- c. Poor obstetrical out comes
- d. Polyhydromnious
- e. Excessive weight gain
- f. Hypertension
- g. Recurrent infection as monillia infection.
- h. Age >35 years.

### **2- Present pregnancy:**

- a. abnormal fasting blood sugar
- b. glycosuria
- c. Unexplained polyhydrominious.

## 3- Anemia During Pregnancy

### Introduction

WHO estimate that more than half of all pregnant women in the world have hemoglobin indicative of anemia, Anemia directly or indirectly contributes to significant proportion of maternal death in the developing world.

### Definition

Anemia means the amount of functioning hemoglobin is reduced below normal. In female the Hb is 12-16 g/100 ml (male 14-18 g %), Anemia is diagnosed in the non-pregnant women if Hb below 12 g% and in pregnant women if Hb below 11 g%.

### Causes of Anemia:

- 1) Inadequate production of RBCs:
  - Iron deficiency anemia
  - Folic acid deficiency anemia (megaloblastic anemia)
  - Anemia caused by infection
- 2) Excessive destruction of RBCs:
  - Sickle-cell anemia
  - Thalassemia anemia
  - Malaria
- 3) Aplastic anemia
  - Congenital
  - Secondary bone marrow failure

## **Types of anemia:**

### **1- Physiological anemia:**

Normally the plasma volume, the number of RBCs and the amount of Hb increase during pregnancy. The increase is more in the plasma volume leading to haemodilution and physiological anemia. Anemia is not physiological if Hb less than 11g/100 ml, the blood picture returns to normal about 6 weeks after delivery. no symptoms no treatment.

### **2- Iron deficiency anemia:**

It is the most cause of anemia during pregnancy, and is responsible for more than 90 % of cases. **It is due to:**

- Fetal demand of iron
- Increase production of RBCs
- Iron deficiency in diet
- Vomiting with pregnancy
- Multiple pregnancy which Increase Iron requirement
- bleeding during pregnancy

### **Diagnosis**

- Symptoms of Iron deficiency anemia as ( pallor , weakness , fatigue , anorexia , malaise , dyspnea )
- CBC, HTC, Hb
- Serum iron, serum ferritin, total iron binding capacity.

### **Treatment**

- Diet rich in iron , vitamin , protein
- Iron given by mouth as ferrous sulphate , fumarate or gluconate
- Vitamin C increase absorption of iron, it is advised to take fresh orange juice with iron tablets.



- If severe anemia (Hb less than 7 g%) is detected near term (after 36 weeks) the Hb is raised by IM or IV iron preparation or even by packed red cells .

### **3- Folic acid deficiency anemia (megaloblastic anemia)**

It occurs in the last trimester and disappears after delivery, folic acid is needed for the increased cell growth of both mother and fetus **.it is due to folate deficiency caused by:**

- fetal demand for folate
- increase tissue formation in the uterus and placenta
- diminished intake of vitamin due to loss of appetite or vomiting
- Multiple pregnancy
- Increase in the rate of destruction and excretion of folate which normally occurs in the second and third trimester.

### **Diagnosis**

- Symptoms of anemia as headache, dyspnea and palpitation.
- In severe cases the spleen and liver are enlarged.
- serum folate is low

### **Treatment**

- Folic acid by mouth 5mg daily if there is vomiting it is given IM.
- Diet rich in protein. Packed red cells in severe cases near term.

### **4- Aplastic anemia**

It occurs due to inhibition of bone marrow by chemical or arsenical compound and chloramphenicol or use of radioactive agent, sometimes it is idiopathic (50%) lack of RBCs cause hypoxia, lack of WBCs predispose to infection, lack of platelet lead to hemorrhage.