

Osaro Evelyn princess

18/mhs07/046

## MATERNAL CHANGES DURING PREGNANCY

During pregnancy, the changes are noticed in various organs, body weight, the metabolic activities and functional status of different physiological systems in the mother.

### STRUCTURAL CHANGES

Various structural changes are noticed in the primary sex organs, accessory sex organs and in the mammary glands during pregnancy.

#### 1. Ovaries

Follicular changes do not appear in ovary and ovulation does not occur because the secretion of FSH and LH from anterior pituitary is inhibited. Corpus luteum enlarges and secretes a large quantity of progesterone and little estrogen, which are essential for maintaining the pregnancy. It continues for 3 months and then, corpus luteum degenerates. By this time placenta develops fully and takes over the function of secreting estrogen and progesterone. It continues throughout the period of pregnancy thus inhibiting the secretion of FSH and LH.

#### 2. Uterus

When the fetus grows, uterus undergoes changes in volume, size, shape and weight.

##### i. Volume

Volume of uterus increases gradually due to fetal growth. From almost zero volume, uterus reaches about 5 to 7 liters at the end of pregnancy. Out of this, 50% of the volume is due to the fetus and rest is due to the placenta, amniotic fluid, etc.

##### ii. Size

Size of the uterus also increases due to:

- a. Hyperplasia (increase in number of cells) of myometrium
- b. Hypertrophy (increase in size of the cells) of myometrium
- c. Growth of fetus.

### iii. Shape

The shape of non-pregnant uterus is pyriform. As the fetus grows, at the 12th week of pregnancy, it becomes globular. Then, once again it becomes pyriform gradually.

### iv. Weight

Non-pregnant uterus weighs about 30 to 50 g. The weight increases as the pregnancy advances. At the end of pregnancy, the uterine weight increases to about 1,000 to 1,200 g.

### v. Histological changes

Endometrium shows formation of decidua, which is the bed for the fertilized ovum during the initial stages of pregnancy. Later, by the end of 3 months, three layers of decidua are formed:

- a. Decidua basalis, which is the maternal part
- b. Decidua capsularis that surrounds fetal sac
- c. Decidua parietalis, which lines rest of uterine wall.

After the 3rd month, the decidua capsularis and parietalis fuse together.

## 3. Vagina

Vagina increases in size and its color changes to violet due to increased blood supply. There is deposition of glycogen in the epithelial cells.

## 4. Cervix

In cervix, the number of glands, blood supply and mucus secretion increase. The tough cervix becomes soft and it is closed by mucus plug.

## 5. Fallopian Tube

The number of epithelial cells and blood supply increase in fallopian tubes.

## 6. Mammary Glands

Size of the mammary glands increases because of development of new ducts and alveoli, deposition of fat and increased vascularization. Pigmentation of nipple and areola occurs

## Eclampsia

Eclampsia is the serious condition of pre-eclampsia characterized by severe vascular spasm, dangerous hypertension and convulsive muscular contractions almost like seizures. It occurs just before, during or immediately after delivery. It leads to death, if timely treatment is not given.

## Features of eclampsia

1. Spasm of blood vessels
2. Very severe hypertension
3. Renal failure
4. Liver failure
5. Heart failure
6. Convulsions
7. Coma.

#### Treatment for eclampsia

Treatment should be immediate. It includes administration of quick acting vasodilator drugs or termination of pregnancy.

#### 3. Respiratory System

Overall activity of respiratory system increases slightly. Tidal volume, pulmonary ventilation and oxygen utilization are increased.

#### 4. Excretory System

Renal blood flow and GFR increase resulting in increase in urine formation. It is because of increase in fluid intake and the increased excretory products from fetus. The urine becomes diluted with the specific gravity of 1,025. In the first trimester, the frequency of micturition increases because of the pressure exerted by the uterus on bladder.

#### 5. Digestive System

During the initial stages of pregnancy, the morning sickness occurs in mother. It involves nausea, vomiting and giddiness. This is because of the hormonal imbalance. The motility of GI tract decreases by progesterone and constipation is common. Indigestion and hypochlorhydria (decrease in the amount of hydrochloric acid in gastric juice) also occur.

#### 6. Endocrine System

##### i. Anterior pituitary

During pregnancy, the size of anterior pituitary increases by about 50%. And secretion of corticotropin, thyrotropin and prolactin increases. However, the secretion of FSH and LH decreases very much. It is because of negative feedback control by estrogen and progesterone, which are continuously secreted from corpus luteum initially and placenta later on.

## ii. Adrenal cortex

There is moderate increase in secretion of cortisol, which helps in the mobilization of amino acids from the mother's tissues to the fetus. Aldosterone secretion also increases. It reaches the maximum at the end of pregnancy. Along with estrogen and progesterone, aldosterone is responsible for the retention of water and sodium.

## iii. Thyroid gland

The size and the secretory activity of thyroid gland increase during pregnancy. The increased secretion of thyroxine helps in the preparation of mammary glands for lactation. It is also responsible for increase in basal metabolic rate.

## iv. Parathyroid glands

Parathyroid glands also show an increase in the size and secretory activity. Parathormone is responsible for maintenance of calcium level in mother's blood in spite of loss of large amount of calcium to fetus.

## 7. Nervous System

There is general excitement of nervous system during pregnancy. It leads to the psychological imbalance such as change in the moods, excitement or depression in the early stages of pregnancy. During the later months of pregnancy, the woman becomes very much excited because of anticipation of delivery of the baby, labor pain, etc.