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**Question**

Elucidate the physiological adaptations of the female to pregnancy?

Most apparent among the many reactions of the mother to the fetus and to the excessive hormones of pregnancy is the increased size of the various sexual organs. For instance, the uterus increases from about 50 grams to 1100 gram, and the breast approximately double in size. At the same time, the vagina enlarges and the introitus opens more widely. Also, the various hormones can cause marked changes in a pregnant woman’s appearance, sometimes resulting in the development of edema, acne, and masculine or acromegalic features.

**Weight gain in the pregnant woman**

The average weight gain during pregnancy is about 24 pounds, with most of this gain occurring during the last two trimesters. Of this, about 7 pounds is fetus and 4 pounds is amniotic fluid, placenta and fetal membranes. The uterus increases about 2 pounds and the breasts another 2 pounds, still leaving an average weight increase of 9 pounds. About 6 pounds of this is extra fluid in the blood and extracellular fluid, and the remaining 3 pounds is generally fat accumulation. The extra fluid is excreted in the urine during the first few days after birth, that is after loss of the fluid-retaining hormones from the placenta.

During pregnancy, a woman often has a greatly increased desire for food, partly as a result of removal of food substrates from the mother’s blood by the fetus and partly because of hormonal factors. Without appropriate prenatal control of diet, the mother’s weight gain can be great as 75 pounds instead of the usual 24 pounds.

**Metabolism during pregnancy**

As a consequence of the increased secretion of many hormones during pregnancy, including thyroxine, adrenocortical hormones, and the sex hormones, the basal metabolic rate of the pregnant woman increases about 15 per cent during the latter half of pregnancy. As a result, she frequently has sensations of becoming over heated. Also, owing to the extra load that she is carrying, greater amounts of energy than normal must be expended for muscle activity.

**Nutrition during pregnancy.** By far the greatest growth of the fetus occurs during the last trimester of pregnancy; its weight almost doubles during the last 2 months of pregnancy. Ordinarily, the mother does not absorb sufficient protein, calcium, phosphates, and iron from her diet during the last months of pregnancy to supply these extra needs of the fetus. However, anticipating these extra needs, the mother’s body has already been storing these substances-some in the placenta, but most in the normal storage depots of the mother.

If appropriate nutritional elements are not present in a pregnant woman’s diet, a number of maternal deficiencies can occur, especially in calcium, phosphate, iron, and the vitamins. For example about 375 milligrams of iron is needed by the fetus to form ts blood, and an additional 600 milligrams is needed by the mother to form her own extra blood. The normal store of nonhemoglobin iron in the mother at the outset of pregnancy is often only 100 milligrams and almost never more than 700 milligrams. Therefore, without sufficient iron in her food, a pregnant woman usually develops hypochromic anemia. Also, it is especially important that she receive vitamin D, because although the total quantity of calcium used by the fetus is small, calcium is normally poorly absorbed by the mother’s gastrointestinal tract without vitamin D. Finally, shortly before birth of the baby, Vitamin K is often added to the mother’s diet so that the baby will have sufficient prothrombin to prevent hemorrhage, particularly brain hemorrhage, caused by the birth process.