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## 1. Vagina

Vaginal cytology was evaluated weekly over 12 months in 20 adult female *Cynomolgus* monkeys (*Macaca fascicularis*). After sacrifice of the animals the histology of the ovaries, uterus and vagina were studied in different phases of the menstrual cycle. The cytological examination of the vaginal smears showed that the superficial cells increased in number towards the middle of the cycle and the number of intermediate cells declined gradually. Parabasal cells were observed mainly at the beginning of the cycle; they disappeared towards the middle of the menstrual cycle. During the early follicular phase, the cells were moderately separated from each other, and during the second half of the proliferative or follicular phase, the superficial cells appeared clumped together. Leucocytes were usually absent except for at the beginning of the cycle and in the last few days of the late secretory or luteal phase. The maturation index of the vaginal smears can be considered as a tool for distinguishing the different phases of the menstrual cycle. The microscopic examination of the genital organs showed that during the proliferative or follicular phase of the cycle, which corresponds to the development of the ovarian follicles, the uterus showed growth of endometrial glands, stroma and endothelial cell proliferation with capillary sprouts. Shortly after ovulation and parallel to the formation of the corpora lutea, the endometrium enters the secretory or luteal phase, which is characterized by coiling of endometrial glands, glandular secretion and the differentiation of the spiral artery. The most striking changes in the vagina, is the marked basal cell proliferation and thickening of the stratum granulosum during the follicular phase of the menstrual cycle. The histological changes observed in the vagina demonstrated a good correlation with the observation on cytological examination of the smears. The present study demonstrated that the process of angiogenesis in the uterus during the different phases of the menstrual cycle is a multiple phenomenon involving proliferation, maturation and differentiation.

## Breasts

The volumes and spin-lattice (T1) relaxation times of breast tissues and parenchymal water content were measured non-invasively by magnetic resonance imaging (MRI) in eight healthy women during four to eight consecutive menstrual cycles. Total breast volume, and parenchymal volume, T1 relaxation time and water content were lowest between days 6 and 15. Between days 16 and 28, parenchymal volume, T1 relaxation time and water content rose sharply by 38.9%, 15.1% and 24.5%, respectively, and peaked after day 25. Within 5 days of the onset of menses, parenchymal volume fell sharply by 30.3%, while water content declined by 17.5%. Rising parenchymal volume in the second half of the menstrual cycle is not solely due to increased tissue water

content and provides in vivo evidence for both growth and increased tissue fluid at this time.

2. Medically, menstruation (also termed period or bleeding) is the process in a woman of discharging (through the vagina) blood and other materials from the lining of the uterus at about one monthly interval from puberty until menopause (ceasing of regular menstrual cycles), except during pregnancy. This discharging process lasts about 3-5 days. It is a part of the monthly menstrual cycle (regular cycling of hormones) that occurs in the female reproductive system that makes pregnancy possible.

During this cycle, your hormones make the lining of the uterus become thicker, getting ready in case of pregnancy. Hormones also cause an egg to be released from an ovary, which is known as ovulation. If you don't become pregnant, your periods start about two weeks after you ovulate. The lining of the uterus falls away and, along with some blood, flows out through the vagina. Periods can be light or heavy, and the blood can range from bright red to dark brown. You might also notice small clots.

The menstrual cycle is the hormonal driven cycle; Day 1 is the first day of your period (bleeding) while day 14 is the approximate day you ovulate and if an egg is not fertilized, hormone levels eventually drop and at about day 25; the egg begins to dissolve and the cycle begins again with the period at about day 30. Menstruation begins day 1 and normally ends days 3-5 of the menstrual cycle.

### Signs and symptoms

Beside the bleeding, other signs and symptoms of menstruation may include headache, acne, bloating, pains in the low abdomen, tiredness, mood changes, food cravings, breast soreness, and diarrhea.

### Problems that can occur during menstruation

Problems with periods can include heavy bleeding, period pain (also called dysmenorrhoea), unpredictable or irregular periods, and premenstrual syndrome, or PMS, which makes some women feel irritable and sad and can cause bloating, tender breasts and aching.

### Treatment for menstrual pain

Treatment for the causes of menstrual pain depends on what the cause is, and may include birth control pills, heavy or prolonged periods, IUDs, noninflammatory steroid drugs (NSAIDs), for example, ibuprofen (Advil, ), aspirin, naproxen (Aleve), and other-the-counter pain (OTC) medications to relieve pain and cramping.

### When do periods stop?

Women usually have periods until menopause. Menopause occurs between the ages of 45 and 55, usually around age 50. Menopause means that a woman is no longer ovulating (producing eggs) or having periods and can no longer get pregnant. Like menstruation, menopause can vary from woman to woman and these changes may occur over several years.

For the first few years after menstruation begins, longer cycles are common. A woman's cycle tends to shorten and become more regular with age. Most of the time, periods will be in the range of 21 to 35 days apart.

Periods stop during pregnancy, and often while you are breastfeeding. Some women find their periods stop for a time because of long-term illness, low body weight, stress, lots of strenuous exercise and hormone problems. Some medications, such as contraceptives, might stop your period. This can be helpful for some women, especially if their periods are heavy or painful. Sometimes after stopping the pill or other contraceptive, it can take a while for your periods to come back. Periods stop altogether when women reach menopause - the average age is 51-52