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1. CYCLIC CHANGES IN BREAST AND CERVIX

- CERVIX

The mucus changes rhythmically throughout the cycle in response to ovarian function between the post menstrual and the mid cycle phase the quantity of mucus increases ten times and maximum at mid cycle precedes the rice in basal temperature by 1 to 3 days. At the time the mucus is very elastic showing maximum spinnbarkeit and sperm will penetrate readily. The secretion of cervical mucus stimulated oestrogen and inhibited by progesterone ,if the mucus is spread on a slide and left to dry it shows crystal pattern which is maximal about ovulation; at other times of the cycle ,in pregnancy or after the menopause ,crystallization is reduced or absent. This crystallization has been described as resembling fern or palm leaves. Projesteron exerts an inhibitory effect on the crystals as on the crystals as on the mucus itself. The mucus was a more sensitive indicator of oestrogen activity than the vaginal epithelium . the change from ferning smear at mid cycle to a non ferning cellular smear pre mensrually indicated a functioning corpus leteum.

- BREAST

Breast development happens in certain stages during a woman's life. First, before birth then at

puberty and later during the child bearing years. Changes also happen to the breast during the menstrual cycle and when a woman reaches menopause. The first thing to develop are libes or small subdivisions of breast tissues. Mammary gland develop next and consist of 15 to 24 lobes. Mammary glands are influenced by hormones activated in puberty. Shrinkage of the milk ducts is the final major change that happens in the breast tissues. The mammary gland slowly starts to shrink. This often starts around age 35.

Each month women go through changes in the hormone that make up the normal menstrual cycle. The hormone estrogen is produced by the ovaries in the first half of the menstrual cycle. It stimulates the growth of milk ducts in the breast. The increasing level of estrogen leads to ovulation half way through the cycle. Then the hormone progesterone takes over in the second half of the cycle. It stimulates the formation of the milk gland. These hormones are believed to be responsible for the cyclical changes that many women feel in their nreast just before menstruation. This include swelling, pain and soreness. During menstruation many women also have changes in breast texture. Their breast may feel very lumpy due to the enlargement of the glands in the breast to get ready for a possible pregnancy. If pregnancy doesn't happen, the breasts go back to normal size.

Breast changes are also one of the earliest signs of pregnancy. This is a result of progesterone. In addition, the dark areas of the skin around the nipples begin to swell followed by the rapid swelling of the breasts themselves. By the 5th or 6th month of pregnancy the breasts are fully capable of producing milk. Hormones like follicle stimulating hormone, luteinising hormone, prolactin, oxytocin and human placental lactogen play vital roles in milk production.

Arriving menopause, levels of estrogen and progesterone begin to change. Estrogen levels dramatically decrease. This leads to many of the symptoms commonly limked to menopause. Without estrogen the breast connection tissue becomes dehydrated and is no longer elastic. The breast tissue which was prepared to make mill, shrinks and loses shape. This leads to sagging of breast associated with womem of this age.

2. HORMONAL REGULATION OF THE MENSTRUAL CYCLE

The menstrual cycle is regulated by a complex hormonal system with positive and negative feedback mechanisms and changes in sensitivity of peripheral tissues. Four concepts appear to be fundamental: regular, pulsatile secretion of LHR is necessary to the functioning of the system; regulation is to a great extent effected by the pituitary gland in response to changes in ovarian steroid levels; changes in ovarian steroid levels are due to regulatory changes in receptivity to pituitary hormones, as well as to variations in enzyme activities; at the periphery, changes in hormonal impacts are accompanied by modifications of receptivity to steroid

hormones.The menstrual cycle is the most evident manifestation of an extremely complex phenomenon which concerns not only reproduction, but the general health of the individual. In the light of the most recent clinical acquisitions, the menstrual cycle can be described as follows: 1) regular, pulsatile secretion by the hypothalamus of luteinizing hormone-releasing hormone (LH-RH), which, in turn, liberates follicle stimulating hormone (FSH) and luteinizing hormone (LH); 2) the FSH makes possible the ovarian action of LH, which, in turn, permits the synthesis of estradiol; 3) negative feedback of estradiol and inhibin on the hypophysis cerebri; 4) ovulation is caused by a peak level of LH, but is dependent on progesterone levels; 5) synthesis of progesterone by the corpus luteum; 6) negative biofeedback of progesterone at the hypothalamic level; and 7) at the endometrial level increase in the number of estradiol receptors during the follicular phase and decrease of cytoplasmatic progesterone receptors during the luteal phase. The discovery of the mechanism of the menstrual cycle has helped women with hypothalamic disorders by using a pump releasing LH-RH in a pulsatile fashion.