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Review of physiological changes in vagina under the influence of estrogen.

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Abstract :

The physiology of vagina undergoes characteristic age-related changes over a lifetime. During puberty vagina mature under the influence of adrenal and gonadal steroid hormone (Estrogen). During the reproductive years, the vagina responds to ovarian steroid hormone. Changes in Vaginal tissue adapt for pregnancy and delivery. During menopause, vaginal atrophy appears. This article covers physiological changes of vagina from puberty to menopause.

Introduction:

The physiology of vagina change over lifetime. The most of the changes are linked to puberty, the menstrual cycle, pregnancy and menopause. During puberty vagina acquire mature characteristics in a sequential fashion in response to adrenal and gonadal maturation. In women of reproductive age,

the vaginal mucosa responds to steroid hormone cycling, After menopause, tissue atrophy appears.

Puberty:

Pubertal changes in vagina are induced by adrenal and gonadal maturation. Puberty generally begins between the age of 8 and 13 years. Under the influence of estrogen, vaginal epithelium changes from cuboidal to stratified squamous epithelium. The whole epithelium thickens and multilayered. Estrogen breakdown the lactobacilli in vagina which produces acidic PH which is considerably resistant to trauma, bacterial infections, fungal infections such as candida albicans.

Reproductive Age:

During the reproductive years, changes in the vagina are linked to the menstrual cycle

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and pregnancy. The vaginal mucosa is sensitive to ovarian steroid hormone cycling. Estrogen stimulation causes the thickness, glycogen content and parakeratosis of the vaginal epithelium to peak at approximately mid-cycle.

Menopause :

The loss of follicular activity will lead to menopause which is the permanent cessation of menstruation.

The vagina is composed of an inner stratified squamous epithelium, a middle muscular layer, and an outer fibrous layer. Before menopause, in the presence of endogenous estrogen levels, the vagina is characterized by a thickened rugated vaginal surface, increased vaginal blood flow, and vaginal lubrication.

Estrogen levels significantly decreases after menopause which affects the vaginal tissues. Vaginal atrophy is most commonly associated with the diminished estrogen levels that accompany menopause. Decreasing estrogen levels are also associated with atrophy of the vulva and

lower urinary tract, commonly referred to as urogenital atrophy. However, this paper focuses only on vaginal atrophy.

The term vaginal atrophy describes vaginal walls that are thin, pale, dry, and sometimes inflamed (ie, atrophic vaginitis).

When normal premenopausal circulating estrogen levels decrease during perimenopause or after induced menopause, the vagina shortens and narrows. The vaginal walls may exhibit small petechiae and become thinner, less elastic, and progressively smoother as rugal folds decrease. Vaginal blood flow diminishes. Although the sebaceous glands remain prominent, their secretions diminish and the onset of lubrication during sexual stimulation is delayed.

With estrogen stimulation, the vaginal epithelium produces glycogen, which is broken down to glucose. Lactobacillus species metabolize glucose and produce lactic acid, which is responsible for the acid pH of the vagina. When estrogenic stimulation is lacking, lactobacilli decrease,

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which then shifts the vaginal pH toward vaginal infections.
alkalinity. This higher PH susceptible to

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