Editorial:

Cervicovaginal smear (Pap Smear)

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The broadest amd most successful application of cytopathology has been in the diagnosis of invasive carcinoma of the uterine cervix and precursor lesions through the technique , first described by Aureli Babe's , a Rumanian pathologist , and popularized in 1943 by Dr.George Papanicolaou (1883-1962) at Cornell University and universally known as the pap smear.

The availability of the Pap smear has been accountable for a decrease in deaths from cervical cancer of over 60% during the years from 1950-1980. Unfortunately, as many as 14,000 women still die from cervical cancer every year, related primarily to the fact that most of these women have never had a pap smear or are tested only infrequently.

What is a Pap smear?

Exfoliated cells can be obtained from various body sites for the purpose of obtaining clinical useful information. Many cells and tissues of the body are undergoing constant process of mutation /death/regeneration, and cells that die slough off or exfoliate. Proliferation and maturation of epithelial cells leads ultimately to exfoliation of cells. Methods are available to collect exfoliated cells, primarily from epithelial surfaces. It is also possible to mechanically enhance the exfoliation process to obtain more viable cells or small tissue fragments compared to large tissue sections obtained in surgical biopsies.

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Diagnostic use of the Pap smear

The female genital tract is lined by epithelium. The upper vagina has stratified squamous epithelium, the ectocervix stratified squamous epithelium, the endocervix simple columnar (glandular epithelium), and the endometrium simple columnar (glandular epithelium). All of these epithelia are subjected to the cyclical hormonal influences of estrogen and progesterone during the menstrual cycle, which induces proliferation (increase in the number of cells), and differentiation or maturation (the development of functional and morphologic features of mature cells of the parent tissue type) of these epithelia. Differentiation and maturation of cells are reflected by characteristic morphologic features, which staining techniques allow us to identify. As a point of communication between the outside and inside of the body, the uterine cervix is continually being bombarded by a variety of stressors including mechanical, microbiologic, chemical, and hormonal insults.

In many cases the cellular abnormalities related to pathologic entities present in the cervix can be detected and characterized by means of the Pap smear, based on the morphologic alterations of cells created by theses entities, and on the presence of inflammatory cells and/or the actual presence of microbiologic agents.

The cervical/vaginal Pap smear in adequately collected cellular sample derived from exfoliated or mechanically dislodged cells of the

vagina, cervix , and in some cases endometrium , which have been smeared on a glass slide, adequately preserved and stained , and evaluated cytomorphologically for one or more of the following purposes:

*Detection of occult pathologic abnormalities of the uterine cervix in asymptomatic women.

*Detection of recurrence of known pathologic abnormalities of the uterine cervix.

*Evaluation of a suspected hormonal abnormality.

*Monitoring of hormonal therapy.

Obtaining a Pap Smear

Specific collection procedure utilized will depend on the type of information required or specific indication for performing the Pap smear. The goal of the actual collection procedure is to produce an adequate, valuable smear of cellular material from the vagina and/or cervix which can be submitted to the laboratory, along with appropriate clinical information, to be stained and evaluated in accordance with the indication for the test. In order to accomplish this goal, the smear has to have the following characteristics:

*Adequate numbers of squamous epithelial cells present.

*Evidence that the transformation zone was sampled (i.e., the presence of endocervical cells on the smear).

*Spread in a relatively even monolayer.

*Epithelial cells not obscured by blood, inflammatory cells, or foreign material such as lubricant or talk.

*Appropriately preserved.

The collection procedure actually begins with appropriate instructions of the patient regarding the test. A Pap test should be obtained:

*Annually after the age of 18 or after the beginning of sexual activity.

*During the 2nd half of the menstrual cycle, i.e., at least two weeks after the start of one menstrual period and before the start of the next menstrual period.

*Without intercourse during the 24 hours prior to the test.

*Without douching during the 24 hours prior to the test.

The collection procedure continues with the taking of an accurate sexual and health history. Information which should be required on the requisition form sent to the laboratory includes:

*Patient name

*patient age

*Last menstrual period

*Pregnancy history

*History of hormone use

*History of IUD use risk factors

*Previous abnormal Pap smears

*Relevant clinical information e.g., abnormal bleeding, discharge, pelvic pain, etc.

Limitations of Pap Smears

In spite of the best collections, specimen handling, and screening procedures, there will still be a false negative (missed lesion) rate of at least 4%. Up to 2/3 of false negative Pap smear result from factors related to the collection procedure. However, the natural history of cervical dysplasias and carcinomas is such that there is along time interval (years) from dysplasia to invasive carcinoma. If yearly screening is performed, then the chance of a lesion being missed is very low.