

## CYTOLOGICAL OBSERVATIONS ON CERVICAL CANCER LESIONS

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### INTRODUCTION

In the 21st century, cervical cancer continues to be one of the most important public health problems facing humanity. Cervical cancer totals 44% of all female genital neoplasms, which justifies the efforts made nationally and internationally to study this disease. Cervical cancer mainly affects women between the ages of 15 and 66 and involves the appearance of atypical cells in the cervix (the first part of the uterus that opens into the vagina, also called the cervix). Unlike other cancers that are incurable, cervical cancer can be cured in most cases if it is discovered at an early stage.

Cervical cancer ranks second after breast cancer in malignant tumors in women. It represents 6% of all cancers. Almost 10% of all deaths are due to cervical cancer.

The "Babeș-Papanicolaou test" must be one of the basic components of the gynecological examination, being one of the most effective screening methods for cervical cancer. This test can look for precancerous and malignant cell abnormalities in the cervix.

Our country ranks first in Europe in terms of incidence (new cases) and mortality from cervical cancer. This is the second leading cause of cancer mortality in women in Romania, after breast cancer. Like most cancers, cervical cancer is named after the part of the body where it begins to develop. Before this type of cancer occurs, the cells of the cervix begin to change and become abnormal. These cells are called precancerous. Precancerous lesions in the cervix can be detected early and treated, thus avoiding progression to cancer.

### MATERIALS AND METHODS

The studied biological material was represented by the vaginal secretion product collected from 282 patients examined at the obstetrics-gynecology office "Clinic Center Hera" Bacău, for one year, March 2019 - March 2020. The samples were processed and examined clinically in within the Medlife laboratory, Bacău.

The observations were made on cervico-

vaginal smears. The working method used was Papanicolaou in liquid medium, May-Grünwald-Giemsa staining, Papanicolaou classification.

Vaginal secretion was collected with a sterile swab of non-hydrophilic cotton wool and smears were performed on microscope slides. The smear was air dried for 1-2 minutes, then stained with the Pap smear technique. The method is intended to stain the nuclei and cytoplasmic components of vaginal and cervical secretions.

The smears are used to: detect microscopic changes in the cervical mucosa, especially in asymptomatic women; detection of recurrences in the cervix in case of previous diseases at this level or for the purpose of hormonal diagnosis.

The stages of making a smear at the cervical level are:

- visualization of the cervix;
- sampling cells from it, by scraping with one or more instruments (cervical exfoliative cytology) and
- transferring the harvested cells from the harvesting devices to glass slides.

### RESULTS AND DISCUSSIONS

Most of the investigated cases come from urban areas (62%) and less (38%) from rural areas (Fig. 1).

As can be seen from Fig. 2 pathological changes on the smear appear with older age. Thus, the younger patients, 15-25 years old, presented a PAP smear type I (PN I) with normal-looking epithelial cells; patients aged between 26 and 36 years, presented a PAP smear type II (PN II) with epithelial cells with inflammatory changes and inflammatory cellular elements (polymorphonuclear, lymphocytes, macrophages); patients aged 37 to 47 years presented with a PAP smear type III (PN III) with suspicious abnormal epithelial cells, but without sufficient characters for the diagnosis of malignancy; patients aged 48 to 58 years had a PAP type IV (PN IV) smear with isolated malignant tumor cells, and patients aged 59 to 69 years had a PAP type V (PN V) smear with malignant tumor cells in placards.

Following the study we can specify that the results were negative in the case of 73.85% of patients, who were identified with PN I and II smears. Patients with PN III smear accounted for 8.83% and 6.36% represented patients with PN IV (Fig. 3).

The quarterly results of the smears represented numerically in Fig. 4 - March, April and May 2019 shows that 36 patients presented a PN I test (normal), 10 patients presented PN II, 9 PN III patients and only 2 PN IV patients.

During June, July and August 2019, 60 patients with PN I test, 10 patients with PN II, 4 patients with PN III and 3 patients with PN IV were identified (Fig. 5).

In September, October, November and December 2019 presented a PN I 62 patients, PN II 5 patients, PN III 8 patients, PN IV 6 patients (Fig. 6).

The quarterly numerical representation of the PN test from January, February and March 2020 is shown in Fig. 7. Thus, 51 patients with PN I, 5 patients with PN II, 4 patients with PN III and 7 patients with PN IV were identified.

The cytological study looked at the main cellular changes. However, the cytological test has multiple valences, allowing the discovery of other diseases present in the genitals (example: the presence of *Trichomonas vaginalis*, *Candida albicans*, etc.), remaining a safe means of detecting cervical cancer in large groups of the population).

Any vaginal smear with the clinical significance of "normal" from a woman with normal hormonal function contains superficial and intermediate squamous cells (Fig. 8). Their proportion may vary depending on the period of the menstrual cycle.

The complete absence of superficial cells in a young woman indicates a disorder of ovarian function.

Epithelial cell abnormalities appear on the **ASC-US** smear (Fig. 9). The smear contains atypical binucleate scaly cells of undetermined significance, with enlarged nuclei, slightly hyperchromatic and inhomogeneous chromatin. The ASC-US smear occurs in inflammatory, atrophic, or early stages of HPV infection.

The **ASC-H** smear (Fig. 10) contains atypical squamous cells that cannot rule out a high-grade intraepithelial lesion. Metaplastic cells are of various shapes and sizes, with nuclear pleomorphism and increased nucleus-cytoplasm ratio.

The **L-SIL** smear (Fig. 11) is characterized by low-grade squamous intraepithelial lesion; has cytological effects caused by HPV and mild dysplasia (CIN).

In Fig. 11 large cells with enlarged, pleomorphic, hyperchromic nuclei, with slightly irregular nuclear membrane and inhomogeneous chromatin are observed; superficial or intermediate

squamous cells, alone or in the beach; the nuclei are enlarged at least 3 times compared to the nucleus of a normal intermediate cell. It has the following changes: they have varying degrees of hyperchromasia; frequent binuclear or multinuclear, irregular nuclear membrane; uniformly distributed, finely granular chromatin; nucleoli absent in general; the cytoplasm is thin, transparent, with clear cell edges, keratinized being present in single cells or in cell ranges.

When HPV infection is associated with smear, the presence of:

- koilocytes: superficial or intermediate squamous cells with clear perinuclear halo and thick cytoplasmic band, associating nuclear anomalies;
- dyskeratocytes - keratinized squamous cells, with cytoplasm and pleomorphic vesicular nuclei, hyperconic.

The **H-SIL** smear (high-grade scaly intraepithelial lesions) has a wide variety of cytological features. On the smear, small, dysplastic cells are observed, arranged in hyperchromatic syncytia, with imprecise limits; parabasal cells, isolated or in syncytium; nucleus: cytoplasm ratio is much higher; the nuclei are pleomorphic, hyperchromatic, generally devoid of nucleoli; the nuclear membrane is irregular, with incisions, and the chromatin is finely granular or inhomogeneous; the cytoplasm is immature, delicate or intensely metaplastic (Fig. 12).

On the **L-SIL smear - koilocytes** (Fig. 13), koilocytosis is observed (presence of koilocytes - superficial or intermediate squamous cells with clear perinuclear halo and thick cytoplasmic band, associating nuclear anomalies).

The microscopic image of an **endocervical adenocarcinoma** (Fig.14) is characterized as follows: on an intense hemorrhagic background, three-dimensional cell groups with enlarged, superimposed, monotonous nuclei, intensely hyperchromic, with inhomogeneous chromatin are highlighted; abnormal endocervical cells, arranged in three-dimensional nest placards and in syncytial aggregates; the nuclei are enlarged, pleomorphic, with inhomogeneous chromatin and irregular nuclear membrane. Necrotic tumor diathesis, present.

In the case of an infection with *Trichomonas vaginalis* (Fig. 15), pear-shaped, round or oval organisms appear on the smear with cyanophilic cytoplasm and pale, vesicular nucleus, located eccentrically. The cytoplasm is cyanophilic (gray-green), with cytoplasmic eosinophilic granules. Flagell obviously sometimes.

In *Gardnerella vaginalis* infection (Fig. 16.), the bottom of the smear shows squamous cells covered with piles of cocobacilli that mask the cell membrane (the appearance of "clue cells").

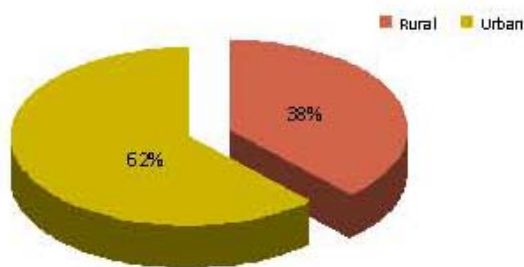


Fig. 1. Percentage representation of the environment of origin

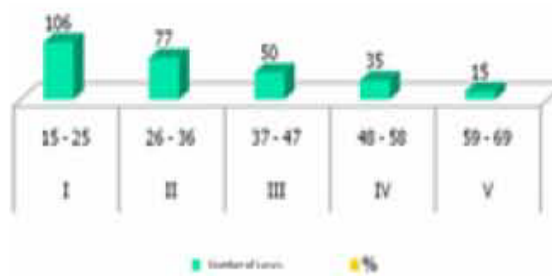


Fig. 2. Representation of investigated patients by decades of age

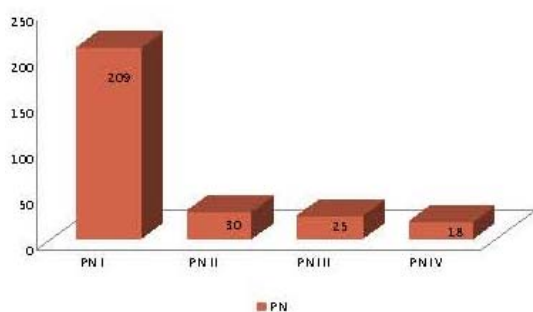


Fig. 3. Numerical representation of the investigated patients and the results of the PN test

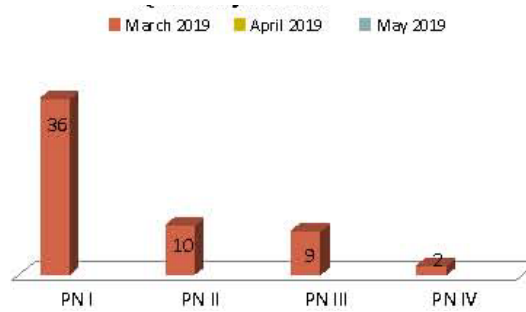


Fig. 4. PN test results for March, April, May 2019

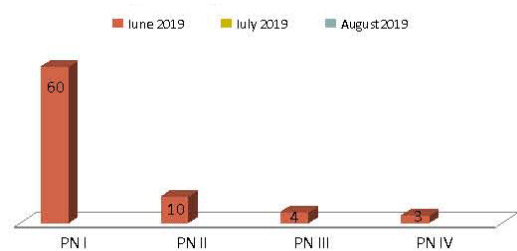


Fig. 5. PN test results for June, July, August 2019



Fig. 6. PN test results for months September, October, November, December 2019

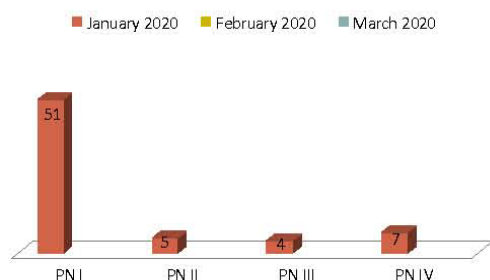


Fig. 7. PN test results for January, February, March 2020

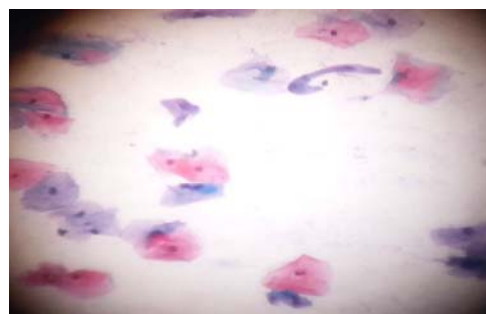


Fig. 8. Cytological appearance of normal vaginal smear with superficial and intermediate squamous cells

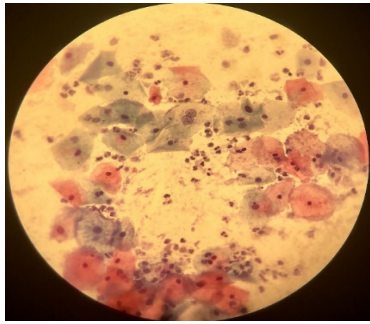


Fig. 9. ASC-US vaginal smear

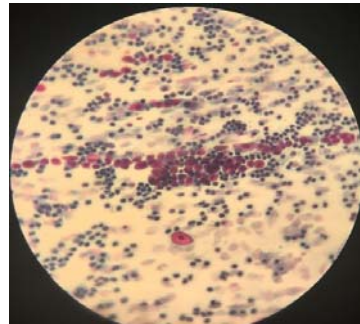


Fig. 10. ASC-H vaginal smear

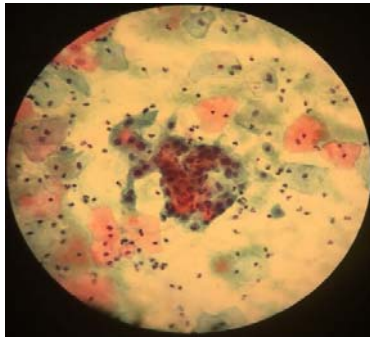


Fig. 11. LSIL - low-grade squamous intraepithelial lesion

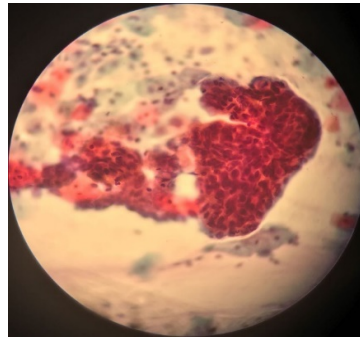


Fig. 12. HSIL- squamous intraepithelial Lesion high grade

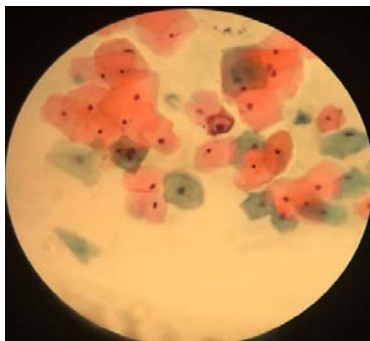


Fig. 13. L-SIL smear - koilocytes

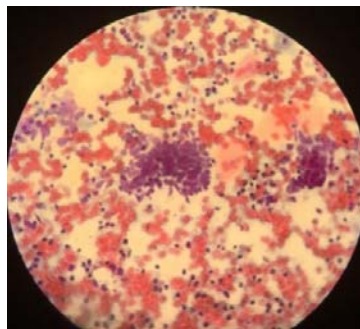


Fig. 14. Endocervical adenocarcinoma

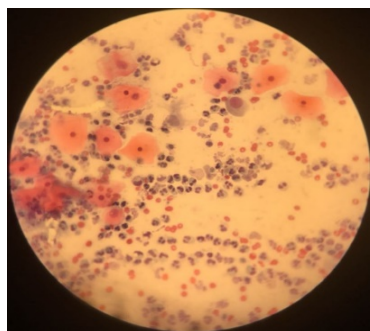


Fig. 15. *Trichomonas vaginalis* infection

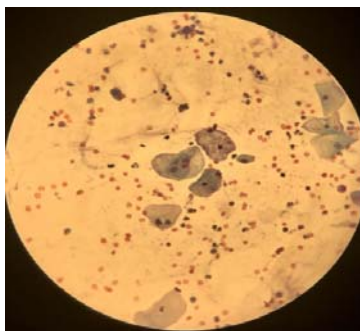


Fig. 16. *Gardenella vaginalis* infection

## CONCLUSIONS

The Babes - Pap test is today used successfully to identify precancerous pathology of the cervix.

Cervical cancer is a major health problem among women, as it affects women's health, fertility and social life.

The frequency of uterine cancer is high, especially in women in urban areas, due to more risk factors (stress, food with chemical additives, excess drugs, disordered sex life, poor hygiene).

The PAP test is an important method of investigation used to detect precancerous pathology of the cervix.

Cervical cancer detected in the early stages is treatable and can be cured. That is why it is important to have regular testing for lesions that can lead to cancer or even early-stage cancer.

The PAP test allows the detection of other non-oncogenic (benign) diseases that can be treated properly, in order not to allow their aggravation over time by malignancy.

In the period 2019 - 2020, the study carried out in the Medlife Bacău laboratory, on a large number of PN smears, showed a low percentage of intraepithelial lesions and malignancy. As a result, the vast majority of PAP test results were normal (73.85%). The fact that most patients presented for examination in the early stages of the disease indicates that the popularity of this type of examination has made them aware of its importance and need in the prevention of cervical cancer.

Most cytological changes in the cervix occur in sexually active women over the age of 35.

Almost all cervical cancers are caused by the Human Papilloma Virus (HPV). This virus is sexually transmitted.

## ABSTRACT

This paper aims to implement and understand the mechanisms by which cervical lesions intervene in the pathogenesis of lesions precursor to neoplasia, as well as knowledge of their cytological investigation methods. The study is channeled towards a complete evaluation of the complex diagnosis of cervical intraepithelial lesions, based on classical methods of investigation that include the Babeş-Papanicolaou cytological examination. The cervix can be easily examined cytologically. The use of this method of investigation leads to the discovery of the disease in the early stages, 100% curable (Koss, 1989).

The observations were made on cervico-vaginal smears. The vaginal secretion product was collected from 282 patients examined in the obstetrics-gynecology office "Clinic Center Hera" Bacău, for one year, March 2019 - March 2020. The samples were processed and clinically examined in the Medlife laboratory, Bacău. The working method

used was Papanicolau in liquid medium, May-Grünwald-Giemsa staining, Papanicolau classification.

Following the study, 73.85% of patients were identified with PN I and II smears, 8.83% were patients with PN III smears and 6.36% were patients with PN IV. Most cytological changes in the cervix occur in sexually active women over the age of 35.

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