THE CYTOLOGICAL DIAGNOSTIC OF THE CERVICAL CANCER

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Abstract. The present paper materializes the efforts made to emphasize the cervical cancer epidemiology and a high quality morphopathological diagnostic. We tracked the problem of the early detection of diagnostic, through mass cytological examination. Cytological screening was performed by a team of health personnel in The Third Clinic of Obstetrics-Gynecology “Elena Doamna”Iaşi between 01 January 2001 and 31 December 2007. We discovered a number of 145 cases of cervical cancer out of 650 that we studied, that is 22,30%. It is necessary to take a sample from the bottom of the posterior vaginal uterine sac and from the surface of the cervix with an Ayre spatula and in special circumstances you can even take an endocervical smear. The early diagnostic can be set after analyzing the vaginal smear through the optical microscope. We identified the pre-cancer and cancer status at 5,4% of the cases we analyzed as follows: L-SIL 3,7%; H-SIN 0,8%; CIN 1,1% (1 case associated with H-SIN). The cytological test has multiple valences, as it allows the discovery and location of the feminine genital cancer in other places than the cervix (even if its accuracy drops dramatically as the segment concerned is farther from the exocervix, endometrium, endosalpinx). The cytological examination proved to have exceptional qualities as a screening method, and has become lately the basic instrument in detecting the cervical cancer in a big number of patients.

INTRODUCTION

The cervical cancer represents an important problem in our country, far from being solved both at hospital level and at the level of the decisional factors in the sanitary system. We are talking mainly about the fact that the patients who come for a medical examination are already in advanced stages of the cancer and that is why the treatment prescribed is sometimes inefficient. We are also referring to the prevention measures that must be done at the same time with an imperious necessity of improving the clinical and paraclinical investigation methods, with the purpose of establishing a diagnostic as early as possible (4).

MATERIAL AND METHODS

The cytological screening was performed by a team of medical staff within the Third Clinic of Obstetrics - Gynecology “Elena Doamna” Iaşi during 01.01.2001-31.12.2007. We found 145 cases of cervical cancer in different stages from the 650 cases studied, that means 22, 30%.

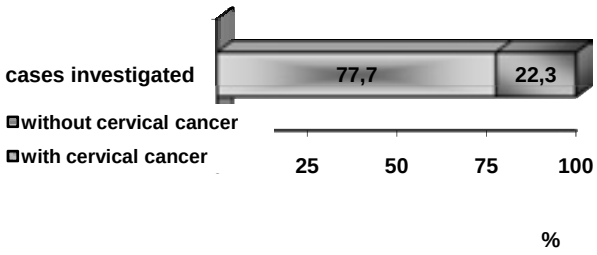

Fig. 1. The share of the patients with cervical cancer from the total number of cases investigated

Conditions for collecting a smear for the cytological examination

You must collect the cytological smear at the right time, which is in the middle of the interval between the woman’s menstrual cycles in order to avoid the contamination of the smear with traces of menstrual blood. If the patient who comes for a medical examination is bleeding, the doctor must find out first if this bleeding is caused by a cervical lesion and if it is a cytological examination is imperative.

Another major condition for collecting a good quality smear is to avoid any intervention in the cervical-vaginal area (biopsy, electrocauterization) before collecting the smear.

It is recommended that the patient hadn't performed a vaginal cleaning at least 24 before the medical examination, because this fact allows the cellular material that is exfoliated in the vagina to be more abundant. The treatment of the local inflammatory processes (fungal or parasite) is also required. Any kind of local application of contraceptive substances or any other substances (within the colposcopy) is forbidden.

The collecting and the number of smears: The way in which the vaginal secretion is collected and the smear is made are essential conditions for a correct interpretation.

The collecting technique: the woman sits on the gynecology table; the doctor introduces the sterile vaginal speculum or vaginal valves, being careful not to cause traumatic lesions of the cervix. The cervix is gently exposed. You must avoid the iodine, salicylate, acetic acid swabs before the sampling because after their application the nuclei appear darker and can arouse the suspicion of a neoplasia; then the exocervix is inspected and also the O.E. of the cervix, noting down any lesion found. You must sample three smears according to the Papanicolaou-Traut classic method:

1. from the bottom of the posterior vaginal sac;
2. from the surface of the exocervix;
3. from the cervical canal.

Displaying the sampled product: is done by gently taking the brush/spatula over the blade from one end to another (without pressing hard). When the sampled product is abundant, you can place a drop at one of the blade's ends and spread it with another blade that is prepared like in the case of a blood smear.

Another modern method is its fixing in liquid.

Fixing the cytological smears: The quality of the cytological smears is extremely important for establishing a correct cytologic diagnostic. If you want to obtain good quality smears it is necessary to use adequate methods for fixing and colouring them, methods that will not alter the cellular morphology and that will emphasize nuclear and cytoplasmatic structural details.

The reading and interpreting of the smears is performed in the cytology lab by a competent cytologist.

There is the possibility to appreciate some cells that have a set of characters that are different than those coming from a normal cell as coming from a neoplasic process.

RESULTS AND DISCUSSIONS

The cervical cancer is usually developed on pre-existing lesions and has two phases in its evolution, as it is initially located strictly intraepithelially, preserving the integrity of the base membrane and later evolving towards stromal invasion.

The usual starting point is situated transitional area between the exocervical pavimenti epithelium and the endocervical cylindrical one, and then it spreads little by little both at surface and in depth and invades the cervix and the organs around, causing metastases through the lymphatic way.

However, it may catch the presence of a neoplasia in an incipient phase that is undetectable by any of the other means of diagnostic by suspicion. Besides, the cytology "*can see"* in places where the colposcope is "blind" like the upper segments of the cervical canal. The reduced number of false positive results (fiability) and especially those of false negative confers cytology an overall precision of over 90% and at the same time brings it closer to the histopathologic examination as value.

In most of the cases that took part in our study we collected cytological smears and, if there was an indication to do that, performed biopsies of the cervix.

The cytological smears were coloured using Giemsa technique or using the method with hematoxylin-eosin (H-E).

When interpreting and diagnosing the cytological smears we used both the Babeș-Papanicolau nomenclature and TBS (*The Bethesda System*).

The cytological smear studies the changes that have a hormonal an atypical neoplasic nature and appear in the cells exfoliated from the exocervix or from the cervical canal.

The cytological diagnostic proves the following aspects:

- in 4,9% of the investigated patients the smear did not confirm the infectious process;
- in 0,8% of the cases the smear was intermediate as type;
- in 90,6% of the patients we identified a genital infection with different types of organisms, the most frequent infection being with *Candida albicans* 9,1%;
- we identified the pre-cancer and cancer status in 5,4% of the cases we analyzed as follows: L-SIL 3,7%; H-SIN 0,8%; CIN 1,1% (1 case associated with H-SIN).

The identification of L-SIL lesions for the patients in the study group has an estimated risk almost 5 times higher (RR=4,80) than the one with H-SIL, with a predictive positive value of 83%.

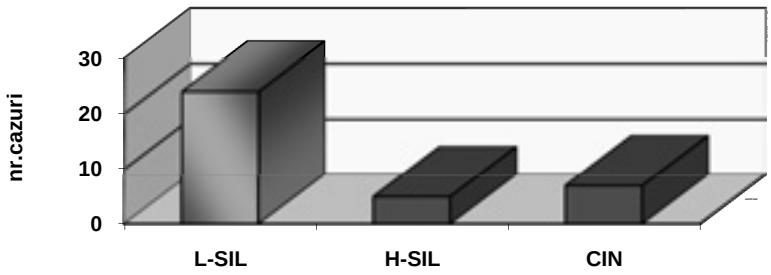

Fig. 2. Distribution of the cases cytologically confirmed according to types of lesions

Table 1. Statistical differences on types of lesions

Lesions	n	%	Statistic significance
L-SIL	24	3,7	χ^2=11,43; GL=1; **p<0,001** RR=4,80 IC95%: 1,84÷12,50
H-SIL	5	0,8	

The vaginal cytological examination has come to a high degree of accuracy in detecting the cervical cancer. It represents a valuable method of detection because of the following qualities (1, 2, 13, 14):

- it is a simple, non-traumatic, easy to perform technique, that is also easily accepted by the woman who has to be examined due to its non-invasive character;
- it allows the disease to be discovered in the early stages (micro-invasive carcinoma), and also the pre-cancer lesions because if they are detected and the patient follows the right treatment ensures a primary prophylaxis of the disease, especially associated with the colposcopic methods;
- it has a high degree of accuracy (sensibility and specificity) that can go up to 90-95%;
- it has an unlimited theoretical applicability, as it can basically cover the whole feminine population at risk and this fact confers great value to colposcopy and recommends it as a method of mass screening;
- you can repeat it over a long period in a woman’s life.

We have used a big variety of studies that include colpo-microscopy, electronic microscopy, cultures of cells and autoradiography in order to establish the origin and evolution

mechanism of CIN. CIN begins in the transformation area and spreads along the basal membrane, replacing the squamous and glandular adjacent epithelial cells. These methods showed the neoplasic process begins in a single cell or a very small group of cells.

The lesion enlarges by clonal expansion, it becomes less differentiated and extends in the endocervical canal. The area of election for the intraepithelial lesions is limited by their border with the native squamous epithelium of the exocervix, but proximally the lesions can extend in a variable manner in the endocervical canal and even in the perimeter and fallopian tubes and only rarely in the peritoneal area. CIN appears twice as frequently on the anterior cervical lip than on the posterior one in very rare cases it can appear laterally. CIN is characterized by an abnormal cellular proliferation and also an untypical nucleus. Proliferation begins in the basal and parabasal layer with an increase in the number of parabasal immature cells that spread in the intermediary and superficial layers.

The cytological smears from the vaginal secretion were collected from 77 women-53,10%

We did not perform the same operation for the rest of 68 - 46,89% patients as they had already been diagnosed by biopsy or in other services or in some cases the smear could not be interpreted because of the hemorrhage, infection or necrosis.

We have found the following results for the smears collected for the cyto-diagnostic:

Table 2. The cases that have been sampled for the cyto-diagnostic smear

CYTOLOGICAL CLASS	NUMBER OF CASES	% (FROM THE TOTAL NUMBER OF CASES)
I	1	1,30%
I-II	1	1,30%
II	8	10,39%
II-III	6	7,80%
III	3	3,90%
III-IV	15	19,48%
IV	9	11,69%
IV-V	15	19,48%
V	19	24,68%

Cervical exfoliative cytology represents the princeps examination in the set of examinations for cervical cancer and it is the most accessible due to the simplicity of the method and the economic advantage because it has unlimited addressability to the feminine population.

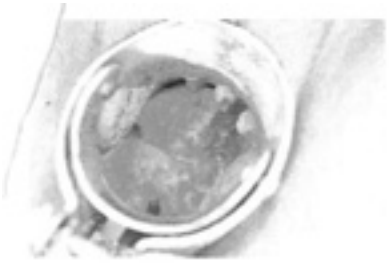

Fig. 3 A Clean, uninfected tumour

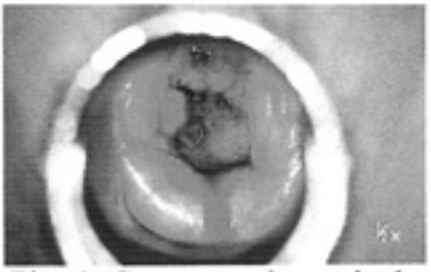

Fig. 3 B Endocervical Cancer stage I

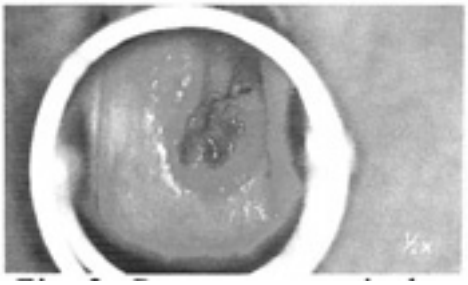

Fig. 4 A Exocervical cancer stage I

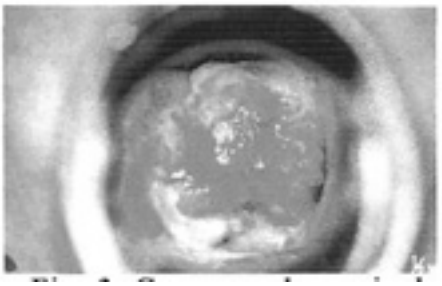

Fig. 4 B Endocervical cancer with infiltration of the parameters without the pelvic wall stage II

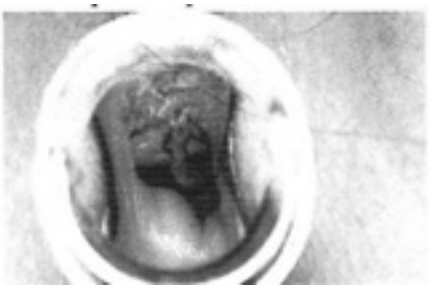

Fig. 5 A. Infiltrative cancer (also to the anterior wall of the vagina)

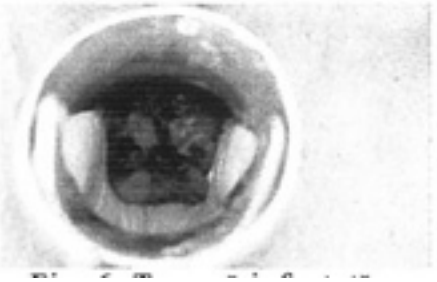

Fig. 5 B Infected tumour with necrosis (gangrene)

A cyto-diagnostic smear made regularly in a rhythmic manner for all the feminine population at risk at not only them, decreases considerably the incidence of the cervical neoplasm and also the mortality caused by this affection. Actually this is exactly the principle that is the basis for cyto-screening. The statement is based on studies performed in countries where the introduction of screening determined a decrease in the incidence of the cervical cancer to half (USA, Norway, Sweden) (2, 5, 6, 9, 12).

In order to have an active surveillance of the entire feminine population at risk the public health managers must collaborate with the general practitioners and especially with gynecologists because if there is a FCD collected “by principia” by every gynecopath-ologist does not satisfy the principles of a rhythmic surveillance (2). This is an important goal of our country in the future.

CONCLUSIONS

The cytological test has multiple benefits, also allowing the discovery and location of the feminine genital cancer in other places than the cervix (even if its precision decreases dramatically as the targeted segment is farther from the exocervix, endometrium, and endosalpinx).

The cytological examination proved to have exceptional qualities as a screening method and it has become the cornerstone of mass identification of the cervical cancer.

With all its accuracy, the cytological examination cannot replace the histopathologic examination and it remains just a means of diagnostic by suspicion, an intermediate step towards the diagnostic of certainty. But, in exchange, it becomes the main method of identifying the cervical cancer for the big groups of population, due to its practically unlimited applicability for mass actions (screening).

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