



DEPENDENCE OF CERVICAL CANCER ON GENETIC POLYMORPHISM AND INTERNATIONAL ONCOLOGICAL STATISTICAL ANALYSIS

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ABSTRACT

Cervical cancer-is a tumor disease of the lower part of the uterus, which is a derivative that grows from epithelial tissue. Cervical cancer has no specific symptoms, the disease often progresses without symptoms, and after reaching a certain level, bleeding before menstruation, pain in the abdomen and back, swelling in the lower body, problems with urination and diarrhea develop.

Diagnosis of the disease is carried out by means of visual inspection, colposcopy, biopsy for histological examination. Depending on the histological form and spread of the tumor, treatment is carried out using surgical light therapy, chemotherapy or all of them.

Cervical cancer accounts for 15% of all neoplastic diseases of the female genital organs, after breast cancer and endometrial cancer. While the majority of patients with this disease are women aged 40-50, today the disease is diagnosed in 40-year-olds and it is also found in younger people.

Factors leading to the development of cervical cancer:

Includes leukoplakia, erythroplakia, condyloma, polyps, chine erosion and cervit causes of cervical cancer - if a disease such as uterine cancer is detected, the cause of its development is problematic. doctors start the process by collecting the history of reproductive diseases in addition to diseases adapted to oncology. Among the factors that stimulate the development of cancer, according to oncologists:

Venous diseases; gonorrhea, syphilis, chlamydia, genital herpes;

Long-term treatment with preparations containing hormones;

Use of hormonal contraceptives;

Early sex;

Frequent changes in sexual partners cause changes in the vaginal flora, resulting in changes at the cellular level;

Protein components in male sperm can cause changes in the cells of the cervix.



Cervical cancer – stages. Cervical cancer, described above, begins to develop from certain types of tissue-shaped cells. At the same time, the process grows rapidly, covering neighboring organs and tissues. Directly for these reasons, the stages of pathology also differ. Each of them has its own clinical appearance, symptomatology. There are a total of 4 stages in the pathological period.

STEP 1. Cervical cancer of the 1st degree is characterized by solid localization, with clear borders. When describing this stage of the cancer process, doctors discuss the following features of the pathology:

The tumor is not behind the neck;

Cytological changes are weak and only microscopic diagnoses are made;

Metastasis can enter the cavity of the cervical canal up to 3-5 mm;

The size of the tumor is less than 4 cm.

STEP 2. Stage 2 cervical cancer is characterized by the release of malignant cells located at the border of the cervix and vagina. In such cases, the pelvic organs and the lower part of the vagina are not damaged. A pathological cell completely affects the parameters. Metastases can enter the environment. They are diagnosed by instrumental methods that allow to determine the amount, size and localization of the number of plants.

STEP 3. Cervical cancer is characterized by tumors and tumors of the small pelvic organs in the 3rd stage. When metastases spread to other organs and systems, their activity is disrupted. There is often a neoplasm on the outer walls of the small pelvis, in the lower third of the vagina. With a comprehensive examination of patients, disorders in the kidneys, a decrease in their functions are observed.

STEP 4. At this stage of the pathological process of cervical cancer, metastases are in almost all organs of the small pelvis; pumpkin, intestines, appendages. Cervical and uterine cancer develops. Later, with the development of pathology, it moves to the regional lymph nodes. Together with the blood, the transformed cell centers can reach distant body systems. In most cases, metastases are found in the brain, lungs, and liver at diagnosis.

Cervical cancer – diagnosis.

Colposcopy-helps to determine the condition of the wall on the vaginal side, the cervix and the uterine cavity;

Cytological examination of the material - it is taken from the surface of the mucous membrane and made microscopically;

The structure, morphology, changes in the structure of the cells taken from the biopsy-cervical neck;

Histological examination helps to determine the stage of pathology;

Ultrasounds-determines their forms and their number.

Methods of treatment.

Treatment of this disease is selected individually. The algorithm of the therapeutic process is directly related to the stage of pathology, the severity of symptoms, the presence of comorbidities.

Basics of therapy;

Surgical interventions

Radiation therapy



Chemotherapy.

The result of treatment depends on the following:

oncology stage

age of the patient

the presence of joint diseases of the reproductive system.

Cervical cancer prevention. The cervical cancer vaccine helps reduce the chance of developing the disease by suppressing the main cause of cancer, the papillomavirus.

From preparations when vaccinated;

Gardasil, cervarix.

Other preventative measures include:

scheduled medical examinations for women from the age of 21-25

normalization of metabolic processes

loyalty to one partner.

Dependence of uterine cancer on genetic polymorphism

Cervical cancer (CaCx) is the fourth most common cancer in women, and among all cancers, it is the seventh most common cancer worldwide. It is the leading cause of cancer-related death in rural and urban Indian women. Cervical cancer in women is increasing every year. The development of cervical cancer is associated with HPV infection, which is one of the identified factors associated with the appearance of cervical cancer lesions. Differences in clinical presentation, disease progression, and response to treatment differ between individuals with and without HPV infection, suggesting the role of specific genetic factors in the pathogenesis of the disease. Identification of these key factors at the molecular level may be an important link in approaches to disease control and/or to determine the importance of molecular markers for disease prognosis.

List of primer sequences of p53 gene from exon 4-9 and their annealing temperature.

S.No Exon Forward primer 5'-3' Reverse Primer 5'-3' Tm°C

1. 4 AATGGATGATTTGATGCTGTCCC GCCAAGTCTGTGACTTGCACG 59

2. 5 GCCAATTCTCCTAGCTCGC GATAGCGATGGTGAGCAGCT 58

3. 6 CCTCATCTTGGGCTGTGTT CACCTCTCATCATCCCCG 61

4. 7 TGGGAGTAGATGGAGCCTGG AGGGAGCACTAAGCGAGGTA 58

5. 8 CCTCTTTCCTAGCACTGCC GGCAGTGATGCCTCAAAGA 61

6. 9 CAATGGCTCCTGGTTGTAGC CACCTAATCTAAGGAACATCATA 57

Demographic and clinic-pathological profile of cervical cancer subjects.

Characteristics	Number of cases [%age]	
	HPV positive (N = 72) [84.70]	HPV negative (N = 13) [15.29]
<i>Age group</i>		
18-30 years	08 [11.11]	01 [7.69]
31-40 years	26 [36.11]	08 [61.53]
41-50 years	19 [26.38]	02 [15.38]
51-60 years	19 [26.38]	02 [15.38]



Characteristics	Number of cases [%age]	
	HPV positive (N = 72) [84.70]	HPV negative (N = 13) [15.29]
<i>Menopausal status</i>		
Pre-Menopausal	44 [61.11]	10 [76.92]
Post-Menopausal	28 [38.88]	03 [23.07]
<i>Histological type</i>		
Well differentiated SCC	43 [59.72]	07 [53.84]
Moderately differentiated SCC	21 [29.16]	04 [30.76]
Poorly differentiated SCC	08 [11.11]	02 [15.38]
<i>Stage</i>		
IIA	32 [44.44]	05 [38.46]
IIB	16 [22.22]	04 [30.76]
IIIA	09 [12.5]	02 [15.38]
IIIB	11 [15.27]	02 [15.38]
IV	04 [5.55]	00 [0.00]
<i>Gravida</i>	4.59 (Mean)	
HPV genotype		NA
HPV16	72 [100.00]	
HPV18	00 [0.00]	

Polymorphisms in Toll-like receptor (TLR) genes are associated with cervical cancer, but some inconsistencies have been found in the results. This study aims to investigate the role of polymorphisms in TLR genes in cervical cancer through meta-analysis and bioinformatics analysis. Meta-analysis results showed that +1196T (rs4986791 TLR4), +7764T (rs1927911 TLR4), -1486C (rs187084 TLR9) +2848A (rs352140 TLR9) allele carriers (rs352140 TLR9) -TL3019/-TL319/7C/C (rs5743836 TLR9) genotypes were associated with an increased risk of cervical cancer. Bioinformatics analysis showed that -1237T>C (rs5743836) and -1486T>C (rs187084) polymorphisms affect transcription factor binding sites (RELA, NFKB1, and THAP1) in the TLR9 gene, and +2848G>A (143) possible polymorphism alters the structure and stability of the TLR4 protein. In addition, significantly higher expressions of IL-1 β , IL-18, and TNF- α were observed in cervical cancer tissues compared to normal tissues using GEPIA.

These findings suggest that polymorphisms in TLR4 and TLR9 genes may affect intracellular signaling and consequently alter immune response patterns, leading to an increased risk of cervical cancer. Due to the importance of TLRs in research on cervical carcinogenesis, the relationship between polymorphisms in TLR2, TLR3, TLR4, and TLR9 genes and cervical cancer has been investigated, but the results are still inconsistent. Thus, this study



aimed to investigate the role of polymorphisms in TLR genes in cervical cancer through meta-analysis and bioinformatics analysis.

Most women who recover from this disease can return to their previous condition. It is not recommended to plan pregnancy only after this disease.

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