

# Description of Immuno-Morphological Characteristics of Cervical Cancer and their Interrelationships

**Abraykulov Ilhom Ramazonovich, Eshmuradov Elbek Abduqayumovich**  
Tashkent Medical Academy Termiz branch

**Received:** 2024, 15, Mar  
**Accepted:** 2025, 21, Apr  
**Published:** 2025, 26, May

**Annotation:** Human papillomavirus (HPV) is the leading cause of cervical precancerous lesions (CPC) among women of reproductive age worldwide, with a mortality rate of 75% from the disease and its complications.

Copyright © 2025 by author(s) and Bio Science Academic Publishing. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).  
<http://creativecommons.org/licenses/by/4.0/>



Open Access

According to the World Health Organization, cervical cancer is the second most common cancer among women, and 1 in 500,000 women are diagnosed with cervical cancer each year. This figure corresponds to 15-25 new cases per 100,000 population in developed countries. 270,000 women die from this disease every year. The problems of screening and prevention of precancerous cervical diseases are urgent, and this is evidenced by the improvement of laboratory algorithms based on the analysis of biochemical and immunoenzyme markers. Epidemiological data show that the incidence of cervical cancer in women is increasing worldwide, and prevention of this condition and immunological screening of the disease are one of the urgent problems facing oncologists and gynecologists today.

It is estimated that by 2050, about one million women will be diagnosed with cervical cancer annually. In developed countries, the mortality rate from this disease is 80%. In most countries, the incidence of cervical cancer is also observed in women under 30 years of age. This incidence rate is recorded among women aged 65-69, reaching 68.7 cases per 100,000 women. In 20-25% of cases, the disease is diagnosed in women of reproductive age, and in 5% in women under 40

years of age. The urgency of the problem of choosing a method of treating benign tumors of the cervix associated with various viruses is due not only to the high incidence in the structure of gynecological diseases among women of reproductive age, but also to the fact that this pathology leads to a decrease in the ability to perform reproductive functions.

A radical overhaul of the healthcare system in our country, with special attention paid to early diagnosis of diseases and reducing their complications, is one of the urgent problems of medicine today. Despite the identification of risk factors for cancer in women, early diagnosis using modern clinical, laboratory and instrumental examinations, the incidence of cervical cancer has increased by 12% over the past decade. It is necessary to organize branches of screening centers and periodically conduct mass early screening of women of reproductive age to detect and prevent various infectious and sexually transmitted diseases at the primary stage.

Uzbekistan is implementing comprehensive reforms to develop the healthcare sector, social protection of the population, and adaptation of the healthcare system to world standards, in particular, to improve early detection and prevention methods for cervical cancer in women. At the same time, evidence-based results on optimizing cervical cancer screening are required to improve the treatment and preventive care provided.

Therefore, the development of new therapeutic methods and the improvement of existing ones in the treatment of this pathology have not lost their relevance.

involves studying the immune and cytokine status of patients with thyroid diseases and a comparative evaluation of the results obtained .

This study is based on the Decree of the President of the Republic of Uzbekistan No. PF-6110 dated November 12, 2020 "On measures to introduce completely new mechanisms into the activities of primary medical and sanitary care institutions and further increase the effectiveness of reforms in the healthcare system" and the Decree of the President of the Republic of Uzbekistan No. PF - 60 dated January 28 , 2022 " On the development of a new Uzbekistan in 2022-2026 " "On the Development Strategy" , Resolutions No. PP-4887 dated November 10, 2020 "On Additional Measures to Ensure Healthy Nutrition of the Population" and No. PP-4891 dated November 12, 2020 "On Additional Measures to Ensure Public Health by Further Increasing the Efficiency of Medical Preventive Work", as well as other regulatory legal acts related to this activity, will to a certain extent serve to implement the tasks set forth in

The immuno-morphological system plays a significant role in the pathogenesis of cervical cancer and plays a key role in the formation and development of the disease.

A number of scientific studies are being conducted in Europe and Central Asia to optimize methods of preventing cervical cancer. The issue of a single terminology and a general classification of pathologies of the cervix (Cervix), vagina and vulva in women of reproductive age has not yet been resolved by the international medical community. The importance of the problem of benign diseases of the cervix is aggravated by its "rejuvenation" (Gumilevskiy B.Yu. 2019). Modern studies confirm that highly oncogenic HPV is an undoubted etiopathogenetic risk factor for the appearance of atypical cells in the mucous layer of the stratified squamous epithelium of the cervix (SCC) (Savelyeva G. M., 2017). HPV persistence may play an important role in the malignancy of SCC of the cervix. The formation and development of dysplasia is associated not only with OPV, but also with metabolic diseases, in particular, with disorders of the folate cycle (Zhirova N. V., 2017).

Uterus neck cancer (BBS) in the world the most many common gynecological oncological from diseases one is considered the world health to keep organization to the information according to , every year for about 600 thousand close new situation record , and 85 % of cases developing countries to his/her credit correct will come BBS mainly human papilloma virus (HPV) oncogene types with related , and their 16th and 18th types are common from 70% of cases the rest organization (WHO, 2021 ).

### Immune of the system importance

Immunity of the disease development and in the propaganda role big to the point In particular , CD4+ and CD8+ T - lymphocytes to grow against on defense main role plays CD8+ cytotoxic lymphocytes tumor cells no in doing CD4+ cells participate and them activates . That's it with together , PD-1/PD-L1 signaling system through tumor cells immune out of control escape to the ability owner will be (Chen & Mellman, 2017).

Most studies are devoted to studying the role of HPV in precancerous pathological processes of the cervix, as well as in the development and progression of cancer (Roik EE 2019; Zueva T.P., 2021).

Scientists of our country study the problems of diagnosing cervical cancer and precancerous diseases among women, in particular, according to Rakhmanova J.A. (2019), the incidence of cervical cancer in the world is 7.6 per 100,000 women. The lowest rate was recorded in 2011 - 5.4 per 100,000 women, and the highest rate was recorded in 2009 and 2018 - 8.5 per 100,000 women. This confirms the need for timely detection of cervical pathology and reducing risk factors for the development of cervical pathologies in women of all ages. The studies of local scientists devoted to the pathogenesis of cervical intraepithelial neoplasia (CIN), the role of papillomavirus infection, screening for benign tumors and precancerous diseases of the cervix in the Uzbek female population did not remain outside the scope of the studied problem (Kattakhodjaeva M.Kh., 2020; Kalandarova A.I., 2021; Solieva R.B., 2022; Mamadalieva G.I., 2022; Karshieva E.E., 2023). Scientific research has been conducted on a number of works on the effective diagnosis of various obstetric and gynecological pathologies in women, however, diagnostic measures for precancerous diseases of the cervix in women are not pathogenetically justified.

It should be noted that, despite the existence of numerous scientific studies on this problem, there are no protocols in the literature for screening and early diagnosis of benign cervical diseases in women. The above-mentioned issues, the high frequency of cervical pathology, and the specific features of the course of the disease require a detailed study of this problem and justify the relevance of the topic of this dissertation.

**The aim of the study was** to identify immunological and morphological characteristics of cervical cancer in women and to develop diagnostic and prognostic markers by assessing the correlations between them.

### **Tasks of the research:**

determination of morphological and morphometric parameters of the cervix in those diagnosed with cervical cancer, assessment of interrelationships between them;

To determine the humoral component of the immune system and cytokine status in women with cervical cancer, and to assess the relationships between them;

To identify immuno-morphological characteristics of women diagnosed with cervical cancer and assess the correlations between them;

development of diagnostic markers and prognostic predictors by determining the immunological and morphological features of cervical cancer and evaluating their interrelationships.

**The study subjects** will be 120 women with cervical squamous cell intraepithelial neoplasia and 30 healthy women from the Bukhara branch of the Republican Specialized Scientific and Practical Medical Center for Oncology and Radiology and the Bukhara city standard diagnostics during 2024-2025.

**a subject of research** , blood serum, vaginal and cervical smears, medical records, and instrumental and laboratory examination results are obtained from patients and practically healthy women to substantiate the diagnosis of cervical pathology based on scientific research.

**Research methods.** To carry out the planned research, clinical, polymerase chain reaction (human papillomavirus (HPV) oncotypes, femoflor-16), pH-metry, immunological (IL-4, IL-6, IL-10, TNF- $\alpha$ , .....), serological, biochemical (homocysteine), ultrasound and statistical methods will be used.

**Expected results of the study.**

the need to check the state of the organism's morphological, immune-cytokine system when the disease lasts for a long time is revealed during the research.

The influence of risk factors on the level of cervical squamous intraepithelial neoplasia is assessed, and new approaches to diagnosing the disease, computer programs, and algorithms for reducing their impact on the development of this pathology, forming a healthy lifestyle, and timely diagnosis and treatment of women are being developed.

**Application of research results.** The results of scientific research work are published in republican and foreign scientific publications as scientific articles and theses. A patent for a utility model, a methodological recommendation, programs for EHM are formalized and submitted for approval. Research results are presented at scientific-practical conferences, congresses, symposia.

Based on the results of scientific research, educational and methodological manuals will be formed, which will be used in the educational process of departments in these areas of higher medical educational institutions of the republic (undergraduate and postgraduate), and will be recommended as a new resource for students to carry out independent work.

**REFERENCES USED**

1. World Health Organization. (2021). Cervical cancer. <https://www.who.int/news-room/fact-sheets/detail/cervical-cancer>
2. Crosbie, EJ, Einstein, MH, Franceschi, S., & Kitchener, HC (2013). Human papillomavirus and cervical cancer. *The Lancet*, 382(9895), 889–899.
3. Wentzensen, N., Schiffman, M., Palmer, T., & Arbyn, M. (2016). Triage of HPV positive women in cervical cancer screening. *Journal of Clinical Virology*, 76, S49–S55.
4. Chen, DS, & Mellman, I. (2017). Elements of cancer immunity and the cancer-immune set point. *Nature*, 541(7637), 321–330.
5. Pie, EC (2016). Cervical adenocarcinoma: diagnosis of human papillomavirus-positive and human papillomavirus-negative tumors. *Archives of Pathology & Laboratory Medicine*, 141(12), 1653–1667.
6. Zigras, T., et al. (2019). The prognostic significance of PD-L1 expression in cervical cancer. *Gynecologic Oncology*, 154(1), 56–60.
7. Doorbar, J. (2012). The E4 protein; structure, function and patterns of expression. *Virology*, 445(1–2), 80–98.
8. Uzbek Oncological Research Center. (2020). Cervical cancer: clinical description and treatment methods. Tashkent: Publishing House of the USSR.
9. Uzbek Journal of Oncology. (2021). Determining the clinical prognosis of cervical cancer based on the results of immunomorphological analysis. *Uzbek Journal of Oncology*, No. 1(12), 23–30.
10. Solomon, D., Davey, D., Kurman, R., et al. (2014). The 2001 Bethesda System: terminology for reporting results of cervical cytology. *JAMA*, 287(16), 2114–2119.
11. Berek, JS, & Hacker, NF (2015). Practical gynecologic oncology. 5th ed. Lippincott Williams & Wilkins.

12. Singh, N., et al. (2020). Association of Ki-67 expression with clinicopathological parameters in cervical cancer. *Asian Pacific Journal of Cancer Prevention*, 21(3), 683–688.
13. Halford, JA, et al. (2018). CD8+ T-cell infiltration and survival in cervical cancer. *International Journal of Gynecological Cancer*, 28(7), 1232–1239.
14. Arbyn, M., Weiderpass, E., Bruni, L., et al. (2020). Estimates of incidence and mortality of cervical cancer in 2018: a worldwide analysis. *The Lancet Global Health*, 8(2), e191–e203.
15. Denny, LA, et al. (2015). Human papillomavirus, HPV-related diseases, and vaccines. *Cancer Epidemiology, Biomarkers & Prevention*, 24(4), 643–652.
16. Kim, JH, et al. (2019). Prognostic significance of PD-L1 expression in patients with cervical squamous cell carcinoma. *PLoS ONE*, 14(4): e0214355.
17. Gien, LT, & Covens, A. (2011). Chemoradiotherapy for locally advanced cervical cancer. *Clinical Oncology*, 23(6), 407–419.
18. Sahebali, S., et al. (2012). Immunohistochemical markers in cervical cancer. *Histology and Histopathology*, 27(12), 1571–1583.
19. Ministry of Health of the Republic of Uzbekistan. (2023). Diagnostic and treatment standards for oncogynecological diseases. Tashkent.
20. Tashkent Medical Academy. (2021). Immunohistochemical diagnostics of HPV-related cervical cancer. Scientific and practical manual.
21. Zakhidova, SR, & Abdurakhmonova, MA (2020). Clinical significance of p16 and Ki-67 biomarker expression in cervical cancer. *Journal of Medicine of Uzbekistan*, No. 4(100), 45–50.
22. Fairlay, J., et al. (2019). *Global Cancer Observatory: Cancer Today*. Lyon, France: International Agency for Research on Cancer.
23. Cancer Genome Atlas Research Network. (2017). Integrated genomic and molecular characterization of cervical cancer. *Nature*, 543(7645), 378–384.
24. Liu, Y., & Dong, Y. (2022). Prognostic value of tumor-infiltrating lymphocytes and PD-L1 expression in cervical carcinoma. *Frontiers in Oncology*, 12, 877965.
25. Bosch, FX, & de Sanjosé, S. (2018). The epidemiology of human papillomavirus infection and cervical cancer. *Disease Markers*, 2018, 1–7.
26. Jastaniah, W., et al. (2016). Tumor infiltrating lymphocytes in cervical cancer: their role in pathogenesis and therapy. *Current Oncology Reports*, 18(11), 67.
27. Uzbek Institute of Oncology. (2022). Clinical observations and morphological analyses of cervical cancer. Collection of scientific works.