



New Day in Medicine
Новый День в Медицине

NDM



TIBBIYOTDA YANGI KUN

Ilmiy referativ, marifiy-ma'naviy jurnal



AVICENNA-MED.UZ



ISSN 2181-712X.
EISSN 2181-2187

6 (92) 2026

Сопредседатели редакционной коллегии:

**Ш. Ж. ТЕШАЕВ,
А. Ш. РЕВИШВИЛИ**

Ред. коллегия:
М.И. АБДУЛЛАЕВ
А.А. АБДУМАЖИДОВ
Р.Б. АБДУЛЛАЕВ
Л.М. АБДУЛЛАЕВА
А.Ш. АБДУМАЖИДОВ
М.А. АБДУЛЛАЕВА
Х.А. АБДУМАДЖИДОВ
Б.З. АБДУСАМАТОВ
У.О. АБИДОВ
М.М. АКБАРОВ
Х.А. АКИЛОВ
М.М. АЛИЕВ
С.Ж. АМИНОВ
Ш.Э. АМОНОВ
Ш.М. АХМЕДОВ
Ю.М. АХМЕДОВ
С.М. АХМЕДОВА
Т.А. АСКАРОВ
М.А. АРТИКОВА
Д.Т. АШУРОВА
Ж.Б. БЕКНАЗАРОВ (главный редактор)
Е.А. БЕРДИЕВ
Б.Т. БУЗРУКОВ
Р.К. ДАДАБАЕВА
М.Н. ДАМИНОВА
К.А. ДЕХКОНОВ
Э.С. ДЖУМАБАЕВ
А.А. ДЖАЛИЛОВ
Н.Н. ЗОЛотова
А.Ш. ИНОЯТОВ
С. ИНДАМИНОВ
А.И. ИСКАНДАРОВ
А.С. ИЛЪЯСОВ
Э.Э. КОБИЛОВ
А.М. МАННАНОВ
Д.М. МУСАЕВА
Т.С. МУСАЕВ
М.Р. МИРЗОЕВА
Ф.Г. НАЗИРОВ
Н.А. НУРАЛИЕВА
Ф.С. ОРИПОВ
Б.Т. РАХИМОВ
Х.А. РАСУЛОВ
Ш.И. РУЗИЕВ
С.А. РУЗИБОЕВ
С.А. ГАФФОРОВ
С.Т. ШАТМАНОВ (Кыргызстан)
Ж.Б. САТТАРОВ
Б.Б. САФОВЕВ (отв. редактор)
И.А. САТИВАЛДИЕВА
Ш.Т. САЛИМОВ
Д.И. ТУКСАНОВА
М.М. ТАДЖИЕВ
А.Ж. ХАМРАЕВ
Б.Б. ХАСАНОВ
Д.А. ХАСАНОВА
Б.З. ХАМДАМОВ
Э.Б. ХАККУЛОВ
Г.С. ХОДЖИЕВА
А.М. ШАМСИЕВ
А.К. ШАДМАНОВ
Н.Ж. ЭРМАТОВ
Б.Б. ЕРГАШЕВ
Н.Ш. ЕРГАШЕВ
И.Р. ЮЛДАШЕВ
Д.Х. ЮЛДАШЕВА
А.С. ЮСУПОВ
Ш.Ш. ЯРИКУЛОВ
М.Ш. ХАКИМОВ
Д.О. ИВАНОВ (Россия)
К.А. ЕГЕЗАРЯН (Россия)
DONG JINCHENG (Китай)
КУЗАКОВ В.Е. (Россия)
Я. МЕЙЕРНИК (Словакия)
В.А. МИТИШ (Россия)
В.И. ПРИМАКОВ (Беларусь)
О.В. ПЕШИКОВ (Россия)
А.А. ПОТАПОВ (Россия)
А.А. ТЕПЛОВ (Россия)
Т.Ш. ШАРМАНОВ (Казахстан)
А.А. ЩЕГОЛОВ (Россия)
С.Н. ГУСЕЙНОВА (Азербайджан)
Prof. Dr. KURBANHAN MUSLUMOV (Azerbaijan)
Prof. Dr. DENIZ UYAK (Germany)

ТИББИЁТДА ЯНГИ КУН НОВЫЙ ДЕНЬ В МЕДИЦИНЕ NEW DAY IN MEDICINE

*Илмий-рефератив, маънавий-маърифий журнал
Научно-реферативный,
духовно-просветительский журнал*

УЧРЕДИТЕЛИ:

**БУХАРСКИЙ ГОСУДАРСТВЕННЫЙ
МЕДИЦИНСКИЙ ИНСТИТУТ
ООО «ТИББИЁТДА ЯНГИ КУН»**

Национальный медицинский
исследовательский центр хирургии имени
А.В. Вишневского является генеральным
научно-практическим
консультантом редакции

Журнал был включен в список журнальных
изданий, рецензируемых Высшей
Аттестационной Комиссией
Республики Узбекистан
(Протокол № 201/03 от 30.12.2013 г.)

РЕДАКЦИОННЫЙ СОВЕТ:

М.М. АБДУРАХМАНОВ (Бухара)
Г.Ж. ЖАРЫЛКАСЫНОВА (Бухара)
А.Ш. ИНОЯТОВ (Ташкент)
Г.А. ИХТИЁРОВА (Бухара)
Ш.И. КАРИМОВ (Ташкент)
У.К. КАЮМОВ (Тошкент)
Ш.И. НАВРУЗОВА (Бухара)
А.А. НОСИРОВ (Ташкент)
А.Р. ОБЛОКУЛОВ (Бухара)
Б.Т. ОДИЛОВА (Ташкент)
Ш.Т. УРАКОВ (Бухара)

6 (92)

2026

Июнь

www.bsmi.uz

<https://newdaymedicine.com>

E: ndmuz@mail.ru

Тел: +99890 8061882

Received: 20.05.2026, Accepted: 06.06.2026, Published: 10.06.2026

UDC 616.98:578.827:618.146-006-091:612.018

**FEATURES OF THE CLINICAL COURSE AND PARACLINICAL CHARACTERISTICS
OF CERVICAL DISEASES DEPENDING ON INFECTION
OF PATIENTS WITH HPV TYPES 16/18**

Khamdamova M.T. <https://orcid.org/0000-0003-3128-6120> e-mail: hamdamova.muhayyoxon@bsmi.uz
Khamidova Sh.Sh. <https://orcid.org/0009-0006-7869-6644> e-mail: shaxloxamidova1988@gmail.com

Bukhara State Medical Institute named after Abu Ali ibn Sina, Uzbekistan, Bukhara, st. A. Navoi.
1 Tel: +998 (65) 223-00-50 e-mail: info@bsmi.uz

✓ **Resume**

Based on the conducted analysis, the effectiveness and feasibility of using a set of modern non-invasive methods for the early diagnosis of cervical lesions associated with the human papillomavirus were substantiated and determined, allowing for the determination of the scope and timing of both diagnostic and therapeutic measures.

In patients with pathological changes in the cervix, infected with human papillomavirus types 16 and 18, compared with uninfected patients, colposcopic and cytological signs of severe intraepithelial neoplasia are significantly more often detected.

Keywords: cervix, human papillomavirus, intraepithelial neoplasia.

**ОСОБЕННОСТИ КЛИНИЧЕСКОГО ТЕЧЕНИЯ И ПАРАКЛИНИЧЕСКОЙ
ХАРАКТЕРИСТИКИ ЗАБОЛЕВАНИЙ ШЕЙКИ МАТКИ В ЗАВИСИМОСТИ ОТ
ИНФИЦИРОВАНИЯ ПАЦИЕНТОК ВПЧ 16/18 ТИПОВ**

Хамдамова М. Т. <https://orcid.org/0000-0003-3128-6120> e-mail: hamdamova.muhayyoxon@bsmi.uz
Хамидова Ш.Ш. <https://orcid.org/0009-0006-7869-6644> e-mail: shaxloxamidova1988@gmail.com

Бухарский государственный медицинский институт имени Абу Али ибн Сины, Узбекистан,
г. Бухара, ул. А. Навои. 1 Тел: +998 (65) 223-00-50 e-mail: info@bsmi.uz

✓ **Резюме**

На основании проведенного анализа обоснована и определена эффективность и целесообразность использования комплекса современных неинвазивных методов ранней диагностики поражений шейки матки ассоциированных с вирусом папилломы человека, позволяющих определить объем и сроки проведения как диагностических, так и лечебных мероприятий.

У пациенток с патологическими изменениями на шейке матки, инфицированных вирусом папилломы человека 16 и 18 типов, по сравнению с неинфицированными, достоверно чаще выявляются кольпоскопические и цитологические признаки тяжелой интраэпителиальной неоплазии.

Ключевые слова: шейка матки, вирус папилломы человека, внутри эпителиальная неоплазия.

**OPV 16/18 TURLARI BILAN BEMORLARNING INFEKSIYASIGA QARAB, BACHADON
BO'YNI KASALLIKLARINING KLINIK KECHISINING XUSUSIYATLARI VA PARAKLINIK
XUSUSIYATLARI**

Khamdamova M.T. <https://orcid.org/0000-0003-3128-6120> e-mail: hamdamova.muhayyoxon@bsmi.uz
Khamidova Sh.Sh. <https://orcid.org/0009-0006-7869-6644> e-mail: shaxloxamidova1988@gmail.com

Abu Ali ibn Sino nomidagi Buxoro davlat tibbiyot instituti, O'zbekiston, Buxoro sh. A. Navoiy kochasi
1 Tel: +998 (65) 223-00-50 e-mail: info@bsmi.uz

✓ **Rezyume**

O'tkazilgan tahlil asosida, inson papillomavirusi bilan bog'liq bo'lgan bachadon bo'yni shikastlanishlarini erta tashxislash uchun zamonaviy invaziv bo'lmagan usullar to'plamidan foydalanish samaradorligi va maqsadga muvofiqligi asoslandi va aniqlandi, bu esa diagnostika va terapevtik choralarning ko'lami va vaqtini aniqlash imkonini berdi.

Bachadon bo'yni patologik o'zgarishlari bo'lgan, 16 va 18-turdagi inson papillomavirusi bilan kasallangan bemorlarda, infeksiyalanmagan bemorlarga nisbatan, og'ir intraepitelial neoplazianing kolposkopik va sitologik belgilari sezilarli darajada ko'proq aniqlanadi.

Kalit so'zlar: bachadon bo'yni, inson papillomavirusi, intraepitelial neoplaziya.

Relevance

Detection and surgical treatment of patients with pathological changes in the cervix have long been the only way to prevent cervical cancer [1,3,5,7,9]. It has now been proven that highly oncogenic human papillomavirus (HPV) types, primarily types 16 and 18, cause cervical intraepithelial neoplasia and cervical cancer [WHO]. Vaccination appears to be the most promising method for preventing cervical cancer, but is only possible in women with unified status. For patients infected with the human papillomavirus, the only real way to prevent the development of intraepithelial neoplasia, and consequently cervical cancer, is through the detection of HPV infection—a highly reliable, accessible, and informative method. The sharp increase in human papillomavirus (HPV) infection in the population, its high contagiousness, and the ability of this pathogen to cause malignant cervical pathology pose a challenge to gynecological practice [2,4,6,8,10].

According to WHO, CDC, and European guidelines, destructive methods are used to treat both the clinical manifestations of HPV infection and associated diseases. To date, there is no consensus on the management of LSIL due to the regression of this disease and frequent complications of surgical intervention [3,13]. The advisability of prescribing immunomodulatory drugs remains controversial [1,11,12]. There are a sufficient number of studies examining the effectiveness of immunotherapy for papillomavirus infection, but its selection is often empirical, without taking into account the immunological status of the body. In this regard, a comprehensive study of the state of the immune system is of interest, in particular, the determination of lymphoid cells, the phagocytic activity of neutrophilic leukocytes, and the concentration of immunoglobulins in the peripheral blood during the development of the infectious process. Despite a significant body of research substantiating the rationale for various destructive interventions on the cervix in cases of HPV persistence for more than two years, the issue of reducing recurrence through combined immunocorrection and destructive treatment remains the most significant [2,14,15,16,17,22]. Therefore, research aimed at identifying rational diagnostic methods and a substantiated differentiated approach to treating cervical diseases associated with HPV infection in women of reproductive age is relevant.

Squamous intraepithelial lesions (SIL) of the cervix are a leading cause of gynecological pathology among women of reproductive age [4,18]. The human papillomavirus (HPV) plays a major role in the development of cervical SIL. According to the literature, the peak incidence of HPV infection occurs between the ages of 15 and 30 years and accounts for 18.6%. After age 30, HPV infection declines (9.9%), while the incidence of SIL and cervical cancer increases [4,19, 20, 93, 167, 195]. In our country, over the past decade, the number of newly identified cases of cervical cancer has increased by 23.9%, which is a serious threat to the reproductive health of the female population [1,21, 23].

The results of numerous publications indicate that women under 30 years of age are characterized by a transient infection, with self-elimination of the human papillomavirus reaching 90%, while women over 30 years of age experience a persistent course of infection [1,24]. It is known that prolonged persistence of human papillomavirus infection (HPV) for 2 years or more is a risk factor for the development of cervical cancer. However, to date, there is not a single effective personalized diagnostic method capable of predicting the course of cervical SIL in a specific patient with a clear indication of the time and duration of the process [4]. The rationale for using currently available diagnostic methods is ambiguous due to their different diagnostic sensitivity and specificity. The lack of universally accessible and highly effective methods for diagnosing and predicting cervical SIL often increases unnecessary, often repeated, aggressive surgical procedures on the cervix and associated complications [3,7,24].

From a clinician's perspective, the need for timely diagnosis and prediction of the severity of cervical SIL is not only a medical but also a socio-demographic problem of our time.

Of undoubted interest is the prevalence of this virus in patients with underlying and precancerous cervical diseases, a common risk group for carcinogenesis in Uzbekistan. We found no studies on the incidence of infection, clinical features, and paraclinical examination results in patients with endocervicosis, cervicitis, and leukoplakia, which are common in the population, compared to patients with neoplasia and intraepithelial cervical cancer.

The results of such comparative studies will allow us to evaluate the feasibility of screening these patients for human papillomavirus infection and subsequent treatment. This approach will, on the one hand, help prevent cervical intraepithelial neoplasia in these patients and, on the other, reduce the number of unnecessary surgical interventions in women of childbearing age.

The aim of the study was to improve the effectiveness of intraepithelial neoplasia prognosis and detection of preventive treatment for cervical epithelial infection with oncogenic types of human papillomavirus in patients with underlying cervical diseases.

Materials and methods

To address the objectives of the study, 168 women aged 16 to 66 years were included in the study. Three clinical groups were formed based on the condition of the cervix of the examined women: Study Group I included 100 patients with underlying and precancerous cervical diseases; Study Group II included 18 patients with a newly diagnosed cervical cancer in situ. The control group consisted of 50 women currently free of pathological changes in the cervical epithelium, selected by a lottery based on the results of a preventive examination. Depending on the presence or absence of high-risk human papillomaviruses (HPVs) in the cervical canal of the examined women (16/18), all patients were divided into subgroups "A" (virus not detected) and "B" (virus detected).

The main study group 1, based on the nosological form of cervical disease, was represented by underlying cervical pathology (73.0%), including simple and proliferative endocervicosis (32.0%), endocervicitis (26.0%), leukoplakia (12.0%), glandular polyps (3.0%), and cervical epithelial dysplasia (27.0%). The clinical examination included a standardized survey, including a clinical, anamnestic, and laboratory-instrumental examination questionnaire for women. This questionnaire, developed by us during our work, recorded the results of a gynecological examination, as well as colposcopic, cytological, and morphological studies, as well as HPV typing using the polymerase chain reaction (PCR) method. Physical health was assessed through anamnesis collection and medical reports from related specialists. Cytological examination of cervical scrapings was assessed using the Bethesda system [2024], and the staining method was according to the Romanovsky-Giemsa method. General and extended colposcopy were performed using a Leisegang colposcope (Germany), providing 7x, 15x, and 30x magnification. In the International Evaluation of Colposcopic Classification of Pictures (updated, used by the International Association of Cervical Pathology and Colposcopy in Barcelona, 2023).

Histological specimens were prepared using a HistoEmbedder apparatus and stained with hematoxylin and eosin using the traditional method. The obtained results were processed using standard variation statistics. The significance of differences between mean parameter values was determined using Student's t-test and Fisher's exact test. For small group sizes, nonparametric statistics were used, including Spearman's rank correlation coefficient (p).

Results and discussion

The mean age between the study groups did not differ significantly. More than half of the patients (59.3%) were of active reproductive age (20-39 years). The qualitative and quantitative characteristics of extragenital and gynecological diseases did not differ significantly between the comparison subgroups. No statistically significant differences were found in the analysis of menstrual function. We assessed existing risk factors in the women examined to further determine their impact on the occurrence of infection with highly oncogenic types of human papillomavirus, which is of great importance for prognostication and preventive measures to prevent the development of neoplastic changes in the cervical epithelium. In women aged 20-29 years, the frequency of HPV detection significantly increased (25.4%) and continued to increase, reaching its maximum in the 30-39 age group (39.0%), although in

women over 40 years of age, the frequency of infection decreased slightly (23.8%), remaining significantly higher than in women under 20 years of age ($p < 0.01$).

A burdened obstetric history was noted in 71.3% of patients in the study group, 66.7% in the study group, and 75.0% in the control group. The questionnaire results were used to examine the contraceptive methods used by women in the study groups. Intrauterine contraception was significantly more common among patients with newly diagnosed cervical cancer in situ (38.7%) compared to this method among patients with underlying cervical diseases (12.5%) ($p < 0.05$). Patients with benign cervical diseases used all methods, with a non-significant predominance of COCs (28.4%). Healthy women significantly used COCs (44.4%) and barrier methods (28.9%) more often ($p < 0.05$). We examined the relationship between the incidence of HPV types 16/18 and the contraceptive methods used. The use of intrauterine contraception (IUD) and no contraception were significantly more common among HPV-infected patients (14.3% and 38.8%) than among HPV-uninfected patients (1.7% and 24.6%) ($p < 0.01$). Barrier methods of contraception were significantly more common among HPV-uninfected patients (28.9%) than among HPV-infected patients (14.2%) ($p < 0.01$).

No statistically significant differences were found in the frequency of destructive treatments for cervical pathology and the qualitative and quantitative characteristics of patient complaints, depending on the type of human papillomavirus infection. When evaluating the results of the cytological examination, we used the Bethesda classification, the basis for which was the clinical, morphological and virological results of the study of cervical pathology.

In addition to koilocytic atypia, cytological examination reveals acanthosis, basal cell proliferation, metaplasia, and hyper-, para-, and dyskeratosis of the superficial epithelial layers.

Such smears and scrapings were found in 31.9% of patients with a positive HPV DNA test, which is significantly higher than the detection of identical cytological signs of papillomavirus infection in patients with cervical diseases and negative HPV testing (16.9%) ($p < 0.01$).

It is believed that as cervical intraepithelial neoplasia progresses, the severity of koilocytic atypia decreases, and signs of malignancy, i.e., dyskaryosis, appear.

Cytological examination revealed changes associated with the inflammatory process: enlarged and pale nuclei, cytoplasmic vacuolization, multinucleation, numerous leukocytes, as well as histiocytes and lymphocytes. These changes were observed insignificantly more frequently in patients in subgroup "A" (47.7% of cases) compared to identical cytological changes in patients in subgroup "B" (38.9% of cases).

Thus, our cytological examination of cervical smears and scrapings demonstrates a significant predominance of signs of human papillomavirus infection, severe neoplasia, and cervical cancer in situ in the presence of high-oncogenic HPV infection, compared to a negative HPV DNA test ($p < 0.01$).

Chronic cervicitis was diagnosed in 32.0% of cases in subgroup A, a histological finding significantly higher than the 8.5% rate in subgroup B ($p < 0.01$). This is consistent with the clinical characteristics of cervical diseases depending on the presence or absence of HPV and suggests that HPV infection and persistence do not result in significant inflammatory changes, unlike other genital infections.

Thus, in patients with cervical pathology, infection with HPV types 16/18 is associated with a significant predominance of colposcopic and cytological factors for malignancy, with significantly less pronounced clinical and morphological inflammatory changes in the cervix.

Conclusion

1. In patients with cervical pathology, the severity of colposcopic and cytological characteristics of intraepithelial neoplasia directly correlates with the frequency of cervical epithelial infection with human papillomavirus types 16 and 18.

2. Dynamic dispensary observation of all patients with identified high-oncogenic risk human papillomaviruses is mandatory: in the case of latent infection, once every 6 months; in the case of subclinical and clinical forms of papillomavirus infection, cervical intraepithelial neoplasia of mild and moderate severity, adequate etiopathogenetic therapy (antiviral, antioxidant).

LIST OF REFERENCES:

1. Abakumova TV, Gening TP, Dolgova DR, Antoneeva II, Peskov AB, Gening SO. Phenotype of circulating neutrophils at different stages of cervical neoplasia. *Med Immunol (Russia)*. 2019;21(6):1127-1138.
2. Aminodova IP, Posiseeva LV, Petrova OA. Reproductive function of patients with cervical dysplasia: possibilities of correction. *Research'n Practical Medicine Journal*. 2015:32.
3. Khamidova ShSh, Khamdamova MT. Predicting the risk of developing cervical intraepithelial neoplasia associated with human papillomavirus infection. *New Day in Medicine*. 2026;5(91):395-398.
4. Khamdamova MT, Khamidova ShSh. Analysis of the microbiotope of cervicovaginal discharge in women with chronic cervicitis and squamous cell intraepithelial lesions of the cervix. *New Day in Medicine*. 2026;5(91):399-403.
5. Borovkova LV, Ionova EV, Pershin DV, Ignatev AA. Early diagnosis of cervical diseases. *Medical Almanac*. 2018;(6):80-83.
6. Khamdamova MT, Kuryazova GK. Sonoelastography in the diagnosis of endometrial cancer. *New Day in Medicine*. 2026;5(91):267-270.
7. Khamdamova MT, Xalilova MT. Morphological variants of tissue reaction of the cervical epithelium in human papillomavirus infection in women of reproductive age. *New Day in Medicine*. 2026;4(90):491-494.
8. Khamdamova MT, Khakimboeva KA. Ectopic pregnancy: a new look at the problem. *New Day in Medicine*. 2025;11(85):76-80.
9. Khamdamova MT, Khamidova ShSh. Anthropometric characteristics of female patients with HPV-associated cervical squamous cell lesions of low degree depending on the expression of oncoprotein P16. *Int J Curr Microbiol App Sci*. 2026;15(5):128-133. doi:10.20546/ijcmas.2026.1505.017.
10. Khamdamova MT, Kuryazova GK. Some morphological and immunohistochemical features of different histotypes of uterine cancer. *Int J Curr Microbiol App Sci*. 2026;15(5). doi:10.20546/ijcmas.2026.1505.xx.
11. Khamdamova MT, Askarova ZZ, Xalilova MT. Morphological criteria for HPV-associated cervical ectopy. *Int J Curr Microbiol App Sci*. 2026;15(5). doi:10.20546/ijcmas.2026.1505.xx.
12. Khamdamova MT, Khamidova ShSh. Anthropometric characteristics of female patients with HPV-associated cervical squamous cell lesions of low degree depending on the expression of oncoprotein P16. *Int J Curr Microbiol App Sci*. 2026;15(5). doi:10.20546/ijcmas.2026.1505.xx.
13. Khamdamova MT, Khasanova MT. Genetic mechanisms of development of endometrial hyperplastic processes in women in menopausal age. *New Day in Medicine*. 2025;3(77):207-211.
14. Khamdamova MT, Akramova DE. Immediate and long-term results of surgical treatment of genital prolapse in elderly women. *New Day in Medicine*. 2025;3(77):201-206.
15. Khamdamova MT, Umidova NN. Genetic factors of genital endometriosis. *New Day in Medicine*. 2025;4(78):82-87.
16. Khamdamova MT, Akramova DE. Genetic aspects of genital prolapse in women of reproductive age. *New Day in Medicine*. 2024;2(64):420-426.
17. Khamdamova MT, Teshaeve ShZh, Khikmatova MF. Morphological changes in the thymus and spleen in renal failure in rats and correction with pomegranate seed oil. *New Day in Medicine*. 2024;3(65):176-187.
18. Khamdamova MT, Rabiev SN. Omatometric data of constitutional features of the body shape of pregnant women. *New Day in Medicine*. 2022;10(48):26-33.
19. Khamdamova MT. The role of an antiviral drug in the treatment of cytomegalovirus infection during pregnancy. *New Day in Medicine*. 2022;10(48):31-35.
20. Khamdamova MT, Jaloldinova MM, Khamdamov IB. State of nitric oxide in the blood serum of patients with skin leishmaniasis. *New Day in Medicine*. 2023;5(55):638-643.
21. Khamdamova MT, Jaloldinova MM, Khamdamov IB. The significance of ceruloplasmin and copper in the blood serum of women carrying a copper-containing IUD. *New Day in Medicine*. 2023;6(56):2-7.
22. World Health Organization. WHO guidelines for screening and treatment of precancerous lesions for cervical cancer prevention. Geneva: World Health Organization; 2023.
23. Wilson GA, Lechner M, Koflerle A, Carén H, Butcher LM, Feber A, Fenton T, Jay A, Boshoff C, Beck S. Integrated virus-host methylome analysis in head and neck squamous cell carcinoma. *Epigenetics*. 2013;8(9):953-961. doi:10.4161/epi.25818.
24. Nekhoroshkov RO. Optimization of pregnancy management in women with miscarriage caused by cervical insufficiency. *Bulletin of the Russian State Medical University*. 2015;(2):22.

Entered 20.05.2026