



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

3 (77) 2025

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
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
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. РУЗИБОВ
С.А. ГАФФОРОВ
С.Т. ШАТМАНОВ (Кыргызстан)
Ж.Б. САТТАРОВ
Б.Б. САФОВ (отв. редактор)
И.А. САТИВАЛДИЕВА
Ш.Т. САЛИМОВ
Д.И. ТУКСАНОВА
М.М. ТАДЖИЕВ
А.Ж. ХАМРАЕВ
Д.А. ХАСАНОВА
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)

3 (77)

2025

март

www.bsmi.uz

<https://newdaymedicine.com> E:

ndmuz@mail.ru

Тел: +99890 8061882

Received: 20.02.2025, Accepted: 03.03.2025, Published: 09.03.2025

UDC 618.145+ 616-071.1+ 616-08-039.71

GENETIC MECHANISMS OF DEVELOPMENT OF ENDOMETRIAL HYPERPLASTIC PROCESSES IN WOMEN IN MENOPACTERIC AGE

Khamdamova M.T. <https://orcid.org/0000-0003-3128-6120>

e-mail: hamdamova.muhayyoxon@bsmi.uz

Khasanova M.T. <https://orcid.org/0009-0000-8673-8361>

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

Analyzing prospective data, the following conclusions can be made. The development of endometrial hyperplastic processes is based on complex multi-stage, genetic, hormonal, proliferative-apoptotic, inflammatory mechanisms

Keywords: endometrial hyperplasia, apoptosis, immunohistochemistry, genetic mechanisms, hyperestrogenism.

ГЕНЕТИЧЕСКИЕ МЕХАНИЗМЫ РАЗВИТИЯ ГИПЕРПЛАСТИЧЕСКИХ ПРОЦЕССОВ ЭНДОМЕТРИЯ У ЖЕНЩИН В КЛИМАКТЕРИЧЕСКОМ ВОЗРАСТЕ

Хамдамова Мухайё Тухтасиновна <https://orcid.org/0000-0003-3128-6120>

e-mail: hamdamova.muhayyoxon@bsmi.uz

Хасанова Махфуза Туйкуловна <https://orcid.org/0009-0000-8673-8361>

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

Анализируя проспективные данные можно сделать следующие заключения. В основе развития гиперпластических процессов эндометрия лежат сложные многоэтапные, генетические, гормональные, пролиферативно-апоптотические, воспалительные механизмы.

Ключевые слова: гиперплазия эндометрия, апоптоз, иммуногистохимия, генетические механизмы, гиперэстрогения.

MENOPAUSAL YOSHIDAGI AYOLLARDA ENDOMETRIYAL GIPERPLASTIK JARAYONLARNI RIVOJLANISHINING GENETIK MEKANIZMLARI

Khamdamova M.T. <https://orcid.org/0000-0003-3128-6120>

e-mail: hamdamova.muhayyoxon@bsmi.uz

Khasanova M.T. <https://orcid.org/0009-0000-8673-8361>

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

Istiqbolli ma'lumotlarni tahlil qilib, quyidagi xulosalar chiqarish mumkin. GPE ning rivojlanishi murakkab ko'p bosqichli, genetik, gormonal, proliferativ-apoptotik va yallig'lanish mexanizmlariga asoslangan.

Kalit so'zlar: Endometriy giperplaziyasi, apoptoz, immunogistokimyo, genetik mexanizmlar, giperestrogeniya.

Relevance

Endometrial hyperplasia (EHP) is interpreted as a non-physiological proliferation of endometrial glands, which is accompanied by structural reorganization of the glandular and, to a lesser extent, stromal components of the endometrium [1,2,3,4,5]. Factors contributing to the development of endometrial hyperplasia include: neuroendocrine disorders, inflammatory diseases of the internal genital organs, the use of intrauterine contraceptives, a high frequency of medical abortions, etc. [1,6].

The leading place in the pathogenesis of EHP is given to excessive estrogen stimulation, combined with insufficient progesterone exposure [1,7,8,9]. Long-term exposure to estrogens, as a rule, initiates pronounced proliferation of the endometrium, which, in the absence of the balancing, protective effect of progesterone, progresses to a state of glandular hyperplasia, and sometimes serves as a background for the development of endometrial cancer [1,10,11]. Endogenous hyperestrogenic conditions have causes that vary in frequency and significance in different age periods. Among women of reproductive age, hyperestrogenism most often occurs as a result of anovulation caused by persistence or atresia of follicles. In the perimenopausal period, estrogenic stimulation is usually associated with obesity and stromal hyperplasia of the ovaries. According to foreign literature, the cause of EHPE in postmenopausal women can be increased activity of the adrenal cortex, which manifests its activity by producing androgenic steroids that affect hormone-sensitive tissues as a result of their conversion to estrone [2,12,13,14,15,16,17]. A number of studies have shown the possibility of initiating EHPE under the influence of exogenous estrogens, for example, monotherapy with synthetic estrogens, their metabolites and selective estrogen receptor modulators over a long period of time can lead to stimulation of the proliferative activity of endometrial cells [3,18,19,20].

Among the dyshormonal conditions that cause the development of GPE, there are disorders in the secretion of hormones of the thyroid axis of the hypothalamic-pituitary system, which are modulators of estrogen action at the cellular level. An imbalance of these hormones can initiate disorders in the histo- and organogenesis of hormone-dependent structures and the formation of endometrial hyperplasia [2,21]. An important role in the development of hyperplastic processes in the endometrium is given to disorders in fat metabolism. A number of processes associated with the extragonadal synthesis of estrogen hormones occur in adipose tissue. An increase in estrogen levels leads to an increase in the "estrogen pool" and, thus, long-term action of estrogens leads to pronounced proliferation of the endometrium [3,22].

However, according to a number of authors, in addition to the analysis of hyperestrogenic effects on the development of GPE, studies of the receptor status of the endometrium are of great importance [2,3]. When studying the role of endometrial receptors to ovarian hormones, the authors found that the content of estradiol receptors in the endometrium of women without GPE is significantly lower than among patients with glandular cystic hyperplasia. At the same time, the number of progesterone receptors in the endometrium decreases with the progression of GPE [1,2]. According to other sources, women with atypical hyperplasia have the highest level of estradiol and progesterone receptors in the endometrial tissue, and the lowest in endometrial polyps [2].

Along with the study of the receptor apparatus of the endometrium, among women with GPE, at the present stage the role of hormonal status disorders in the body as a whole, as well as local changes in tissue metabolism of the target organ, is actively studied. It has been established that not only estrogens are involved in the regulation of cell proliferation, but also other biological amines (melatonin, norepinephrine, parathyroid hormone, bradykinin, insulin, histamine, prostaglandins, serotonin, gastrin), chorionic gonadotropin and other peptides that are produced by cells of the diffuse endocrine system - APUD-system (Amino Precursor Uptake and Decarboxylation) [1,4]. It has been proven that in the unchanged uterine mucosa, apudocytes are usually absent or can be contained in low concentrations, whereas in adenocarcinoma and diffuse hyperplasia their concentration increases by 20 and 5 times, respectively [2,13].

A significant role in the development of GPE belongs to biological processes that cause the transition of normal endometrial cells to transformed ones. Such processes include: hormone-independent proliferation induced by polypeptide growth factors, inflammation, reduced apoptosis, pathological neoangiogenesis, as well as impaired immune status [4,22].

In publications of recent years, more and more data appear on the participation of certain growth factors in the mechanisms of GPE formation. It has been established that they are the main carriers of the mitogenic signal and are able to stimulate the division and differentiation of endometrial cells

[1,5,7,9]. It has been proven that the development of GPE may be associated with an imbalance of insulin-like growth factors, which may manifest itself as an increase in the IGF-I content in the blood serum of women with GPE compared to women without GPE, and changes in its ratio with binding proteins - IGFBP-1 and IGFBP-3, which are most unfavorable in patients without metabolic syndrome. In addition, there is evidence that there is a direct relationship between the stimulation of IGF expression and steroid hormones, i.e. IGF acts as a local mediator of the growth-stimulating activity of steroid hormones [1,2]. The results of many studies demonstrate the complexity of the pathogenesis of GPE, the development of which often occurs due to an imbalance between cellular proliferation and programmed cell death (apoptosis). The persistence of these disorders is probably one of the main causes of the progressive course and relapse of GPE [3,4].

The aim of the study was to improve the treatment outcomes of GPE in menopause based on a differentiated algorithm of diagnostic measures.

Materials and methods

The 117 perimenopausal women we examined were retrospectively divided into groups depending on the morphological characteristics of the endometrium: 63 patients with glandular and glandular-cystic endometrial hyperplasia; 26 patients with atypical endometrial hyperplasia; 28 patients with glandular-fibrous and fibrous endometrial polyps.

All patients were comparable in age, social status, parity, gynecological and somatic morbidity.

The examination program included clinical, anamnestic, instrumental, and laboratory studies. According to indications, patients underwent surgical treatment in the amount of hysteroscopy and separate curettage of the uterine mucosa with subsequent morphological examination of scrapings. The histochemical scoring system included determination of staining intensity, assessed from 0 to 3 points, and the proportion (%) of stained cells, and was the sum of products of percentages reflecting the proportion of cells with different staining intensities by the point corresponding to the reaction intensity. The intensity of the immunohistochemical reaction to the Ki67 protein was assessed as a percentage (the number of stained nuclei per 100 cells). The intensity of the reaction to the p27 and cyclin E proteins was assessed in points: 0 points - no bright staining; 1+ - weakly expressed nuclear staining, 2+ - moderately expressed nuclear staining, 3+ - strongly expressed nuclear staining, - and as a percentage (the number of stained nuclei or cytoplasm per 100 cells).

Results and discussion of the study

Clinical and statistical characteristics of the examined patients confirm the high frequency of gynecological and somatic morbidity in patients of all groups, also revealing features characteristic of proliferative processes of the endometrium.

Despite the fact that diseases of the reproductive system were detected in more than half of all examined women, patients with atypical endometrial hyperplasia suffered from breast diseases significantly more often (4.9 times) than patients with endometrial polyps. Primary and secondary infertility among patients of this group was also noted significantly more often (23.1%). More than two thirds of patients with glandular and glandular-cystic endometrial hyperplasia (65.7%) suffered from inflammatory diseases of the genitals, which is significantly higher than in other groups. A significantly higher frequency of previous gynecological surgeries, in particular, tubectomies (11.9%), adnexectomies (17.4%), ovarian resections (39.2%) and mammary gland resections (19.3%), was also observed in patients with atypical endometrial hyperplasia.

Ultrasound scanning of the pelvic organs was performed on all patients. Coincidence of ultrasound and histological examination data of the endometrium was noted in 84.9% of cases with endometrial hyperplasia and in 96.9% of cases with endometrial polyps. However, the method of choice for diagnosing intrauterine pathology in patients during menopause is hysteroscopic examination.

Separate curettage of the uterine mucosa under hysteroscopy control was performed on all patients admitted to the hospital both on a planned and emergency basis. Coincidence of hysteroscopy data and histological conclusion was noted in 91.7%.

The obtained material from the uterine cavity was subjected to histological examination. Among patients with endometrial hyperplasia, glandular hyperplasia was diagnosed in 29 (24.8%) women, and glandular-cystic hyperplasia in 31 (26.5%) women. A combination of both forms of hyperplasia was noted in 12 (10.3%) patients.

Atypical endometrial hyperplasia in most patients was represented by endometrial intraepithelial neoplasia of varying severity. Moreover, in the overwhelming majority of cases, atypia of I (0.8%) and II (1.7%) severity was detected. Only 2 (0.02%) patients were diagnosed with CIN III. The histological picture in patients with endometrial polyps was as follows: 13 (11.1%) patients with glandular-fibrous endometrial polyps, 11 (9.4%) with glandular and 21 (17.9%) with fibrous endometrial polyps.

Immunohistochemical studies were performed in 51 patients with various types of endometrial hyperplastic processes.

After conducting a set of immunohistochemical studies, we came to the conclusion that patients with glandular and glandular-cystic endometrial hyperplasia had moderate expression of receptors to estrogens and progesterone, while with atypical endometrial hyperplasia, low expression of receptors was detected, which suggests low efficiency of hormonal therapy in this category of patients.

Analysis of the results of the study of the expression of the pro-oncogenic protein Ki 67 indicates a high proliferative activity of endometrial cells in a state of atypical, glandular and glandular-cystic hyperplasia ($p < 0.05$), while in the case of endometrial polyps this indicator is less pronounced. Expression of the antioncogenic protein p53 in glands and stromal cells in atypical hyperplasia is significantly lower than the indicators in endometrial biopsies in patients with polyps, glandular and glandular-cystic hyperplasia. Moreover, in glandular and glandular-cystic hyperplasia, some compensatory activation of apoptosis was noted, which noticeably faded in atypical endometrial hyperplasia.

Analysis of the content of proteins regulating the cell cycle indicates a decrease in the content of the cycle inhibitor p27 against the background of an increase in the concentration of cyclin E, which is especially pronounced in patients with atypical endometrial hyperplasia.

The immunohistochemical studies conducted deepened our understanding of the pathogenesis of GPE; in particular, low expression of receptors for steroid hormones, high expression of pro-oncogenic and low expression of anti-oncogenic proteins were established in patients with atypical endometrial hyperplasia. These data confirm the high risk of developing oncological transformation of the endometrium and the inappropriateness of hormonal therapy in this category of patients.

The identified immunohistochemical markers of the development of GPE allow us to predict the development of neoplastic changes and determine the need for this study. We have proposed an algorithm for examining patients with hyperplastic processes in menopause, which is based on the verification of the morphological diagnosis using immunohistochemical criteria: the presence/absence of expression of steroid hormone receptors, proteins Ki 67, p 53, p 27 and cyclin E.

From our point of view, in addition to the generally recognized classical pathogenetic determinants of the development of GPE, one of the main reasons can be confidently considered the predominance of proliferation processes over apoptosis against the background of an altered receptor status of the endometrium.

An attempt to comprehensively influence the indicated pathophysiological mechanisms, in our opinion, made it possible to significantly increase the effectiveness of GPE treatment, reduce the risk of relapse and progression of the process. Thus, possible molecular and cellular pathogenetic determinants of endometrial hyperplastic processes may be proliferation and apoptosis factors, which is confirmed by a reliable increase in the proliferation marker Ki67 from 9.3/4.2% (epithelial/stromal cells) in endometrial polyp biopsies to 23.3/11.3% in atypical endometrial hyperplasia, as well as a decrease in the apoptosis marker p53 from 10.6/13.4% to 4.2/5.8%, respectively. A differentiated approach to the diagnosis of endometrial hyperplastic processes based on immunohistochemical determination of biomolecular markers (Ki67, p27, p53 and cyclin E) allows not only to predict the course of the hyperplastic process, but also to evaluate the effectiveness of the treatment. The possible role of cell cycle regulators in the pathogenesis of endometrial hyperplastic processes is confirmed by a reliable increase (1.3-1.7 times) in the cell cycle activating protein cyclin E and a decrease (1.2-4.1 times) in the cell cycle inhibitor protein p27 in biopsies of patients with atypical endometrial hyperplasia.

Conclusion

The developed complex of clinical and laboratory studies and therapeutic and health-improving measures allows us to identify risk groups for recurrence of hyperplastic processes and endometrial malignancy and to promptly subject menopausal patients to surgical treatment.

LIST OF REFERENCES:

1. Afify A.M., Craig S., Paulino A.F., Stem R. Expression of hyaluronic acid and its receptors, CD44s and CD44v6, in normal, hyperplastic, and neoplastic endometrium // *Ann. Diagn. Pathol.* 2023;9(6):P.312-318.
2. Atasoy P., Bozdogan O., Ereku S., Bozdogan N., Bayram M. Fas-mediated pathway and apoptosis in normal, hyperplastic, and neoplastic endometrium // *Gynecol.Oncol.* 2023;91(2):3P.09-17.
3. Fabjam G., Kucera E. et all. Genetic alterations in endometrial hyperplasia and cancer. // *Cancer Lett.* 2021;175(2):205-211.
4. Feng Y.Z., Shiozawa T., Miyamoto T., Kashima H., Kurai M. et all. BRAF mutation in endometrial carcinoma and hyperplasia: correlation with KRAS and P53 mutations and mismatch repair protein expression. // *Clin. Cancer Res.* 2019 Sep;11(17):6133-6138.
5. Khamdamov I.B. Improving tactical approaches in the treatment of hernias of the anterior abdominal wall in women of fertile age // *New day in medicine.* Bukhara, 2022;10(48):338-342 <https://newdayworldmedicine.com/en/article/1364>
6. Khamdamov I.B. Morphofunctional features of the abdominal press in women of reproductive age // *New day in medicine.* Bukhara, 2022;3(41):223-227 <https://newdayworldmedicine.com/en/article/806>
7. Khamdamov I.B. Clinical evaluation of the effectiveness of the traditional approach to the treatment of hernias of the anterior abdominal wall in women of fertile age // *Doctor's Bulletin.* –Samarkand 2022;2.2(104):65-70.
8. Khamdamov I.B., Khamdamov A.B. Differentiated approach to the choice of hernioplasty method in women of fertile age (Clinical and experimental study) // *New day in medicine.* Bukhara 2021;6(38/1):112-114. (Print)
9. Khamdamov I.B., Khamdamov A.B. Fertil yoshdagi ayollarda endovideo surgeon hernioplasty // *Tibbiyotda yangi kun.* Bukhoro, 2021.-№6 (38/1) -P. 25-27.
10. Khamdamov I.B. Improving tactical approaches in the treatment of hernias of the anterior abdominal wall in women of fertile age // *New day in medicine.* Bukhara 2022;10(48):338-342 <https://newdayworldmedicine.com/en/article/1364>
11. Khamdamov I.B. Morphofunctional features of the abdominal press in women of reproductive age // *New day in medicine.* Bukhara, 2022;3(41):223-227 <https://newdayworldmedicine.com/en/article/806>
12. Khamdamova M.T. Age-related and individual variability of the shape and size of the uterus according to morphological and ultrasound studies // *News of dermatovenereology and reproductive health.* - Tashkent, 2020. - No. 1-2 (88-80). - P.49-52.
13. Khamdamova M. T. Anthropometric characteristics of the physical status of women in the first and second period of middle age // *Тиббиётда янги кун.* Ташкент, 2020. - № 1 (29). - С.98-100. <https://newdayworldmedicine.com/en/article/3052>
14. Хамдамова М.Т., Жалолдинова М.М., Хамдамов И.Б. Состояние оксида азота в сыворотке крови у больных кожным лейшманиозом // *Тиббиётда янги кун.* - Бухоро, 2023;5(55):638-643. <https://newdayworldmedicine.com/en/article/1995>
15. Хамдамова М.Т., Жалолдинова М.М., Хамдамов И.Б. Значение церулоплазмينا и меди в сыворотки крови у женщин носящих медьсодержащих внутриматочной спирали // *Тиббиётда янги кун.* - Бухоро, 2023;6(56):2-7. <https://newdayworldmedicine.com/en/article/2018>
16. Хасанова М.Т., Хамдамова М.Т. Различные механизмы патогенез гиперплазии эндометрия у женщин постменопаузального периода (обзор литературы) // *Тиббиётда янги кун.* - Бухоро, 2023;8(58):103-107. <https://newdayworldmedicine.com/en/article/2157>
17. Khamdamova M. T. Bleeding when wearing intrauterine contraceptives and their relationship with the nitric oxide system // *American journal of pediatric medicine and health sciences* ISSN (E): 2023;1(7):2993-2149. R.58-62
18. Khamdamova M. T. The state of local immunity in background diseases of the cervix // *Eurasian journal of medical and natural sciences Innovative Academy Research Support Center.* 2023 January; 3(1):171-175 ISSN 2181-287X
19. Khamdamova M. T., Khasanova M.T. Genetic mechanisms of development of endometrial hyperplastic processes in women in menopacteric age // *American Journal of Medicine and Medical Sciences* 2025;15(2):372-375 DOI: 10.5923/j.ajmms. 20251502.22
20. Khamdamova M. T., Akramova D.E. The problem of pelvic organ prolapse in women in modern gynecology // *American Journal of Medicine and Medical Sciences* 2025;15(2):483-486 DOI: 10.5923/j.ajmms.20251502.47
21. Khamdamova M. T., Umidova Nigora Nabi kizi. Endometriosis and women's reproductive health // *American Journal of Medicine and Medical Sciences* 2025;15(2):407-410 DOI:10.5923/j.ajmms.20251502.28
22. Hong S.C., Song J.Y., Lee J.K., Lee N.W., Kim S.H., Yeom B.W., Lee K.W. Significance of CD44v6 expression in gynecologic malignancies. // *J. Obstet. Gynaecol. Res.* 2016;32(4):P.379-386.

Entered 20.02.2025