

MODERN METHODS OF TREATMENT OF BENIGN DISEASES OF THE CERVIX IN WOMEN

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The article shows the treatment of benign diseases of the cervix with an innovative method of broadband radio wave technology using the «FOTEK EA 141M» apparatus with the function of argon plasma coagulation. Argon plasma coagulation (APC) is a safe, effective, sparing, organ-preserving method, which makes it possible to recommend this tactic for the treatment of benign diseases of the cervix in women of any age.

It was found that, benign diseases of the cervix in women lead to functional and structural changes in the reproductive system, having a negative impact on the psycho-emotional and employable spheres of a woman, significantly affecting the quality of life, leading to the development of depressive conditions. Broadband radio wave technology using the FOTEK EA141 M device with the function of argonoplasmic coagulation makes it possible to treat a whole range of gynecological diseases in women, which is of clinical diagnostic, therapeutic and practical significance. Argonoplasmic ablation (coagulation) is a safe, effective, sparing, organ-preserving method, which allows us to recommend this tactic for the treatment of benign cervical diseases in women of any age.

Key words: *benign diseases of the cervix, treatment, argon plasma coagulation, cervical cancer.*

The connection of the publication with planned research works. This work is a fragment of an ongoing dissertation for the degree of Doctor of Philosophy in medicine «Improving the diagnosis and treatment of cervical disease».

Introduction. The problem of oncogynecological diseases of women continues to remain relevant, in view of their wide spread and quantitative growth in percentage ratio. According to the World Health Organization (WHO), the annual mortality rate from cervical cancer is 273500 women worldwide [1–5]. Among oncogynecological diseases of women, breast cancer ranks 2nd in the world, after breast cancer and 1st in mortality among oncological diseases in economically undeveloped countries [1–3]. It is well known that the development of precancerous conditions occurs due to an increase in the incidence of benign cervical diseases. It is also known that the human papillomavirus (HPV) plays an etiological role in the development of oncogynecological diseases in women. In particular, HPV subtypes 16 and 18 play a key role [6].

Benign diseases of the cervix, leading to the development of precancerous conditions in women, continue to attract a wide range of researchers, as issues related to modern methods of treatment are debatable. It is possible that growth and development, as well as mortality, are associated with the delayed treatment of patients for medical care. In this connection, it is relevant to determine the effectiveness of innovative methods of treatment of benign diseases of the cervix [1, 2, 3, 7, 8, 9, 10, 11, 12].

The aim of the study was to study the effectiveness of broadband radiowave surgery and argonoplasma coagulation in the treatment of benign cervical diseases in women.

Object and methods of research. The study involved n=150 women of various ages who applied to the outpatient polyclinic service of the Research

Institute of Obstetrics and Gynecology in Baku. The main group consisted of n=130 women with a history of background processes and pathological changes. The control group consisted of 20 conditionally healthy women. Comprehensive clinical and laboratory examination (n=130) of women included the following methods: clinical, laboratory, bacteriological and microscopic studies of the cervical canal and vaginal discharge, histological studies); instrumental and special methods (classical traditional and liquid cytology). Cytological examination was carried out according to the traditional classical method and liquid cytology (RAR test). Staining of the smear was carried out by Papanicolaou, some by the classical method. To interpret the results of cytological examination of the cervix, we used the Bethesda system (updated in 2014).

Clinical studies included: a thorough collection and study of the features of the obstetric and gynecological history of women, a standard gynecological examination and retrovaginal examination; an assessment of the state of health by functional systems was carried out. We applied the PCR method conducted to detect the DNA of a papillomavirus infection. This method determined: 16, 18 HPV genotypes. The material for the study was urogenital DNA from the cervix. Instrumental studies included: Ultrasound of the pelvic organs (the device «LOGIK 500GE» and «MEDISON SA-8000»), colposcopy (simple and extended). To carry out liquid cytology, we used the «CellScan 100A» device. For the treatment, we applied an innovative technology of broadband wave surgery and argonoplasmic coagulation (APC) using the FOTEK EA 141M device (manufactured by FOTEK LLC, Russia). We also performed a biopsy for histological examination using the FOTEK EA 141 M device.

Statistical analysis was carried out using variance (ANOVA criterion) quantitative indicators, discriminant

(Chissquare Reanson) analysis of qualitative indicators followed by nonparametric U (Mann-Whitney) and H (Kruskal-Wallis) statistical reliability of the difference calculated between groups and subgroups. Statistical processing of the obtained results was carried out according to the program «IBM Statistics SPSS-26» version. The differences between the data were considered reliable at $p < 0.05$, which meets the requirements of biomedical research.

Written informed consent was obtained from all patients who participated in the study.

The results of the study and their discussion.

A comprehensive clinical and laboratory examination of $n=130$ women revealed the following nosological forms of benign diseases: nonspecific vaginitis in 8 (6.2 %) cases; ectopia, endocervicitis – 23 (17.7 %) cases; extrapion – 7 (5.4 %); cervical polyp – 9 (6.9 %); leukoplakia – 15 (11.5 %) cases; atrophic vaginitis – 7 (5.4 %) cases; condyloma – 12 (9.2 %); cervical erosion – 37 (28.5 %); cervical stenosis – 2 (1.5 %); cervical endometriosis – 10 (7.7 %) cases, respectively ($p < 0.001$) (fig. 1).

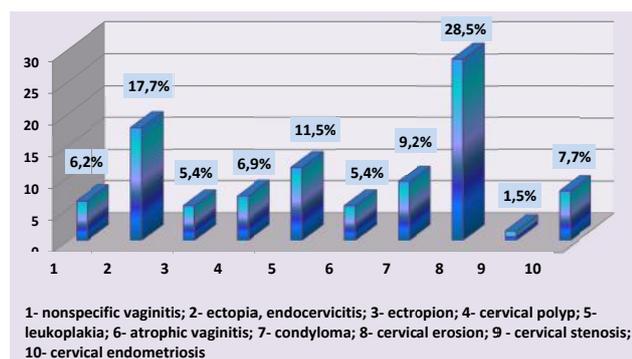


Figure 1 - Diagram of the incidence of benign cervical diseases.

For the treatment of benign cervical diseases $n=50$ women, we used the FOTEK EA141 M device. Of these, 38 (76 %) patients underwent argonoplasma coagulation (ablation), 12 (24 %) underwent cervical excision. The age of the women ranged from 23 to 65 years. «High» oncogenic risk of HPV was noted in 33 (66 %) patients, «low» oncogenic risk of HPV – in 12, which was 24 % of cases, respectively.

In the treatment of the following benign diseases of the cervix: with nonspecific vaginitis, detected in 3 (7.9 %) cases; ectopia, endocervicitis – in 10 (26.4 %); ectrapion – 1 (2.6 %); with cervical polyp registered in 6 (15.8 %) cases; leukoplakia – in 4 (10.5 %); with condylomas – 2 (5.3 %); cervical erosion – 11 (28.9 %) cases; with cervical endometriosis, detected in 1 (2.6 %) case, respectively, we performed argonoplasmic coagulation of pathologically altered areas using the FOTEK EA 141M apparatus (fig. 2).

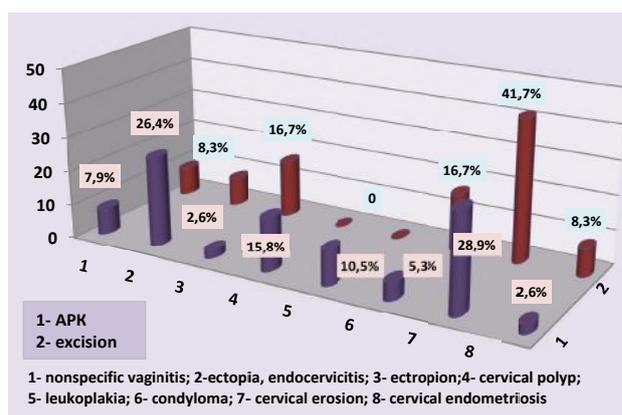


Figure 2 - Diagram of the distribution of women with benign cervical diseases depending on the treatment (argonoplasma coagulation, excision).

Adverse reactions during the APC were not observed in more than one case. The essence of the APC is to create a non-contact effect of high-frequency current energy using ionoplasmic argon gas in the form of a torch on the fabric. It should be noted that the impact on the tissue occurs locally, the selection of the mode and the specified power is carried out individually, depending on the degree, depth and prevalence of the pathological process.

Excision was performed in 1 (8.3 %) patient with nonspecific vaginitis; 1 (8.3 %) – with ectopia, endocervicitis; 2 (16.7 %) patients with extrapion; 2 (16.7 %) – with condylomas; 5 (41.7 %) – with cervical erosion and 1 (8.3 %) patient with endometriosis of the cervix. One patient was diagnosed with leukoplakia (CIN III), with a confirmed positive PCR result of HPV infection of «high» oncogenic risk.

Against the background of APC treatment, a thin light film of a serous-fibrinous nature was observed on the wound surface for two weeks, in particular on the 7th day – in 19 (50 %) patients with APC; in 6 (50 %) – with excision; on the 14th day – 37 (97.4 %) patients with APC; in 12 (100 %) – with excision ($p < 0.001$). To take the biopsy material, we also used the FOTEK EA141 M device. From the area of pathological changes, after pre-anesthesia (lidocaine solution 10 %) biopsy material was taken for histological examination. The features of taking the material were as follows: depending on the nature and the halo of the prevalence of the pathological process, the depth of dissection and the volume of tissue were selected individually, taking into account at least 5–6 mm.

The effectiveness of treatment was assessed by the activity of the process of epithelization of the wound surface on the 30th; 45th; 60th day after the treatment. So, on the 30th day after APC in 34 (89.5 %), with excision in 9 (75 %) patients, epithelization of the wound surface was observed. Complete epithelialization of the wound surface was noted on day 45 in 38 (100 %) women after APC and in 12, which accounted for 100 % of cases after

excision. A control gynecological, colposcopic examination of women on the 60th day after the treatment did not reveal any abnormalities on the part of the reproductive system, a favorable outcome was noted – complete completion of the epithelialization process, no charring of tissues, rough scarring. Therefore, the APC method can be used in unborn women in the treatment of gynecological diseases ($p < 0.001$). It should be noted that there were no complaints from the patients in any case, control examinations in the dynamics after the treatment did not reveal the presence of inflammatory, infectious, or oncogenic pathological processes on the part of the reproductive system organs. The process of treatment by the APC method was painless, without requiring additional therapy. Thus, the analysis of the APC method in the treatment of a whole spectrum of benign gynecological diseases has shown that the method is highly effective, gentle, simple, capable of creating both high-quality hemostasis and reducing the risk of complications. It should also be noted that the argonoplasmic effect of the plasma jet on the tissue has a sterilizing effect, thereby preventing the development of microbial contamination, the technique does not require deep excision of tissues, suturing, which allows it to be used in daily clinical and practical activities of outpatient services.

During the APC, women with the above benign diseases of early, late complications and/ or relapses were not noted in any case. Of the long-term consequences, 1 (2 %) women had telangiectasia.

Thus, the use of electrosurgical innovative technologies in the outpatient diagnostic gynecological service is highly effective in the treatment of benign diseases of

the cervix in women, allows to achieve positive results without the formation of relapses and long-term consequences. In particular, the positive effectiveness of the application of this method was: in the speed of carrying out; in creating a bloodless surgical field; absence or minimal painful sensations; absence of contact of the electrode with the tissue; absence of charring of tissues; absence of smoke during the procedure; absence of microbial contamination; absence of formation of a rough scar; in the possibility of carrying out this technique on an outpatient basis; in controlling the depth of coagulation; no risk of perforation; absence of massive bleeding; absence of postoperative complications; in creating high-quality rapid hemostasis with capillary bleeding; minimum hospital stay.

Conclusions. 1. Benign diseases of the cervix in women lead to functional and structural changes in the reproductive system, having a negative impact on the psycho-emotional and able-bodied spheres of a woman, significantly affecting the quality of life, leading to the development of depressive states.

2. Broadband radio wave technology using the FOTEK EA141 M device with the function of argonoplasmic coagulation makes it possible to treat a whole range of gynecological diseases in women, which is of clinical diagnostic, therapeutic and practical significance.

3. Argonoplasmic ablation (coagulation) is a safe, effective, sparing, organ-preserving method, which allows us to recommend this tactic for the treatment of benign cervical diseases in women of any age.

Prospects for further research. The study of various methods for the treatment of benign cervical diseases in women.

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СУЧАСНІ МЕТОДИ ЛІКУВАННЯ ДОБРЯКІСНИХ ЗАХВОРЮВАНЬ ШИЙКИ МАТКИ У ЖІНОК

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Резюме. Метою роботи було дослідження ефективності широкосмугової радіохвильової хірургії і аргоноплазмової коагуляції в лікуванні доброякісних захворювань шийки матки у жінок. В дослідження було включено $n=150$

жінок різного віку, що звернулися до НДІ Акушерства та Гінекології міста Баку. Основну групу склали $n=130$ жінок. До контрольної було включено 20 умовно здорових жінок. Обстеження ($n=130$) жінок включало наступні методи: клінічний, лабораторний, бактеріологічне та мікроскопічне дослідження виділень з цервікального каналу та піхви, гістологічне дослідження; інструментальні методи. Інструментальні дослідження включали: УЗД органів малого тазу (апарат «LOGIK 500GE» і «MEDISONSA-8000»), кольпоскопія. Для проведення рідинної цитології нами було використано апарат «CellScan 100A». Була застосована технологія широкосмугової хвильової хірургії та аргоноплазмової коагуляції (АПК), а також біопсія для гістологічного дослідження з використанням апарату «ФОТЕК EA 141M» (виробництва ООО «ФОТЕК», Росія). Було виявлено неспецифічний вагініт у 8 випадках; ектопія, ендцервіцит – 23 випадки; екстрапіон – 7; цервікальний поліп – 9; лейкоплакія – 15 випадків; атрофічний вагініт – 7 випадків; кондилома – 12; ерозія шийки матки – 37; стеноз шийки матки – 2; ендометріоз шийки матки – 10 випадків. З $n=50$ жінок у 38 пацієнток була застосована аргоноплазмова коагуляція (абляція) апаратом «ФОТЕК EA 141M», 12 – проведено ексцизія шийки матки. Вік жінок складав від 23 до 65 років. «Високий» онкогенний ризик ВПЛ відмічено у 33(66 %) пацієнток, «низький» онкогенний ризик ВПЛ – у 12, що склало 24 % випадків відповідно. Ефективність лікування оцінювали за активністю процесу епітелізації ранової поверхні відмічено на 45 день у 38(100 %) жінок після АПК та у 12, що склало 100 % випадків після ексцизії. Метод АПК може бути застосований у жінок, що не народжували для лікування гінекологічних захворювань.

Таким чином, широкосмугова радіохвильова технологія із застосуванням апарату «ФОТЕК EA 141M» з функцією аргоноплазмової коагуляції дає можливість для лікування цілого спектру гінекологічних захворювань у жінок, що дозволяє рекомендувати дану тактику для лікування доброякісних захворювань шийки матки у жінок будь-якого віку.

Ключові слова: доброякісні захворювання шийки матки, лікування, аргоноплазмова коагуляція, рак шийки матки.

MODERN METHODS OF TREATMENT OF BENIGN DISEASES OF THE CERVIX IN WOMEN

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Abstract. *Goal.* To study the effectiveness of broadband radiowave surgery and argonoplasma coagulation in the treatment of benign cervical diseases in women. *Methods.* The study involved $n=150$ women of various ages who applied to the Research Institute of Obstetrics and Gynecology in Baku. The main group consisted of $n=130$ women. The control group consisted of 20 conditionally healthy women. Examination ($n=130$) of women included the following methods: clinical, laboratory, bacteriological and microscopic studies of the cervical canal and vaginal discharge, histological studies; instrumental methods. Instrumental studies included: Ultrasound of the pelvic organs (the device «LOGIK 500GE» and «MEDISONSA-8000»), colposcopy. To carry out liquid cytology, we used the «CellScan 100A» device. The technology of broadband wave surgery and argonoplasma coagulation (APC) was applied, as well as a biopsy for histological examination using the FOTEK EA 141M device (manufactured by FOTEK LLC, Russia). *Results.* There were identified: nonspecific vaginitis in 8 cases; ectopia, endocervicitis – 23 cases; extrapion – 7; cervical polyp – 9; leukoplakia – 15 cases; atrophic vaginitis – 7 cases; condyloma – 12; cervical erosion – 37; cervical stenosis – 2; cervical endometriosis – 10 cases. Of $n=50$ women, 38 patients underwent argonoplasma coagulation (ablation) with the FOTEK EA 141M device, 12 underwent cervical excision. The age of the women ranged from 23 to 65 years. «High» oncogenic risk of HPV was noted in 33 (66 %) patients, «low» oncogenic risk of HPV – in 12, which was 24 % of cases, respectively. The effectiveness of treatment was assessed by the activity of the process of epithelialization of the wound surface on the 30th; 45th; 60th day after the treatment. Complete epithelialization of the wound surface was noted on day 45 in 38 (100 %) women after APC and in 12, which accounted for 100 % of cases after excision. The APC method can be used in unborn women in the treatment of gynecological diseases.

Conclusions. Broadband radio wave technology using the FOTEK EA 141M device with the function of argonoplasma coagulation makes it possible to treat a whole range of gynecological diseases in women, which makes it possible to recommend this tactic for the treatment of benign cervical diseases in women of any age.

Key words: benign cervical diseases, treatment, argon plasma coagulation, cervical cancer

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