DOI: 10.26693/jmbs07.04.036
UDC 618.145-007.61:618.173]-07; 618.1:616.07(584.5)
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STRUCTURE OF HYPERPLASTIC PROCESSES OF THE UTERUS IN MENOPAUSAL WOMEN ACCORDING TO THE RESULTS OF AN ECHOGRAPHIC STUDY

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The purpose of the study was to evaluate the results of ultrasound scanning in menopausal women with endometrial hyperplastic processes.

Materials and methods. Ultrasound protocols of 67 menopausal women with uterine hyperplastic processes were analyzed. Endometrial imaging data were assessed as corresponding to focal endometrial hyperplasia in 53 (79.1%) women. Uterine fibroids in combination with endometrial hyperplasia were found in 42 (62.7%) menopausal patients. According to the transvaginal ultrasound protocols, only endometrial polyp was detected in 20.9% of women (n=14).

Results and discussion. The main complaints of patients with endometrial hyperplastic processes were abnormal uterine bleeding and abdominal pain. Every third (n=22; 32.8%) woman in the menopausal period noted uterine bleeding. Every second patient complained of lower abdominal pain of varying intensity (n=34; 50.7%). 11 (16.4%) women had no complaints. All the women studied underwent transvaginal and transabdominal ultrasound (in 3D mode). Ultrasound examination of the pelvic organs in order to differentiate endometrial pathology in 54% of cases was performed twice and more often. Ultrasound examination of the uterus was performed in standard projections. Endometrial polyps in most cases were oval in shape and were visualized quite clearly due to high echogenicity, homogeneous structure, the presence of a base that has no connection with the myometrium, and the integrity of the basal layer in the area of attachment of the polyp base. The sizes of endometrial polyps ranged from 1 mm to 90 mm (12.6 ± 3.5 mm). Small polyps were more often of increased echogenicity and homogeneous structure. At the same time, patients with endometrial polyps in the menopausal period often lack their visualization during transvaginal ultrasound. They are often verified as a focal or diffuse form of endometrial hyperplasia, while the low frequency of diagnosis of polyps in the menopausal period is determined.

Ultrasound results were interpreted as corresponding to a combination of focal hyperplasia and endometrial polyp in 16.4% of cases (n=11). Ultrasound with color Doppler mapping in endometrial cancer revealed a sharp increase in the blood flow rate in the arcuate arteries (Vmax = 0.33 ± 0.06 m/s, Vmin = 0.16 ± 0.1 m/s).

Conclusion. Ultrasound is an affordable method for diagnosing hyperplastic processes of the uterus. In the diagnosis and determination of the structure of hyperplastic processes of the uterus, combined transabdominal and transvaginal ultrasound is a highly informative non-invasive method. There is a need for further investigation of the management tactics of patients with endometrial pathology during menopause.

Keywords: women, endometrial hyperplasia, menopause, ultrasound.

Introduction. Abnormal uterine bleeding is one of the most common reasons for seeking medical help in menopausal women. In determining the tactics of management of patients with uterine bleeding it is important to accurately diagnose the pathological process of the endometrium [1, 2]. Of course, the diagnosis of hyperplastic processes of the endometrium is based on the data of histological examination of scrapings of the uterine mucosa, allowing to determine the nature of morphostructural changes [3]. Nevertheless, there is often a need for preclinical diagnosis of hyperplastic processes and endometrial cancer using relatively simple techniques. The undisputed priority among non-invasive examination methods belongs to ultrasound scanning. In menopausal women, transvaginal ultrasound of the pelvic organs with determination of the thickness of the M-echo serves as a method of examination to exclude pathological processes in the endometrium. Ultrasound examination in three-dimensional scanning mode provides a non-invasive detailed assessment of the structure of the internal genitalia, their blood supply, as well as the vessels of the pelvis [4].

The purpose of the study was to evaluate the results of ultrasound scanning in menopausal women with endometrial hyperplastic processes.

Materials and methods. Under supervision at the Academician Mir-Gasimov Republican Clinical Hospital there were 67 women (average age 55.4 ± ± 0.8 years) who were in menopause from 1 to 8 years, of whom 12 menopausal women with previously diagnosed endometrial cancer were examined.

The paper presents the data of ultrasound examination of menopausal patients with endometrial hyperplastic processes. Echographic examination was performed on the SonoScape 6 device (PRC) with convexic sensors with a frequency of 3.5–6.0 and intracavitary sensors with a frequency of 6.0–9.0 MHz by transabdominal and transvaginal access. This device provides a combination of real-time scanning mode, color mapping and pulse-wave Doppler function, which allows to obtain an ultrasound image on the device screen in three-dimensional examination mode (3D).

All experiments were conducted in accordance with the Council of Europe Convention "On the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine Application of Biological and Medicine Achievements (ETS No. 164)" dated 04.04.1997, and the Helsinki Declaration of the World Medical Association (2008). Each study patient signed an informed consent to participate in the study and all measures to ensure anonymity of patients were taken.

Statistical processing of the obtained research results was carried out using a standard computer package of statistical programs (Excel 2010).

Results and discussion. The main complaints of patients with endometrial hyperplastic processes were abnormal uterine bleeding and abdominal pain. Every third (n=22; 32.8%) woman in the menopausal period noted uterine bleeding. Every second patient complained of lower abdominal pain of varying intensity (n=34; 50.7%). 11 (16.4%) women had no complaints.

All the women studied underwent transvaginal and transabdominal ultrasound (in 3D mode). Ultrasound examination of the pelvic organs in order to differentiate endometrial pathology in 54% of cases was performed twice and more often. Ultrasound examination of the uterus was performed in standard projections, its results are shown in **Table 1.**

Table 1 – Indicators of ultrasound examination of the uterus in menopausal patients (M±m) (min-max) [95%CI]

Ultrasound indicators	Observation group (n=67)
Uterus:	
– length, mm	66.5 ± 3.3 (31.7–155.5) [95%CI:59.8–73.1]
– anterior-posterior size, mm	53.3 ± 2.6 (25.0–110.5) [95%CI:48.0–58.6]
– width, mm	61.9 ± 2.9 (19.5–130.5) [95%CI:56.0–67.8]
Cervix:	
– length, mm	32.2 ± 0.8 (22.0–48.0) [95%CI:30.6–33.9]
– width, mm	26.0 ± 0.9 (13.0–52.0) [95%CI:24.0–28.0]

During ultrasound examination in the examined patients, the average dimensions of the uterus body were: length – 66.5 ± 3.3 mm, anterior-posterior size – 53.3 ± 2.6 mm, width – 61.9 ± 2.9 mm. The average dimensions of the cervix in patients were: length – 32.2 ± 0.8 mm, width – 26.0 ± 0.9 mm.

Special attention was paid to the state of the endometrium (M-echo) during ultrasound examination. When performing ultrasound, the structure of the endometrium, its thickness, echogenicity, median line, the presence of intracavitary fluid, and the transitional zone of the endometrium were evaluated. Thickening of the endometrium over 5 mm was considered pathological. According to our study, in ultrasound of the endometrium, its average thickness was 11.7 ± 0.5 mm. In 36 (53.7%) menopausal patients, the endometrial structure was homogeneous, in 17 (25.3%) – heterogeneous with asymmetry and cystic formations, in 14 (21.0%) – heterogeneous asymmetric without cystic areas. Hyperechoic endometrium was observed in 21 (31.3%), hypoechoic – in 13 (19.4%), isoechoic – in 33 (49.0%) patients. An uneven transition zone was observed in 6 (9.0%) patients and was combined with a heterogeneous endometrium (**Figure 1**).

Fig. 1 – Uneven transition zone

In 17 (25.0%) menopausal patients, deformity of the average linear hyperechoic structure, dilation of the uterine cavity was revealed, which may indicate the presence of very small endometrial polyps. In 8 (12.0%) patients, ultrasound revealed the presence of fluid in the uterine cavity, the nature of which was determined as anechoic – in 2 (25.0%), isoechoic – in 3 (37.5%), mixed – in 3 (37.5%) patients. The volume of intrauterine fluid averaged 6.86 ± 1.33 ml (from 3 ml to 20 ml).

Endometrial imaging data were assessed as corresponding to focal endometrial hyperplasia in 53 (79.1%) women. In endometrial hyperplasia, the characteristic ultrasound signs were heterogeneity of the structure, the presence of echopositive and echonegative inclusions in the form of small brushes, echopositive formations of various sizes.

Uterine fibroids in combination with endometrial hyperplasia were found in 42 (62.7%) menopausal patients. Ultrasound scanning for uterine fibroids allows to accurately determine the size and localization of nodes, their relationship with large vessels, the cervix and the uterine cavity. When examining patients with uterine fibroids, special attention should be paid to determining the topography of the pelvic organs, the location of myomatous nodes and their blood supply, as well as assessing the condition of the uterus. During the study, the following typical ultrasound signs of proliferating uterine fibroids are distinguished: heterogeneous tumor structure, increased echogenicity, hyperechoic inclusions, anechoic cavities of various sizes and shapes.

According to echographic studies, 57 myomatous nodes were identified. One myomatous node was found in the majority of patients (n=27; 64.3%). Two myomatous nodes were observed in 15 (35.7%) women. In most cases (n=24; 57.2%), myomatous nodes in menopausal women were up to 10 mm in size. In the remaining patients (n=18; 42.8%), the size of the nodes ranged from 15 to 50 mm. The echogenicity of small nodes was reduced, and the structure was homogeneous. As the tumor size increased, the echogenicity increased, and the structure became heterogeneous. Nodes with a diameter of more than 20 mm overwhelmingly had lateral shadows. In tumors with a diameter of more than 30 mm, hyperechoic inclusions were found, located both on the periphery and in the fibroid tissue, behind which acoustic shadows were formed. Anechoic cavities of various shapes and sizes were also observed in the structure of the nodes. When studying the localization of myomatous nodes, it was found that in menopausal women, in most cases, the nodes were located intramurally – in 22 (52.4%), subserously – in 17 (40.4%), submucosally – in 3 (7.2%) patients. Subserous myomatous nodes predominantly had a hyperechogenic structure, and hyperechogenicity was not observed among submucous nodes.

According to the transvaginal ultrasound protocols, only endometrial polyp was detected in 20.9% of women (n=14). Ultrasound results were interpreted as corresponding to a combination of focal hyperplasia and endometrial polyp in 16.4% of cases (n=11). In all patients, endometrial polyps provoked abnormal uterine bleeding. The presence of an endometrial polyp was suspected during sequential longitudinal and transverse scanning of the uterine body in patients based on the registration of the M-echo pattern (**Figure 2**).

Endometrial polyps in most cases were oval in shape and were visualized quite clearly due to high echogenicity, homogeneous structure, the presence of a base that has no connection with the myometrium, and the integrity of the basal layer in the area of attachment of the polyp base. The sizes of endometrial polyps ranged from 1 mm to 90 mm (12.6 ± 3.5 mm). Small polyps were more often of increased echogenicity and homogeneous structure. At the same time, patients with endometrial polyps in the menopausal period often lack their visualization during transvaginal ultrasound. They are often verified as a focal or diffuse form of endometrial hyperplasia, while a low frequency of diagnosis of polyps in the menopausal period is determined.

Fig. 2 – Endometrial polyp

Among women all over the world, cancer of the reproductive system occupies a leading position in the structure of oncological diseases. In recent years, endometrial cancer has taken the second place among malignant tumors of the reproductive system after breast cancer. In most cases, endometrial cancer is the result of successive proliferative changes in the endometrium [5, 6].

Laboratory and instrumental methods play an important role in the diagnosis of endometrial cancer. As a tumor marker for tumor indication, CA-125 is widely used, which, during screening analysis, reveals high indicator abilities in relation to malignant tumors of the female reproductive system [7].

Currently, standard echography has turned into a routine study in oncogynecology, which is widely used by clinicians as a method of primary and clarifying diagnosis. In this regard, it is necessary to use various techniques that improve ultrasound imaging. Ultrasound with color Doppler mapping makes it possible to suspect endometrial cancer due to the detection of neovascularization zones in the projection of the median M-echo, as well as a decrease in vascular resistance in the basal arteries [8–10].

In our study, ultrasound with color Doppler mapping in endometrial cancer revealed a sharp increase in the blood flow rate in the arcuate arteries (Vmax = 0.33 ± 0.06 m/s, Vmin = 0.16 ± 0.1 m/s).

Conclusion. Thus, ultrasound is an affordable method for diagnosing hyperplastic processes of the uterus. In the diagnosis and determination of the structure of hyperplastic processes of the uterus, combined transabdominal and transvaginal ultrasound is a highly informative non-invasive method. All of the above suggests that there is a need for further research into the management tactics of patients with endometrial pathology during menopause.

Perspectives of further research. It is planned to improve the diagnosis of polyps in the menopausal period, since patients with endometrial polyps in the menopausal period often lack their visualization during transvaginal ultrasound.

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УДК 618.145-007.61:618.173]-07; 618.1:616.07(584.5)

СТРУКТУРА ГІПЕРПЛАСТИЧНИХ ПРОЦЕСІВ МАТКИ У ЖІНОК В ПЕРІОД МЕНОПАУЗИ ЗА РЕЗУЛЬТАТАМИ ЕХОГРАФІЧНОГО ДОСЛІДЖЕННЯ

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Резюме. *Мета дослідження* – оцінка результатів ультразвукового сканування у жінок у менопаузальному віці при гіперпластичних процесах ендометрію.

Об'єкт та методи. Проаналізовано протоколи УЗД 67 жінок менопаузального віку з гіперпластичними процесами матки. Основними скаргами пацієнток з гіперпластичними процесами ендометрію були: аномальні маткові кровотечі та болі внизу живота. Дані візуалізації ендометрію були розцінені як відповідні осередковій гіперплазії ендометрію у 53 (79,1%) жінок. У 42 (62,7%) пацієнток менопаузального віку встановлено міому матки у поєднанні з гіперплазією ендометрію. За даними протоколів трансвагінального УЗД, виключно поліп ендометрію був виявлений у 20,9% жінок (n=14).

Результати. Поліпи ендометрію в більшості випадків були овальної форми, і візуалізувалися досить чітко за рахунок високої ехогенності, гомогенної структури, наявності основи, що не має зв'язку з міометрієм, та інтактності базального шару в області прикріплення основи поліпа. Розміри поліпів

ендометрію були від 1 мм до 90 мм (126±33 мм). Невеликі поліпи частіше були підвищеної ехогенності та однорідної структури. Разом з тим, у хворих з поліпами ендометрію в менопаузальному періоді досить часто відсутня їхня візуалізація при трансвагінальному УЗД. Нерідко їх верифікують як осередкову або дифузну форму гіперплазії ендометрію, при цьому визначається низька частота діагностики поліпів у періоді менопаузи.

Результати УЗД трактувалися як відповідні поєднанню осередкової гіперплазії та поліпа ендометрію у 16,4 % випадках (n=11). УЗД з кольоровим допплерівським картуванням при раку ендометрію дозволило виявити різке підвищення швидкості кровотоку в аркуатних артеріях (Vmax = 0,33 ± 0,06 м/с, Vmin = 0,16 ± 0,1 м/с).

Висновок. При діагностиці та визначенні структури гіперпластичних процесів матки комбіноване трансабдомінальне та трансвагінальне ультразвукове дослідження є високоінформативним неінвазивним методом. Існує необхідність подальшого дослідження тактики ведення хворих з патологією ендометрію в періоді менопаузи.

Ключові слова: жінки, гіперплазія ендометрію, менопауза, УЗД.

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A – Work concept and design, B – Data collection and analysis,
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The authors of this study confirm that the research and publication of the results were not associated with any conflicts regarding commercial or financial relations, relations with organizations and/or individuals who may have been related to the study, and interrelations of coauthors of the article.

Стаття надійшла 29.06.2022 р.
Рекомендована до друку на засіданні редакційної колегії після рецензування