ULTRASOUND EXAMINATION IN VARIOUS PATHOLOGIES OF THE ENDOMETRIUM

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Abstract. The diagnostic accuracy of ultrasound examination (US) is of particular importance as the first line of determination of endometrial pathology. However, ultrasound has a number of limitations, and the factors that reduce its accuracy have not been definitively established. **Objective.** To evaluate the diagnostic accuracy of ultrasound in various types of intrauterine pathology and to identify the factors influencing it. Materials and methods. The study included 63 women who underwent hysteroscopy with endometrial biopsy: 32 with endometrial polyps (EP), 8 with endometrial hyperplasia (EH), 7 with chronic endometritis (CE), as well as 15 women without histological signs of endometrial pathology. Before surgical treatment, all patients underwent transvaginal ultrasound of the pelvic organs in the early follicular phase of the menstrual cycle. **Results**. The sensitivity and specificity of ultrasound for PE were 64.8% and 77.9%, respectively, for HE - 64.7% and 89.8%, for CE - 39.3% and 90.1%, which indicates underdiagnosis. The lowest accuracy of echography was noted with HE, PE less than 0.6 cm and in the absence of abnormal uterine bleeding. **Conclusions.** Ultrasound has a number of limitations in verifying a specific diagnosis and can be characterized by both hyper- and underdiagnosis. The clinician should take into account the size of the PE and the presence of symptoms to assess further management tactics.

Keywords*: ultrasound examination of polyps, hyperplasia, chronic endometritis, intrauterine pathology.*

Nowaday, it is known that up to 30% of women of reproductive age have noted at least one episode of AUB. Moreover, in perimenopause this figure reaches 70%, and in postmenopause - 35% [1-5]. Pathology of the endometrium includes endometrial polyps (EP) and endometrial hyperplasia (EH), which are considered a risk factor for uterine cancer (UC). Due to the optimization of diagnostic algorithms and an increase in screening coverage, the detection rate of UC has increased by more than 1.5 times over the past 20 years and amounted to 30.6 per 100 thousand female population by 2020 [6]. However, the diagnosis of intrauterine pathology can cause certain difficulties due to the fact that the clinical manifestations of these diseases are nonspecific, and instrumental research methods often have limited diagnostic accuracy. Transvaginal ultrasound examination (US) of the pelvic organs, although considered the first line of diagnosis of endometrial pathology, is the cornerstone of the diagnostic search, since it has a number of limitations. The main parameters assessed by ultrasound are the thickness of the endometrium - the mid-uterine echo (M-Echo), echogenicity and the degree of vascularization. At the same time, changes in the ultrasound picture of the endometrium are not strictly specific for various types of pathology, which complicates the differentiation of PE, GE and RTM. A separate category

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of pathology of the uterine mucosa is chronic endometritis (CE), the first line of diagnosis of which, according to most recommendations, is a morphological assessment of the endometrium [7]. However, indirect signs of CE are found in the protocols of ultrasound examinations, which often requires differential diagnosis with PE and GE.

The accuracy of ultrasound is of particular clinical importance, since further treatment tactics are determined based on the conclusion, including the need for surgical treatment and the method of surgical intervention.

However, the factors affecting the accuracy of echographic diagnostics of endometrial pathology have not been definitively established.

The aim of the study is to evaluate the diagnostic accuracy of ultrasound for various types of intrauterine pathology and to identify the factors affecting it.

Materials and methods of research

The work is based on the results of ultrasound and pathomorphological studies of 63 women of reproductive age who underwent hysteroscopy. Which were examined for the periods 2023-2024.Inclusion criteria were previous hysteroscopy with endometrial biopsy, previous ultrasound examination, age from 22 to 44 years, and regular menstrual cycle. Exclusion criteria were: taking hormonal therapy (oral contraceptives, hormone replacement therapy), anticoagulants, tamoxifen, and others that can affect the volume of menstruation and the occurrence of AUB. The study included 32 patients with histologically confirmed PE, 8 with GE, 7 with CE, and 15 women without histological signs of endometrial pathology. All patients underwent transvaginal echography of the pelvic organs in the early follicular phase of the menstrual cycle (5–7 days of the menstrual cycle), in some cases against the background of AMC. Echography was performed using ultrasound devices with intracavitary sensors with a frequency of 6.0–12.0 MHz.

During the study, the location of the uterus, its size, the structure of the myometrium, the presence of myomatous nodes, their size, location, presence ofecho signs of adenomyosis and external genital endometriosis. Particular attention was paid to the state of the endometrium - the median uterine echo (M-Echo), its echogenicity, structure were assessed, the anteroposterior size was measured. If PE was suspected, their size and number and degree of vascularization were determined. The ultrasound criteria for PE were formations of increased echogenicity with clear even contours and increased vascularization. The criteria for GE were the detection of M-Echo more than 7 mm with areas of heterogeneous endometrium. The signs of CE were considered to be a heterogeneous structure of the endometrium with areas of reduced echogenicity and hyperechoic inclusions.

Research results. Among 32 histologically verified PE, Uz-diagnosis “PE” was installed in less than 2/3 of the women's nations-21/32 (65.6%) cases. In other patients According to the ultrasound, there was a suspicion of an indefinite pathohype of the endometrium-5/32 (15.6%), on GE-3/32 (9.4%) and on HE - 2/32 (6,25%). In 1/32 (3,2%) cases. There were no pathologies of the endometrial for ultrasound, and they were a find of pathomorphologists. Among the 27 patients, in which PE visualized by ultrasound,

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In 20/27 (74.1%), it was confirmed morphologically.In other cases, the diagnosis was erroneous: In 4/32 (13.6%) samples-there were no signs of an endo-metrium pathology, in 2/32 (6.3%)-revealed HE and 1/32 (4.5%) - GE. Due to the fact that GE and RTM have identical ultrasound criteria, in calculations of diagnostic accuracy Nosology data were combined. Thus, The results of 32 patients with morphological conclusion of GE and RTM were evaluated, including signs of GE Ultrasound was noted in 22/32 (64.7%) cases. The same Often, by ultrasound, instead of GE, PE and the indefinite endometrial pathology-5/32 (14.7%), in 1/32 (2.9%). Women - HE and another 1/32 (2.9%) - endometrial pathologies Not detected.

According to the ultrasound, the diagnosis was confirmed only by every second -6/12 (50.0%). Instead of GE in 3 /12 of cases (27%), Lenen PE was identified, in 9/44 (20.5%)-a normal endometrium without Pathologies and in 1/44 (2.3%) - HE. According to the results of histology, HE is verified In 28 women, of which only 11/28 (39.3%) expected to have an ultrasound. Still 7/28 (25.0%).

Patients were visualized by PE, in 3/28 (10.7%)-an undesirable pathology of endometrium and in 1/28 (3.6%)-GE.

In case of detection on ultrasound, the diagnosis was confirmed. Only every third patient has 11/33 (31.4%). In 9/33 (25.7%) cases, PE was found, in 1/33 (2.9%) – he but most often - in 14/33 (40%) cases – organic. Thus, a significant proportion of ultrasound conclusions did not correspond to the morphological diagnosis. The calculation of the main indicators of diagnostic accuracy is presented in Table 2. The obtained data demonstrated that the highest sensitivity was noted in verification of PE - 64.8% and HE - 64.7%, and the lowest – in ChE - only 39.3%. The highest PCR was noted in the detection of PE, indicating a 75.5% probability of confirming the diagnosis when it is suspected by ultrasound. With GE this indicator was 50.0%, and with CE - only 33.3%. Due to its high specificity, ultrasound demonstrated a high PCR in relation to intrauterine pathology. The highest PCR was with GE - 94.2% and CE - 92.2%, while with PE it was significantly lower - 67.9%.

Specificity, however, was low - only 15%. To determine the factors influencing the efficiency of echographic diagnostics, an analysis of sensitivity, specificity, PCR and PCR was performed depending on the presence of abnormal uterine bleeding (AUB) in all the nosologies under study, and in PE - depending on their size. For this purpose, PE were conditionally subdivided into small sizes - less than 0.6 cm, medium - 0.6-1.0 cm and large sizes - more than 1.0 cm. As it turned out, the greatest difficulties in diagnosis were observed with PE sizes less than 0.6 cm - the sensitivity was only 52.9%. With small PE, low specificity was also noted - 41.7%.

CONCLUSIONS

Thus, ultrasound, traditionally used as the first line of diagnostics of intrauterine pathology, has limitations in verifying a specific diagnosis and can be characterized by both hyper- and hypodiagnosis. The lowest accuracy is characteristic of CE, small-sized PE, as well as GE without manifestation of AMC. In order to reduce the number of unjustified

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invasive interventions, when choosing the tactics of management, the size of the PE should be taken into account.

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