



IMPORTANCE OF ECHOGRAPHY IN THE DIAGNOSIS OF ADENOMYOSIS

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Abstract: We observed perimenopausal women with adenomyosis, who used echography to determine the degree of adenomyosis. In recent years, there has been a significant increase in the frequency of this disease, and more often it is diagnosed in later stages (stage III-IV), which pose a serious danger to the health of patients, including reproductive health. This is due to the lack of clear non-invasive criteria for the initial stages of adenomyosis.

Keywords: color Doppler mapping, adenomyosis, perimenopause, echography of gynecological diseases.

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Introduction: In the structure of gynecological morbidity, adenomyosis occupies one of the leading places and occurs in 12-50% of women of reproductive age. According to both domestic and foreign authors, adenomyosis is a common cause of dysmenorrhea, menometrorrhagia of infertility, chronic pelvic pain of varying intensity, often leading to psychosomatic and autonomic disorders [8].

In recent years, there has been a significant increase in the frequency of this disease, and more often it is diagnosed in later stages (stage III-IV), which pose a serious danger to the health of patients, including reproductive health. This is due to the lack of clear non-invasive criteria for the initial stages of adenomyosis [7,9].

Among the instrumental methods for diagnosing adenomyosis, transvaginal echography (TVE) is a priority due to its availability, non-invasiveness and low cost" [1,4].

There is evidence of JZ thickening of more than 8 mm without specifying the stage of adenomyosis prevalence (Barto R.A., 2017).

However, the information content of ultrasound for detecting adenomyosis varies, according to different authors, from 20 to 86%, which is associated with the low sensitivity of the method for grade I adenomyosis. In recent years, due to the widespread introduction of Doppler measurements into medical practice using color Doppler mapping, isolated works have appeared devoted to the study of blood flow in the uterine and ovarian arteries in adenomyosis [2,6].

It should be noted that the authors attempted to compare echography data with histological studies of surgical material, although the number of such studies is very limited. It can be assumed that a comprehensive study of the parameters characterizing blood flow in the uterine artery basin, when comparing them with the morphometric and immunohistochemical parameters of the “transition zone” of the uterus, will not only complement the understanding of the pathogenesis of adenomyosis, but also develop more informative early non-invasive methods for diagnosing the disease.

Purpose of the study: To evaluate the informativeness of echography in diagnosing adenomyosis in perimenopausal women.

Materials and methods of examination. We analyzed the case histories of 35 patients with adenomyosis and 20 women with relapses of adenomyosis who received inpatient treatment in the gynecological department of the multidisciplinary clinic of SamState Medical University from January 2023 to December 2023. The control group consisted of 23 potentially healthy women. The age of the women ranged from 43 to 51 years, with an average of 46.9 ± 1.6 years. A comprehensive clinical and laboratory examination included examination of the external genitalia, vagina, and cervix in speculums; bimanual examination, ultrasound and Doppler ultrasound of the pelvic organs, endoscopic examination of the uterine cavity, histological examination of biopsy specimens, MRI.

The criteria for inclusion in the study were the following data: perimenopausal age, confirmed diagnosis of adenomyosis, absence of antibacterial therapy over the past 3 months for an objective assessment of infection status, absence of hormonal therapy over the past 3-6 months. A necessary condition for participation in the study was informed consent.

Exclusion criteria: the studies did not include patients with coagulopathies and iatrogenic bleeding, as well as with malignant diseases of any location.

Table 1

Types of adenomyosis in examined women, $M \pm m$

Types of adenomyosis	I-group n=35	II-group n=20
diffuse	25($71,4 \pm 7,6\%$)	11($55 \pm 11,1\%$)
focal; nodal cystic	10($28,6 \pm 7,6\%$) 6($17,2 \pm 6,4\%$) 4($11,4 \pm 5,4\%$)	9($45 \pm 11,1\%$)* 5($25 \pm 9,7\%$) 4($20 \pm 8,9\%$)

Notice:

* $-p < 0,05$ reliability of differences between groups I and II

When considering the types of adenomyosis in the examined patients (Table 1) by group, the following was revealed: diffuse adenomyosis in the group of patients with recurrent adenomyosis was 11 ($55 \pm 11.1\%$), and nodular adenomyosis occurred in 9 ($45 \pm 11.1\%$) patients, which is relatively significant compared to its frequency in group I ($p < 0.05$).

Echography was performed on patients in the second phase of the menstrual cycle, usually a few days before the onset of menstruation. At the same time, we paid most attention, especially for diagnosing the initial manifestations of adenomyosis, to the state of the basal layer of the endometrium.

The studies carried out allowed us to identify the following most characteristic

Signs of grade I prevalence of adenomyosis:

- formation of small (about 1 mm in diameter) anechoic tubular structures extending from the endometrium towards the myometrium;
- the appearance in the area of the basal layer of the endometrium of small hypo- and anechoic inclusions of round or oval shape with a diameter of about 1–2 mm;
- uneven thickness of the basal layer of the endometrium;
- jagged or rugged basal layer of the endometrium;
- detection of “bitten off” or local defects of the endometrium;
- appearance in the myometrium immediately adjacent to the uterine cavity, individual areas of increased echogenicity up to 3 mm thick.

The thickness of the uterine walls in patients with grade I adenomyosis is close to normal.

Symptoms of grade II adenomyosis identified on echograms:

- an increase in the thickness of the uterine walls, exceeding the upper limit of normal;
- thickening of one wall of the uterus compared to the other by 0.4 cm or more;
- appearance in the myometrium immediately adjacent to the uterine cavity, zones of increased heterogeneous echogenicity of varying thickness;
- appearance in the area of increased echogenicity of small round anechoic formations with a diameter of 2–5 mm, as well as liquid cavities of various shape and size, containing fine suspension (blood), and sometimes dense inclusions of slight echogenicity (blood clots);
- ultrasonic signs occurring in grade I of prevalence diseases (they are also characteristic of all other manifestations of internal endometriosis).

The thickness of the uterus in grade II adenomyosis is increased in approximately half of the patients.

Symptoms of grade III adenomyosis identified on scanograms:

- enlargement of the uterus in the main anteroposterior size;
- predominant increase in the thickness of one of the walls of the uterus;
- the appearance in the myometrium of a zone of increased heterogeneous echogenicity, occupying more than half the thickness of the uterine wall;

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- detection of anechoic inclusions with a diameter of 2–6 mm or liquid cavities of various shapes and sizes containing fine suspension;
- the appearance in the area of pathological formation of multiple close located stripes of medium and low echogenicity, oriented perpendicular to the scanning plane;
- identification of a zone of increased echogenicity, as well as the anechoic zone in the area of the far front;
- significant reduction in endometrial thickness during examination, carried out even at the end of the second half of the menstrual period cycle.

The thickness of the uterus with grade III adenomyosis is increased in almost all female patients.

In nodular and focal forms of adenomyosis, the following echographic signs were determined on scanograms:

- the appearance in the wall of the uterus of a zone of increased echogenicity - round or oval with smooth contours in a nodular form and with uneven contours - in focal;
- small (2–6 mm in diameter) anechoic inclusions or cystic cavities containing fine suspension;
- increased echogenicity near the leading edge of the formation and decreased - near the far one;
- detection of medium and low echogenicity in a pathological focus is close located stripes oriented perpendicularly to the scanning plane;
- deformation of the median uterine echo with a submucosal location node.

The thickness of the uterus in focal and nodular forms of adenomyosis depends on the size of the pathological formation.

Table 2

Degrees of adenomyosis in examined women, M±m

Degrees of adenomyosis	I degree	II degree	III degree	adenomyosis was not detected
With hysteroscopy followed by histology (n=55)	28(50,9%)	17(30,9%)	10(18,2%)	-
During echography (n=55)	25(45,5%)	16(29,1%)	10(18,2%)	4(7,2%)



Picture 1. Ultrasound picture of stage I adenomyosis



Picture 2. Ultrasound picture of stage II adenomyosis



Picture 3. Ultrasound picture of stage III adenomyosis

In general, the use of these criteria makes it possible to establish grade I adenomyosis in 88.5% of cases, grade II in 90%, grade III in 100% of cases. The presented data indicate that echography is currently the most informative method for diagnosing adenomyosis, despite certain difficulties and known subjectivity in the interpretation of echograms. The greatest difficulties arise when adenomyosis of endometriosis is combined with multiple interstitially located myomatous nodes. In such cases, it is not always possible to establish or exclude the pathology in question using echography.

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