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Sonographic Predictors Of Pelvic Organs In Women With Premature Ovarian Failure

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ABSTRACT

Premature menopause is a pathological condition characterized by the cessation of the functional activity of the ovaries in women under the age of 40 and manifested by amenorrhea, high levels of gonadotropins in the blood, infertility and symptoms of estrogen deficiency. POF occurs on average in 1% of women. The exact nature of the disease remains unknown. The basis of this pathology, regardless of the etiological factor, is a decrease in the reserve of primordial follicles, which is unusual for this age period, up to its complete depletion and the formation of the afollicular type of POF. This condition is described as a "multifactorial syndrome" due to chromosomal abnormalities, genetic disorders, fermentopathies, infectious and iatrogenic factors.

KEYWORDS

Premature menopause, echography, amenorrhea, primordial follicle, infertility, hormone replacement therapy.

INTRODUCTION

Premature ovarian failure is a complex, multifactorial and long-term process. The term "premature ovarian failure" (POF) denotes a complex of symptoms that develops in

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women under 40 years of age and includes amenorrhea, signs of pronounced estrogen deficiency and infertility with elevated levels of gonadotropins (FSH, LH) [1, 2]. The literature discusses the age range that makes it legitimate to diagnose premature ovarian failure. The age of POF formation is considered to be 35-43 years [8, 13], but most researchers point to the age of up to 40 years [6].

This pathology, regardless of the etiological factor, is based on a decrease in the supply of primordial follicles, which is unusual for this age period, up to its complete depletion and the formation of the afollicular type of POF. This condition is described as a "multifactorial syndrome" caused by chromosomal abnormalities, genetic disorders, fermentopathies, infectious and iatrogenic factors [1, 4,8].

There is a directly proportional relationship between the pool of primordial and the number of growing follicles, therefore, with a decrease in the number of the first, the size of the cohort of follicles, taken monthly in the ovulatory cycle, decreases. It is impossible to objectively assess the ovarian pool in vivo, therefore, indirect methods of determining it are necessary. According to some authors [2,4], along with hormonal methods, the main method is echography, which includes determining the volume of the ovary and the number of antral follicles. It has been established that the volume of the ovary is less than 3 cm3 [2, 9] and the presence of less than 5 antral follicles in the ovary is an unfavorable prognostic sign of the ovarian reserve [2, 4]. The number of antral follicles detected by transvaginal echography reflects the remaining pool of "resting" primordial follicles, which is confirmed by a number of works based on histological studies, in which a direct relationship was proved between the number of primordial and growing follicles [11,13].

At present, hormone replacement therapy is prescribed to correct early, mid-term and late metabolic disorders typical of POF [1]. At the same time, drugs are used, which include natural estrogens in dosages that temporarily maintain their concentration in blood plasma at the level of the early follicular phase of the menstrual cycle.

The aim of this study is to assess changes in the echographic parameters of the pelvic organs in patients with POF using sonography.

MATERIALS AND METHODS

We examined 35 women with premature ovarian failure aged 18 to 40 years (mean age 36.4 ± 2.8) before and after 12 months of taking hormone replacement therapy. The control group included 30 women of reproductive age with a preserved menstrual rhythm, who underwent echography of the pelvic organs on the 3rd day of the cycle. The levels of hormones (FSH, LH, E2 and T) were determined by ELISA using the appropriate test systems. Transvaginal ultrasound examination of the pelvic organs was carried out on the "" apparatus using a multi-frequency transvaginal transducer with a frequency of 8 - 6 - 4 MHz. With transvaginal echography of the pelvic organs, the volume of the ovaries was calculated and the antral follicles in them were counted, in addition, the size of the body of the uterus was measured and the state of the endometrium was studied.

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Hormone replacement therapy for patients with premature ovarian failure was carried out with «Lenzetto» preparations (spray, transdermal, 1.53 ml / 1 dose, (Gedeon Richter, Hungary). The estrogenic component in it is represented by estradiol hemihydrate. «Lenzetto» was used 1 time per day in a continuous sequential mode in combination with Duphaston (10 mg) Duphaston was prescribed for 14 days.

Statistical data processing was performed on a computer using «Microsoft Excel» spreadsheets and «Statistica for Windows» v. 7.0, StatSoft Inc. (USA).

RESULTS

A prospective clinical and laboratory examination of 35 patients with POF (mean age 36.4 ± 2.8 years) was carried out. By the time of the study, the duration of the disease was 4.7 ± 1.4 years, and the age of onset of the disease was 30.2 ± 2.6 years. The onset of menstrual rhythm disturbances occurred at the age of 29.3 ± 1.3 years.

Among the reasons that led to the development of POF, the patients most often noted stress factors (26.92%), although in the majority of patients (53.85%) it was not possible to establish the direct cause of POF.

The onset of the disease by the type of oligoamenorrhea was detected in the majority of patients (92.3%), only 7.7% had a sudden cessation of menstruation as a persistent amenorrhea.

All patients with POF complained of secondary amenorrhea, 25 (71.4%) - increased fatigue, 23 (65.7%) - hot flashes, 21 (60%) - infertility, 16 (45.7%) - for decreased libido, 7 (20%) - for vaginal dryness, 5 (14.3%) - for dizziness, 3 (8.6%) - for frequent urination, 2 (5.71%) - for weight gain , 2 (5.71%) - for an increase in blood pressure.

The severity of symptoms of sex hormone deficiency according to the Kupperman index (16.1 ± 1.6 points) was assessed as moderately severe.

The average level of LH and FSH in patients with POF significantly exceeded the standard values for women of reproductive age, amounting to 92.6 ± 4.8 and 117.8 ± 4.2 IU / L, respectively. The concentration of estradiol (75.4 ± 9.6 pmol / L) in women with POF was significantly lower than the normative indicators of the early follicular phase in women with regular menstruation, while in 24 (68.6%) patients the level of estradiol did not exceed 69 pmol / l and averaged 54.6 ± 12.7 pmol / l. It is interesting to note that, on average in the group, in women with POF, the testosterone level was 1.1 ± 0.07 nmol / l, and in 21 (60%) patients it was within 0.3-0.8 nmol / l and amounted to 0 , 71 ± 0.2 nmol / l, which is regarded as a persistent hypoandrogenic state.

To study the size and internal structure of the ovaries, 35 women with POF underwent transvaginal echography of the pelvic organs (Table 1) (Fig. 1).

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Table 1. Echographic characteristics of the ovaries in patients with premature ovarian failure

Indicator	Patients with PYAN (n = 35)
Ovarian imaging on both sides	27 (77,14%)
Ovarian imaging on the right only	2 (5,7%)
Ovarian imaging on the left only	2 (5,7%)
The ovaries are not visualized on both sides	1 (2,9%)

Table 2. Echographic picture of the ovaries in patients with premature ovarian failure and control group

Indicator	Patients with POF (n = 35)	Control group (n = 33)
Rightovaryvolume, cm^3	1,78+0,21*	5,9+1,6
Left ovary volume, $см^3$	1,79+0,26*	6,0+1,4
Follicular type of POF	17 (51,5%)*	33(100%)
Up to 5 antral follicles	9 (25,7%)	-
5-10 antral follicles	8(22,9%)*	33(100%)
Average number of antral follicles for per ovary	3,4+1,2*	6,6+1,7
Afollicular type POF	15 (42,9%)	-
Uterine body volume, $см^3$	27,4+2,3*	46,7+1,9
M-echo, см	0,3+0,08	0,5+0,02

Note. * - Significant difference in relation to the control group (P <0.05).

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Table 3. Hormonal profile of patients with follicular and afollicular types of premature ovarian failure.

Indicator	Follicular type of POF (n=15)	Afollicular type of POF (n=20)
E2 level, pmol / l	105,6+18,41*	61,2+5,6
FSHlevel, IU / L	100+12,8	111+10,8

Hormone replacement therapy was recommended to all 35 patients with POF to relieve early (and in some cases, late) symptoms of sex hormone deficiency. During the administration of the drug, all patients experienced a regular menstrual-like response, no acyclic spotting was observed.

After 12 months of taking hormone replacement therapy, the Kupperman index was determined in patients. It was 5.6 ± 1.6 points, which indicates the replacement of the missing sex hormones. This has also been confirmed by hormonal studies (Table 4).

Table 4. Hormonal profile in patients with premature ovarian failure before and after 12 months of taking HRT.

Indicator	Average value	
	Before treatment	After treatment
FSH, IU / L	117+37,6	49,2+9,64
LH, IU / L	92,4+34,7	50,2+8,1
E2, pmol / l	77,1+9,6	178,4+30,1
T, nmol / L	0,9+0,18	1,2+0,2

As can be seen from Table 4, after 12 months of taking HRT, the LH level decreased almost 2 times and amounted to 50.2 + 8.1 IU / L, FSH - more than 2 times (49.2 + 9.64 IU / L) ...

Simultaneously with the fall in the level of gonadotropins, the level of E2 increased by 2.3 times (178.4 + 30.1 pmol / l). During therapy, we also achieved an increase in testosterone levels by about 20% (from 0.9 + 0.18 to 1.2 + 0.2 nmol / l).

After hormone replacement therapy, 28 patients with POF underwent dynamic

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transvaginal echography of the pelvic organs. At the same time, an increase in the volume of the ovaries was revealed by 32-80%, the body of the uterus - by 35%, as well as a relative improvement in the indices of the ovarian reserve (Table 5).

Table 5. Dynamic transvaginal echography of the pelvic organs after 12 months of HRT.

Indicator	Before treatment	After treatment
Rightovaryvolume, $см^3$	1,78+0,21*	2,4+0,6
Leftovaryvolume, $см^3$	1,79+0,26*	3,2+0,8
Follicular type of POF	17 (51,5%)*	19 (67,9%)
Up to 5 antral follicles	9 (27,3%)	22 (78,6%)
5-10 antral follicles	8(24,2%)*	4(14,3%)
Average number of antral follicles for per ovary	3,4+1,2*	5,0+1,0
Afollicular type of POF	15 (45,5%)	9 (32,1%)
Uterine body volume, $см^3$	27,4+2,3*	35,1+2,6
M-echo, см	0,3+0,08	0,5+0,09

Note. * - p <0.05 when compared between the two groups.

DISCUSSION

The results of the study show a decrease in the volume of ovarian reserve in women with POF (up to 1.78 + 0.21 and 1.79 + 0.26 cm3 for the right and left ovaries, respectively) and the number of antral follicles (up to 3.2 ± 0.9 follicles on the ovary). They agree with the data obtained earlier [1]. Ignatieva R. Ye. Et al. [5] found that in POF the follicular type of pathology is detected in 60% of cases. We found follicles in 64.5% of women with POF, which indicates a significant decrease in ovarian reserve in the examined patients.

In patients with POF against the background of hormone replacement therapy with drugs that include a gestagen with a partial androgenic effect, an increase in ovarian volume was noted by 31-77%. The average volume of the uterus during therapy increased by 34%. The data obtained are due to an increase in the level of E2 (77.1 + 9.6 to 178.4 + 30.1 pmol / L) and a decrease in FSH (from 117 + 37.6 to 49.2 + 9.64 IU / L). Our data are consistent with the results of the XuH study. etal. [13].

Thus, the follicular type of POF was detected in 67.9% of patients compared to 55.5% before treatment, while in 22 (78.6%) patients up to 5 antral follicles were visualized, in 4 (14.3%) patients - up to 10 antral follicles, which

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indicates a relative improvement in ovarian reserve indicators.

CONCLUSION

Thus, transvaginal echography is a non-invasive highly informative technique that allows dynamic monitoring of patients with POF who are taking hormone replacement therapy. To increase the effectiveness of hormone therapy, patients with POF should be advised to modify their lifestyle taking into account the existing corrected cardiovascular risk factors.

REFERENCES

1. Absatarova Yu. S., Andreeva EN Premature ovarian failure: modern aspects of patient management // Collection of theses of the III All-Russian conference with international participation "Reproductive health of women and men". - 2018 .-- S. 5-5.
2. Adamyan LV et al. New possibilities of surgery in restoring the lost functions of the ovaries with premature ovarian failure in women of reproductive age // Doctor. RU. - 2019. - T. 11. - No. 166 .-- S. 44-9.
3. Andreeva VO, Aperyan AV, Shukhardina TA Comparative analysis of the clinical efficacy of low-dose combined oral contraceptives with drospirenone and systemic enzyme therapy in adolescents with ovarian hypofunction of autoimmune genesis // Reproductive health of children and adolescents. - 2019. - T. 15. - No. 3.
4. Blinov DV and others. Early menopause and premature ovarian failure: problems and prospects // Obstetrics, gynecology and reproduction. - 2020. - T. 14. - No. 3. - S. 328-345.
5. Ignatieva R. E., Gustovarova T. A., Dmitrieva E. V. Method for assessing the state of the ovarian reserve of the ovaries. - 2018.
6. Kravtsova OA et al. Sonomorphological criteria of endometrium readiness for implantation during IVF // Postgraduate readings-2017. - 2017 .-- S. 110-111.
7. Podzolkova NM et al. Discussion issues of clinical, laboratory and instrumental diagnosis of ovarian tumors in women of reproductive age (literature review) // Gynecology. - 2020. - T. 22. - No. one.
8. Solomatina AA et al. Ultrasound indicators of ovarian reserve in newly diagnosed and recurrent endometrioid ovarian formations // Russian Bulletin of Obstetrician-Gynecologist. - 2017. - T. 17. - No. 4. - S. 43-48.
9. Cekici Y. et al. Prediction of Lipoprotein-Associated Phospholipase A2 and Inflammatory Markers in Subclinical Atherosclerosis in Premature Ovarian Failure Patients // Acta CardiologicaSinica. - 2021. - T. 37. - No. 1. - P. 30.
10. Chen L. et al. Effect of stem cell transplantation of premature ovarian failure in animal models and patients: A meta-analysis and case report // Experimental and therapeutic medicine. - 2018. - T. 15. - No. 5. - S. 4105-4118.
11. Eleazu I. C., Jones-O'Connor M., Honigberg M. C. The Impact of Premature Menopause on Future Risk of Cardiovascular Disease // Current Treatment Options in Cardiovascular Medicine. - 2020. - T. 22. - No. 12. - S. 1-11.
12. Gu Y., Xu Y. Successful spontaneous pregnancy and live birth in a woman with premature ovarian insufficiency and 10 years of amenorrhea: A case report // Frontiers in medicine. - 2020. - T. 7.

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13. Xu H. et al. Effects of Low Intensity Pulsed Ultrasound on Expression of Bax and Bcl-2 in Premature Ovarian Failure Mice Induced by 4-Vinylcyclohexene Diepoxide. - 2021.