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Autoimmune Thyroiditis And Characteristics Of Disorders Of Reproductive Function In Women Of Fertile Age

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ABSTRACT

The aim is to study the review of the literature review on autoimmune thyroiditis and violations of the reproductive function in women of fertile age

Methods. In total, 100 cases of Ait in women of fertile age with various disorders of the menstrual function (MF) and the reproductive system (PC) were studied. The average age of women was ranging from 18 to 45 years (31.5 ± 0.4).

All 100 patients were performed by a study spectrum, including the study of endocrine status (anthropometric - height, weight, waist volume, thighs, body weight index), general crystal, biochemical, hormonal (TSH, LG, FSH, prolactin, estradiol, progesterone, free thyroxine, antibodies to TPO and other - in the laboratory of radioimmune hormonal studies of the RSNPMC Endocrinology of the Ministry of Health of Ruz. In addition, they performed an ultrasound study of the brief and genital organs, an ECG, as well as a study of the quality of life on the questionnaire of The World Health Organization Quality Of Life (WHOQOL -Qol).

Research results. Depending on the body mass index (BMI), the patients were distributed into 2 groups: 1 group - patients with ait with soblinic hypothyroidism -48 (48.0%) patients, 2 groups - patients with AIT with manifestic hypothyroidism - 52 (52.0%) patients.

In the structure of violations of MC in women, the 1st groups were allowed -24.6%, secondary amenorrhea -12.5%. These patients had a history of miscarriage (12.5%), stillbirth (14.6%). Violations of reproductive function were not observed.

In the structure of violations of the MC in women, 2 groups were an olnognosorya -59.6%, the metrrahny frequency is 21.2%, secondary amenorrhea -19.2%. For this category of patients, a high

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frequency of violations of the reproductive system (53.9%) is characterized, of which: primary infertility was observed in 40.4% of cases, secondary infertility - 13.5% of cases. These patients had a history of miscarriage (32.8%), stillbirth (39.8%), butorous prevention of the fetus (22.7%).

Conclusions. 1) The first stage in the treatment of menstrual disorders and infertility in women with ait should be the correction of excess body weight. 2) Most often, the violation of the MC and the reproductive function was observed in patients with ait and 1 degree of obesity than with ait and normal body weight.

KEYWORDS

Autoimmune thyroiditis, women, disorders of reproductive function.

ABBREVIATION:

Autoimmune thyroiditis – AIT;

Thyroid gland – TG;

Follicle-stimulating hormone (FSH);

Luteinizing hormone – LH;

INTRODUCTION

The problem of autoimmune thyroiditis (AIT) in women of reproductive age is currently of great theoretical and practical interest. This is due not only to medical (increased gynaecological morbidity), but also to social aspects since the hypothyroid phase of AIT without timely correction leads to the birth of mentally disabled offspring [1-9, 26-30].

The frequency of AIT, according to different authors [1-3, 29], ranges from 4 to 46% of all thyroid pathology, and women are 10-17 times more likely than men to suffer from thyroid disorders [21].

This is largely due to the characteristics of the female hormonal status and the role of sex steroids. Changes in the state of the thyroid gland (TG) negatively affect menstrual and reproductive function [30].

Thyroid disease is the second most common endocrine disease in women of childbearing age. As you know, thyroid hormones are involved in the control of the menstrual cycle and in achieving fertility, affecting the actions of follicle-stimulating hormone (FSH) and luteinizing hormone (LH), on the biosynthesis of steroids by specific sites of triiodothyronine on oocytes; therefore, affect all aspects of

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reproduction. The purpose of this review, carried out by US authors, was to examine recent studies evaluating thyroid dysfunction in pregnant women, its treatment, and new perspectives on thyroid autoimmunity in pregnant women with euthyroidism in achieving fertility. Searches were conducted using medical databases on the Internet: Medline/PubMed, EMBASE, EBSCO and the Cochrane Library [23].

Confirmation of the close relationship of the thyroid and reproductive systems is that during critical periods of a woman's life (puberty, pregnancy, lactation, menopause), an increase in the thyroid gland and a change in its activity are noted [4, 5, 6]. According to many authors [7-10, 30-40], thyroid diseases often develop after childbirth and abortion. However, despite the presence of a pronounced relationship between the thyroid gland and the reproductive system, proven by several authors, there is still no consensus about the nature of this interaction and the level at which it occurs [8, 9].

And if the issues of the influence of thyroid dysfunction on puberty and ovulation have been studied to such an extent that they make it possible to achieve success in treatment, the problem of the joint influence of sex and thyroid hormones on target organs in case of disorders in the immune status of the body remains practically unresolved. According to some authors [10-15], especially close attention is required to study the influence of the functional state of the thyroid gland on the reproductive sphere, since the future of the nation largely depends on the state of a woman's reproductive health. So, according to the literature, in a number of women, with a decrease in the functional activity of the thyroid gland, ovarian-menstrual dysfunction is noted, which ultimately leads to the inability of women of reproductive age to conceive and/or bear a fetus, which in turn plays a role in the violation of the psychosocial adaptation of women and affects the main demographic indicator - fertility.

Thus, the preservation of a woman's reproductive health is one of the important problems of endocrinology, which has not only medical but also social significance. Other researchers have shown that women of reproductive age with AIT suffer from gynaecological diseases in 68% of cases, while among patients of fertile age with gynaecological diseases, AIT is detected in 48% of cases. The most common gynaecological diseases in women with AIT are uterine fibroids (39.2%), adnexitis (30%), and endometriosis (16.6%).

The clinical course of gynaecological diseases in women with AIT is complicated by disorders in the pituitary-thyroid and ovarian links, which manifests itself in the form of hypothyroidism in uterine myoma, hyperthyroidism in inflammatory diseases of the appendages, a tendency to develop hypothyroidism in endometriosis. The central mechanisms of regulation of the hypothalamic-pituitary-ovarian system, manifested by insufficiency of the luteal phase (68.08%), anovulation (18.08%), changes in the secretion of LH, FSH, hypoprogesteronemia, hyperestrogenia in combination with uterine fibroids with AIT and a tendency to hyperestrogenism in combination endometriosis with AIT, lead to impaired reproductive function [20-25].

In addition, it has been conclusively shown that hypothyroidism and diffuse toxic goiter can be the causes of menstrual irregularities. At the same time, the influence of the functional state of the thyroid gland in AIT on the course of gynecological diseases, when a number of links of the endocrine and immune systems are involved in the pathological process, remains unclear [11-16].

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In the latest study on this issue, carried out by a number of researchers [20-24], the question was raised whether levothyroxine improves the results of fertility after in vitro fertilization in women with AIT? The authors performed a comprehensive literature search on standard medical databases by April 8, 2019, in consultation with the Information Specialist of the Cochrane Group on Gynecology and Fertility for a randomized clinical trial. The authors found four studies (with 820 women) that met the requirements. In women with mild thyroid hormone imbalance and unknown thyroid autoimmune status, the authors were not sure whether thyroxine substitution affected the number of live births or miscarriage (very low quality data from one study involving 70 women). All of the above emphasizes the relevance of the topic of the work. In connection with the above, the need arose for this study.

Purpose of the study - to study the literature on the characteristics of reproductive dysfunctions in women of fertile age with autoimmune thyroiditis.

MATERIALS AND METHODS

We in the departments of thyroidology and neuroendocrinology of the Republican Specialized Scientific and Practical Medical Center of Endocrinology named after acad. J.H. Turakulov for the period 2018-2021 In total, 100 cases of AIT were studied in women of fertile age with various disorders of menstrual function (MF) and reproductive system (MS). The average age of women ranged from 18 to 45 years (31.5 ± 0.4). All 100 patients underwent a range of studies, including the study of endocrine status (anthropometric - height, weight, waist, hips, body mass index), general clinical, biochemical, hormonal (TSH, LH, FSH, prolactin, estradiol, progesterone, free thyroxine , antibodies to TPO, etc. - in the laboratory of radioimmune hormonal research of the RSNPMC Endocrinology of the Ministry of Health of the Republic of Uzbekistan.

In addition, he underwent an ultrasound examination of the thyroid gland and genitals, an ECG, as well as a study of the quality of life according to the short questionnaire The World Health Organization Quality Of Life (WHOQOL-Qol).

The data obtained were processed using Microsoft Excel and STATISTICA_6 computer programs. The mean values (M), standard deviations of the means (m) were calculated. The significance of differences in the level between the groups was assessed by the value of the confidence interval and the Student's test (p). Differences were considered statistically significant at $p < 0.05$. The patients were prescribed replacement therapy with levothyroxine at the rate of 1.6/kg body weight, as well as Siofor, veroshpiron, if necessary, in order to correct excess weight.

RESULTS

The patients were divided into 2 groups: Group 1 - patients with AIT with subclinical hypothyroidism -48 (48.0%) patients, Group 2 - patients with AIT with overt hypothyroidism - 52 (52.0%) patients. Table 1 shows the distribution of patients by age. As can be seen from Table 1, patients aged 16 to 29 years predominated - 72 patients (72%).

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Table 1. Distribution of patients by age periods and groups

Age, years	1st group (n= 48)	Group 2 (n= 52)
16 – 29	33	39
30-44	15	13
45-59	-	-
60-74	-	-
75 и ст.	-	-
Total :n = 100	48	52

Table 2. Characteristics of menstrual irregularities by groups.

violations	1 группа n=48	2 группа n=52
Amenorrhea ikkilamchi	4 (8,3%)	7 (13,5%)
Dysmenorrhea	8 (16,7%)	2 (3,8%)
Hypermenorrhea	-	-
Polymenorrhoea	-	-
Oligomenorrhea	13 (27,2%)	8 (15,3%)
Hypomenorrhea	2 (4,1%)	2 (3,8%)
Follicle persistence	21(43,7%)	14 (26,9%)
Primary infertility	-	13 (25,1%)
Secondary infertility	-	2 (3,8%)
Libido	-	4 (7,6%)

Table 2 shows the characteristics of menstrual irregularities by groups. As can be seen from Table 2, opsomenorrhea -24.6%, secondary amenorrhea -12.5% were in the structure of MC disorders in women of group 1. These patients had a history of miscarriages (12.5%), stillbirth (14.6%). Reproductive dysfunctions were not observed. In the structure of MC disorders in women of the 2nd group, there was an inflammation of 59.6%, the frequency of metrorrhagia is 21.2%, secondary amenorrhea is 19.2%. This category of patients is characterized by a high frequency of reproductive system disorders (53.9%), of which: primary infertility was observed in 40.4% of cases, secondary infertility - 13.5% of cases. These patients had a history of miscarriages (32.8%), stillbirth (39.8%), breech presentation (22.7%).

Table 3 shows the comparative characteristics of the average BMI values by groups before treatment.

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Table 3. Average BMI values by group.

Groups	30,0-34,9 kg/м^2	35,0-39,9 kg/m^2	≥40 kg/m^2
group 1 n= 48	33, 5 ± 3,8 n= 28	37,8 ± 3,2 n= 20	41,2 ± 4,6 n= 2
group 2 n=52	34, 3 ± 4,5 n= 18	37,6 ± 4,1 n= 24	42,3 ± 3,5 n= 3
Всего n= 100	n= 46	n= 44	n= 5

As can be seen from Table 3, patients with 1 (n = 46) and 2 degree (n = 44) obesity prevailed. Most often, disorders of MC and reproductive function were observed in patients with AIT and grade 1 obesity than in patients with AIT and normal body weight. Table 4 shows a comparative characteristic of the average values of basal hormone levels on the 14th day of the cycle by groups.

Table 4. Comparative characteristics of the average values of basal hormone levels on the 14th day of the cycle.

hormones	1st group	2nd group	control	norm
LH	12,7±0,6	22,9±0,8	21,7±2,1	28,7 ME/L (20,0-42,0)
FSH	16,2±0,5	21,6±0,8*	22,2 ± 2,3	22,1 ME/L (20,0-28,0)
PRL	5,6±0,3	15,6±0,3	5,3±0,5	5,7 ng/ml
TSH	2,1±0,2	5,0±0,3*	1,1±0,01	0,14-4,7 MME/L
Estradiol	0,19±0,7*	0,23±0,6 *	1,3 ±0,3	0,34 – 1,8 nmol/l
Progesterone	16,5±0,6	4,5±0,3 *	24,5 ±3,2	11- 80 nmol/l
St. thyroxine	10,2 ±0,5	1,2 ±0,2	2,5 ±0,5	9 – 22 pmol/l
St. testosterone	2,9±0,1.	3,1±0,2.	1,7±0,19.	0,2-2,7 nmol/l

Note: * - reliability of differences compared with the data before treatment, where * - p <0.05

As can be seen from table 4, for patients from group 1, on the 14th day of the cycle, normal basal levels of LH, FSH were characteristic, against the background of a decrease in estradiol and normothyroxinemia.

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For patients from group 2, on the 14th day of the cycle, a significant increase in the basal levels of LH, FSH, TSH, a decrease in ovarian hormones (Estradiol, Progesterone), a decrease in free thyroxine, against the background of an insignificant increase in prolactin were characteristic. Hyperandrogenemia was observed in both groups.

Several authors have found that women suffering from thyroid hypofunction are threatened by the development of various kinds of reproductive disorders [17-20]. The researchers emphasized that, unfortunately, today there is no consensus about the relative true frequency of menstrual disorders in this endocrinopathy, their dependence on such important from a practical point of view factors as the woman's age, the duration of the degree of compensation of the underlying disease, concomitant gynaecological pathology... They noted that AIT with an outcome in hypothyroidism is one of the causes of hormonal and germinal ovarian dysfunction. According to them, clinically indicated disorders are manifested mainly by hypomenstrual syndrome. The duration of the course of decompensated hypothyroidism, associated metabolic disorders, and the woman's age are key factors for menstrual irregularities.

Thus, our studies have confirmed that this problem remains relevant and further research is needed to solve them.

CONCLUSION

1. The first step in the treatment of menstrual irregularities and infertility in women with AIT should be the correction of excess body weight.
2. Most often disorders of MC and reproductive function were observed in patients with AIT and 1 degree of obesity than in patients with AIT and normal body weight.

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