



AUTOIMMUNE THYROIDITIS AND IODINE DEFICIENCY

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Annotation

The article presents the results of a study to assess the impact of iodine deficiency on the course of pregnancy in women with autoimmune thyroiditis. The study was conducted on the basis of the maternity complex of the first clinic of the Samarkand State Medical University. 30 women were examined in the conditions of the city of Samarkand, as an iodine-deficient zone. It has been shown that in the presence of concomitant iodine deficiency in pregnant women with autoimmune thyroiditis, subclinical hypothyroidism occurs more often, and the frequency of miscarriage and the threat of termination of pregnancy in the early stages is significantly increased. The conclusion was made about the need for adequate iodine prophylaxis in patients with autoimmune thyroiditis.

Keywords: iodine deficiency, autoimmune thyroiditis, pregnancy, Hashimoto's goiter, endemic zone, Samarkand city.

Introduction

Currently, AIT is understood as a chronic organ-specific disease of the thyroid gland, characterized by lymphoid infiltration of its tissue, which occurs due to autoimmune factors.

Since the problem of total iodine deficiency and related iodine deficiency diseases was identified by the World Health Organization in the 1990s, significant progress has been made in eliminating iodine deficiency. Nevertheless, the extreme importance of this problem, both at the medical and at the demographic



level, forces us to constantly return to the issues of correcting the iodine status. Iodine prophylaxis during pregnancy not only compensates for the increased physiological need for iodine in a given period of life, but also contributes to the physiological course of pregnancy and childbirth, maintaining the normal thyroid status of the mother and child, and is the key to adequate neuropsychic and intellectual development of the child. In 2007, a WHO expert group revised the recommended intake of iodine during pregnancy, increasing them to 200–250 mcg/day. [ten]. It should also be noted that the stimulating effect of excess iodine on the development of autoimmune thyroid diseases has been widely described. This explains the reason for the reserved attitude of practicing endocrinologists and obstetricians-gynecologists to the issue of iodine prophylaxis in patients with autoimmune thyroiditis (AIT).

It has been shown that the introduction of pharmacological doses of iodine can lead to the appearance of thyroid antibodies in genetically predisposed individuals. At the same time, a number of studies have not revealed a negative effect of physiological doses of iodine on autoimmune processes in the thyroid gland [3]. Moreover, some studies indicate that iodine deficiency may be a predictor of thyroid hypofunction in patients with AIT [6].

Purpose of the Study

To study the effect of iodine deficiency on pregnant women with autoimmune thyroiditis living in the iodine-deficient region of the city of Samarkand.

Materials and Methods

30 pregnant women with concomitant autoimmune thyroiditis, who applied to clinics No. 1 of Samarkand State Medical University, were examined. The comparison group consisted of 30 pregnant women who did not have anamnestic and clinical data on thyroid diseases, but also living in the endemic zone. To assess the thyroid status, clinical research methods were used (assessment of clinical symptoms, examination and palpation of the thyroid gland), determination of the level of hormones TSH, T4f, antibodies to TPO and TG in the blood (the reference range of TSH values during pregnancy is 0.2–3.5 μ IU / ml; -5000; determination of the concentration of iodine in the urine by the arsenite-cerium method (a mixture of three single portions of urine collected on different days was subjected to the study). To identify somatic, hereditary and obstetric-gynecological history, a questionnaire method was used. The study of the characteristics of the course



of pregnancy and childbirth was carried out according to the individual card of the pregnant woman and the puerperal. Statistical processing of the obtained data was carried out using the Microsoft Excel spreadsheet analysis package, a two-sample t-test was used to assess differences, differences were considered significant at $p < 0.05$.

Results and Discussion

The mean age in the main and control groups was the same and amounted to 27.8 ± 1.2 and 28.1 ± 0.8 years, respectively. In 23 (76.7%) women of the main group, AIT was detected for the first time during this pregnancy. In 7 (23.3%) patients, AIT was diagnosed earlier, while the duration of the disease ranged from 0.5 to 10 years (average 3.3 years). Occupational hazard in the form of contact with harmful chemical compounds had 12 (40%) people in the main group and 2 (6.7%) in the comparison group ($p = 0.002$). In 15 (50%) pregnant women with AIT, a burdened family history of thyroid diseases was revealed, in the comparison group - in 3 (10%) ($p = 0.001$). The study group included 16 (53.3%) primiparous and 14 (46.7%) multiparous women. When studying the obstetric history, the presence of miscarriages was noted in 7 (11.7%), miscarriages - in 3 (5%), premature births - in 4 (6.7%) and delayed births - in 6 (10%) women from the general sample. In general, 11 (36.7%) patients with AIT and 3 (10%) patients in the control group had a aggravated reproductive history ($p = 0.006$).

A history of gynecological diseases was equally common in both groups (73.3% in the main group and 66.7% in the comparison group). Thus, it was found that AIT during pregnancy is more often observed in women with occupational hazards and a burdened family history of thyroid diseases. More than a third of patients with AIT also have a burdened reproductive history, characterized by infertility and miscarriage.

Analyzing the quality of iodine prophylaxis, we found that in patients with AIT, iodine prophylaxis was characterized by a later start compared to the control group. Only every 10th woman from the main group started iodine prophylaxis at the stage of preconception preparation, and every 10th woman did not receive iodine preparations at all. Probably, in this regard, in patients with AIT, iodine deficiency is more pronounced than in pregnant women without thyroid pathology. It is also possible that pregnant women with AIT have slightly different iodine requirements.



To assess the degree of influence of concomitant iodine deficiency on the processes of gestation in pregnant women with AIT, two subgroups were conditionally distinguished in the main group: group I-A ($n = 15$) with a median of iodine $75 \mu\text{g/l}$ and group I-B ($n = 15$) – with a median of ioduria of $110 \mu\text{g/L}$. We compared these two subgroups with each other as well as with the control group in terms of pregnancy complications. In both subgroups, the threat of miscarriage was more common than in the control group. At the same time, in conditions of more pronounced iodine deficiency, the percentage of the threat of miscarriage was higher: 73.3% in group I-A versus 46.7% in group I-B ($p = 0.035$). The same pattern was revealed when comparing the frequency of abortion in the first trimester. Thus, missed pregnancy and miscarriages in group I-A occurred 3 times more often than in group I-B (20 and 6.7%, respectively, $p = 0.3$), and were not observed in the comparison group.

Hypothyroidism plays a key role in the genesis of miscarriage in AIT. thyroid hormones stimulate the function of the corpus luteum and the endocrine function of the trophoblast, and a decrease in their level leads to the development of primary placental insufficiency. The role of generalized immune dysfunction in AIT is also discussed [2].

Significantly more often in group I-A, only early preeclampsia was detected ($p = 0.045$). Complications such as late preeclampsia, placental insufficiency, genital infection, and extragenital pathology, although they were observed more often in group I-A than in group I-B, but these differences were not statistically significant. When assessing the function of the thyroid gland in our study, it was found that subclinical hypothyroidism in group I-A occurred 1.5 times more often than in group I-B (40 and 26.7%, respectively; $p = 0.028$); decrease in peripheral thyroid hormones was not recorded in any case. The clinical manifestation of thyroid dysfunction during pregnancy was characterized by increased fatigue, weakness in 8 (53.3%) and 6 (40%) patients of groups I-A and I-B, respectively, and the presence of signs of thyroid dermopathy (hyperkeratosis, hair loss, dry skin) in 7 (46.7%) and 5 (33.3%) patients, respectively ($p > 0.05$).

The average volume of the thyroid gland was recorded in groups I-A at 16.4 cm^3 at the beginning of pregnancy and 17.8 cm^3 before delivery, in groups I-B - 10.9 and 12.8 cm^3 , respectively ($p < 0.01$). Mean values of TSH in group I-A were $3.4 \mu\text{IU/ml}$, $2.0 \mu\text{IU/ml}$ and $1.98 \mu\text{IU/ml}$ in trimesters I, II and III, respectively. Similar indicators in group I-B were $2.08 \mu\text{IU/ml}$, $2.44 \mu\text{IU/ml}$ and $1.2 \mu\text{IU/ml}$ ($p > 0.05$). 46.7% of patients of group I-A and 26.7% of patients of group I-B received



replacement therapy with L-thyroxine at the time of the onset of pregnancy. At the same time, the average dose of L-thyroxine taken in the I-A group was 70.0 µg/day, in the I-B group - 62.3 µg/day.

Thus, patients with more pronounced iodine deficiency showed less stable indicators of thyroid function both on the eve of pregnancy and during pregnancy.

Conclusions

According to the survey, it was found that the median of ioduria in the group of pregnant women with autoimmune thyroiditis living in conditions of moderate iodine deficiency does not correspond to a sufficient level of iodine supply. The presence of concomitant iodine deficiency in patients with AIT is a risk factor for the development of hypothyroidism during pregnancy and increases the frequency of miscarriages and threats of termination of pregnancy in the early stages.

Pregnant women with AIT living in conditions of iodine deficiency region, need antenatal iodine prophylaxis. However, given the potential risk of a negative impact of excess iodine on autoimmune processes in the thyroid gland, when prescribing iodine prophylaxis, one should focus on individual indicators of iodine availability.

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