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The analysis of women's reproductive health in subclinical hypothyroidism in ecologically unfavorable Kyzylorda region (Kazakhstan)

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Abstract
The participation of thyroid hormones in stimulation of oocyte maturation, yellow body, with their lack brings to the disruption of the female reproductive functions of the body. The object of the study was to assess the state of reproductive function in women with subclinical hypothyroidism in ecologically unfavorable regions of Kyzylorda area. The result of the survey in five regions of the Kyzylorda area of the functional thyroid lesion as subclinical hypothyroidism was detected on average in 19.34% of women. It was revealed the pathology of reproductive system as primary and secondary infertility in 30.9% of women with subclinical hypothyroidism, late menarche and early menopause – in 22.8%. Thus, there is a high frequency of propagation of lesion of female reproductive function on the background of subclinical hypothyroidism.

Keywords: Aral crisis; thyroid pathology; subclinical hypothyroidism; reproductive function.

Introduction

Subclinical hypothyroidism (SH) is fairly common condition, occurring in 7-8% of women (usually after 50 yrs) and in 3% of men. SH is a laboratory phenomenon characterized by persistent increase of thyroid stimulating hormone (TSH), normal values of thyroxine (T4), and triiodothyronine (T3), and also scant clinical symptoms. SH, innocuous at first glance, aggravates the currency and may be hiding under the mask of serious diseases such as coronary heart disease, hypertension, and diseases that manifest by broncho-obstructive syndrome, etc., in which the treatment of the underlying disease brings only a slight positive effect. The participation of thyroid hormones in stimulation of oocyte maturation, yellow body, with their lack brings to the disruption of the female reproductive functions of the body [1-3].

The aim of our study was the assessment of female reproductive function in cases of subclinical hypothyroidism in ecologically unfavorable Kyzylorda region.

Materials and Methods

They were examined 1,940 women living in the zone of ecological trouble not less than 5 yrs with employment in higher hazard occupations not higher second class. 1,406 women were in the reproductive age from 19 to 49 yrs old. Clinical-laboratory and instrumental methods of research were used in order to verify the diagnosis of SH. It was conducted the determination of free thyroxine ($T4_{free}$), TSH by ELISA method for the determination of the functional capacity of thyroid gland (TG).

The assessment of female reproductive functions carried out using the data of collected gynecological history, examination, cytology of smears from vagina and cervical canal of uterus. Statistical analysis was performed using the

package STATISTICA 6.0 (Stat-Soft, 2001) and the program BIOSTATISTICA 4.03 [4].

Results and Discussion

As it is known, thyroid disease ranges from 1.5 to 6.4%. Thyroid lesions frequency varies depending on the geographical area and the data of ionizing radiation [5,6]. The result of the provided survey in five regions of the Kyzylorda area was detected a high prevalence of the functional thyroid lesion as a subclinical hypothyroidism (Table 1).

In both studied areas of ecological crisis and environmental disaster, it was registered the later menarche in girls older than 16 yrs (39%). At the same time, there is the tendency of younger age for menopause occurrence. Five women before 40 yrs with premature menopause were revealed in Aralsk. Early menopause was observed in seven women from 40 to 45 yrs. In settlement Ayteke-Bi, 10 cases of early menopause were registered.

We revealed one case of premature menopause and four cases of early menopause in settlement Zhalagash. In settlement Zhusaly early menopause was diagnosed in four women, cases of late menopause we have not registered. We had registered four cases of premature and two cases of early menopause in Shiely settlement. Moreover, the incidence of premature menopause in women before 40 yrs prevails over earlier for 9%.

Frequency of primary and secondary infertility is presented in Table 2.

At comparison of persons with primary and secondary infertility with data of thyroid status, it was revealed the parallel process of two diseases.

In settlement Ayteke-Bi, in 37.5% of women such changes were observed in reproductive function as a primary and secondary infertility, late menarche and early menopause in 15% and 19.3%, respectively.

Primary and secondary infertility were registered in 50% of women with the SH in Aralsk, the premature and early menopause in this region was determined in 20% of cases. In settlement Zhalagash, 12% of women with SH had primary and secondary infertility and 20% of women – early menopause. In settlement Zhusaly in 25% of women with SH the primary and secondary infertility had been registered, 20% had early and late menopause. In settlement Shiely, 30% of women had primary and secondary infertility and 33.3% – premature menopause.

Conclusion

As can be seen from the results of our study, there is a high prevalence rate of subclinical hypothyroidism on the environmentally unfriendly territory of Kyzylorda region. The indices of prevalence of subclinical hypothyroidism exceed the average prevalence of this disease in

Table 1: The prevalence of subclinical hypothyroidism in ecologically unfavorable zone, M ± m.

Area	Prevalence (%)	TSH	$T4_{free}$
Aralsk	27.27	5.63 ± 0.38	13.48 ± 0.36
Ayteke-Bi	15.41	5.68 ± 0.41	12.42 ± 0.24
Zhusaly	17.64	5.14 ± 0.49	13.25 ± 0.56
Zhalagash	16.28	5.59 ± 0.45	13.52 ± 0.43
Shiely	23.85	5.86 ± 0.35	16.62 ± 0.34

Table 2: Frequency of reproductive function lesions.

Area	Primary infertility (%)	Secondary infertility (%)
Aralsk	3	5
Ayteke-Bi	3	2
Zhusaly	2	6
Zhalagash	3	4
Shiely	3	7

the population [7]. In our opinion, the presence of subclinical hypothyroidism in women of child-bearing age is an unfavorable background for the development of abnormalities of the reproductive system. The above is confirmed by the presence in the area of high frequency lesions of the female reproductive function, evidenced by our findings on the prevalence of early menarche and late menopause, as well as primary and secondary infertility.

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