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Prevalence of Thyroid Diseases among the Population of Aral Sea Region and Socio-Economic Aspects of Thyroid Pathology Control

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Abstract: The Aral Sea crisis is recognized as one of the global environmental problems of today. Extreme ecological situation in the area of Aral crisis caused by massive chemical pollution of the territory during last several decades. As part of the STP of KSMU «Integrated approaches in the management of public health in Aral Sea region» the population of Aralsk city, Zhusaly settlement (the population of Aral Sea region) was surveyed. We have assessed the state of the thyroid gland in presented region, where it was identified the high prevalence of thyroid abnormalities, higher than the average incidence in the population. Also the certain socio-economic ways of control of thyroid pathology in the troubled territory were offered.

Key words: Aral crisis · Thyroid pathology · Social and economic aspects

INTRODUCTION

Scientific problems of assessing of the impact of environmental factors on human health and the study of recreational activities today are the priorities of state environmental policy almost in all developed countries. The establishing of causal relationship between environmental risk factors and health outcomes allows management risk as a preventive measure. The problem of measuring and assessing of risks today have a special role, both because of exacerbation of ecological trouble in recent decades and because of the difficult handling of the process [1].

Ecologia and human health are the actual problems to which currently brought the attention of the Kazakhstan public Living in zone of ecological disaster the population of Aral Sea region exposed to various toxicants (dusty-salt aerosols, iodine deficiency, etc.) [2].

For improving of population health in Governmental level is accepted the program " Salamatty Kazakhstan " for 2011 - 2015, aimed at improving sustainable socio-demographic development of the whole country with equal healthcare services.

One of the most vulnerable targets for the effects of these pathogenic factors and the occurrence of pathologies is the endocrine system, namely the thyroid.

It should be noted that the adverse Aral Sea regions are far from the major regional centers, which, in turn, predisposes to delayed or misdiagnosis pathology. All these circumstances put before the state the certain tasks, one of which is a solution to the prevalence of thyroid cancer, a highly skilled diagnosis and prevention in population.

The Object of the Study: To assess the condition of the thyroid gland in the population of Aral Sea region and the determination of certain socio-economic ways of control of thyroid pathology in this problem area.

MATERIALS AND METHODS

The population of Aralsk city and Zhusaly settlements of Kyzylorda region was surveyed. The inclusion criteria were as follows: the staying of an adult in the Aral Sea area not less than 5 years, the employment in occupations with health hazard no more than 2 class.

All residents of the study Kyzylorda regions underwent the clinical examination to detect the symptoms of thyroid dysfunction. Also lab tests conducted: determination of TSH, free T4 in serum, ultrasound. Statistical analysis was performed using the package STATISTICA 6.0 (Stat-Soft, 2001) and the program BIOSTATISTICA 4.03.

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RESULTS

In recent years, the problems of thyroid morbidity have acquired a special urgency. The large number of organs and systems that respond to thyroid hormones, including problems of thyroid science to the area of interest of representatives of various medical disciplines and an increased incidence of thyroid disease in the population [3, 4], brings these issues to the forefront of modern endocrinology.

The study of thyroid cancer in environmentally disadvantaged areas of Aral Sea region was a part of the STP of KSMU « Integrated approaches in the management of public health in Aral Sea region».

As a result of laboratory examination of the population in the area of Aral Sea region in zone of ecological disaster (Aralsk city) and in zone of ecological crisis (Zhusaly settlement) the high rates of thyroid dysfunction in the form of subclinical and overt hypothyroidism were registered (Table 1, 2).

As can be seen from the results of the study the level of revealed thyroid disorders in the population of Aral Sea region is significantly higher than the average prevalence in the population.

Regarding the distribution of thyroid abnormalities on nosology in population of Aralsk city we obtained the following results: diffuse goiter of I degree in 28 persons (56%), diffuse goiter of II degree in 3 persons (6%), colloidal goiter had 8 patients (16%) and nodal forms identified in 11 (22%) cases. In all we revealed 50 patients with thyroid.

The results of study of the distribution of thyroid abnormalities on nosology in population of Aralsk city and Zhusaly settlement presented in table 3.

The distribution in accordance with nosology in the population of Zhusaly settlement was as the following: diffuse goiter of I degree was identified in 29 persons (40,28%), diffuse goiter of II degree-in 8 persons (11,11%), colloidal goiter had 7 patients (9,72%) and nodal forms were identified in 14 (19,44%) cases. Chronic autoimmune thyroiditis (CAT) had been registered in 14 (19,4%) persons. Total in the area 72 patients with thyroid disease had been revealed.

According to our data diffuse and nodular forms predominate among thyroid abnormalities and it in turn indicates the presence of the risk of cancer pathology among the population of the studied area.

CONCLUSION

The population of the Aral Sea region has the high indices of thyroid dysfunction in the form of subclinical and overt hypothyroidism. In addition, it is also noted a high prevalence of diffuse and nodular changes in thyroid tissue. During the research process the dissatisfaction of the population by quality of diagnosis of thyroid pathology had been revealed.

In this regard, it is necessary to highlight the certain areas for further action on the control of thyroid pathology in this region [3]. According to our opinion it should be given the great attention to certain socio-economic aspects. As one of the priorities it is necessary to resolve the question of the quality of laboratory and instrumental methods of early diagnosis of thyroid pathology. To do this, it is necessary to expand the capacity of local laboratories by supporting of the higher organizations of medical profile, which should provide organizational and financial support.

Table 1: Indicators of thyroid dysfunction in men of population of Aral Sea region, M ± m

Regions	Subclinical hypothyroidism			Clinical hypothyroidism		
	Amount	TSH	Free T4	Amount	TSH	Free T4
Zone of eco-disaster	43 (20.97%)	9.92±2.16	16.72±2.13	11 (5.36%)	6.30±1.89	8.14±0.59
Zone of eco-crisis	35 (23.97%)	4.93±0.33	14.05±0.57	6 (4.1%)	7.37±1.75	7.68±0.92

Table 2: Indicators of thyroid dysfunction in women of population of Aral Sea region, M ± m

Regions	Subclinical hypothyroidism			Clinical hypothyroidism		
	Amount	TSH	Free T4	Amount	TSH	Free T4
Zone of eco-disaster	26 (27.27%)	5.63±0.38	13.48±0.36	35 (13.3%)	7.11±0.87	11.45±2.69
Zone of eco-crisis	33 (17.64%)	5.14±0.49	13.25±0.56	14 (7.48%)	9.85±1.90	14.68±6.70

Table 3: Distribution of thyroid abnormalities in accordance with nosology in population of Aralsk city and Zhusaly settlement

Regions	Diffuse goiter of I degree	Diffuse goiter of II degree	Colloidal goiter	Nodal forms	Chronic autoimmune thyroiditis
Zhysaly settlement	29 (40.28%)	8 (11.11%)	7 (9.72%)	14 (19.44%)	14 (19.44%)
Aralsk city	28 (56%)	3 (6%)	8 (16%)	11 (22%)	

Also it is necessary to pay attention to the level of qualification of medical staff working in these diagnostic centers. In addition to timely diagnosis an important part of monitoring of thyroid pathology in the region is the prevention of diseases of the thyroid gland. The prevention depends on the work of the medical staff, which in turn suffers from a lack of personnel of the profile [5]. All of the above problems, as well as proposed solutions require the certain material resources, which can be implemented attracting investors.

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