

Studying the Influence of External Factors on the Indicators of the Blood System in Children under the Conditions of the Southern Aral Sea Area

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Abstract: *The article presents the results of a study of the impact of environmental factors on blood counts in children who live in the South Aral Sea region. It has been established that the quality of drinking water is considered as the highest priority problem of ecology and the environment in the region of the South Aral Sea region.*

Keywords: South Aral Sea region, environmental factors, child population, blood system indicators, correlations

1. Introduction

Currently, the problem of human ecology is the most urgent. This problem is of particular importance in physiology, since adverse environmental factors directly affect the growing organism, which is sensitive to the slightest changes. At the same time, the children's body experiences numerous effects: hereditary, social, biological. The health status of the children born and living in the Southern Aral Sea region has become clearly negative trends.

Regional climatogeographic factors have a significant impact on the physical development of the child. It is believed that a hot climate to a certain extent has an inhibitory effect on the growth processes of the body and, at the same time, accelerates the process of puberty in children [3; 4]. According to experts, in the medical and environmental respect, the most significant environmental parameters are: chemical pollution of drinking water (tap water, from canals and wells), the residual amount of pesticides in food [7; 8]. These factors are directly related to the incidence of blood and circulatory organs.

2. Material and Methods

The habitat analysis of children born and living in the South Aral Sea region was carried out on the basis of collection and processing of ecological and hygienic information on the composition and severity of adverse environmental factors according to the ecology laboratory of the Republican Center for Sanitary Epidemiological Supervision of the Ministry of Health of the Republic of Karakalpakstan.

The examined contingent was a group of children aged 6 to 14 years. Geographically, all subjects were divided into 3 groups in accordance with the place of permanent residence. A total of 540 children were examined, of boys - 270 (50%), girls 270 (50%). All examined children were analyzed age-related dynamics of physical development (body weight and growth indicators). In the laboratory, the following blood parameters were determined: the number of red blood cells, hemoglobin content, erythrocyte sedimentation rate, color indicator.

All obtained data were processed by statistical methods using computer technology and using a statistical software package.

3. Results and Discussion

In this work, we conducted studies to identify correlations between the functional characteristics of the blood system and environmental parameters. The results of the correlation analysis between the environmental parameters (the quality of drinking water, the residual amount of pesticides in food products, bacterial contamination of food products) and blood system parameters in the examined children in the Aral Sea region are shown in Table 1. The analysis showed that there are correlations between the residual amount of pesticides in food products and all the considered indicators of blood composition in the examined children. So, with the hemoglobin level, the correlation coefficient was $R = 0.36$, with the number of red blood cells in the blood, the correlation coefficient was $R = 0.37$. Also, the most significant correlation was found between the level of hemoglobin in the blood of children and the availability of tap water in the population - the correlation coefficient was $R = 0.34$.

Table 1: Values of correlation coefficients between blood composition indicators in children and environmental parameters in the Aral Sea region (2010-2018)

Environmental parameters	Blood composition indicators	
	The average hemoglobin content	The average number of red blood cells
Residual Pesticides in Food 27 hazard rating (HCH, DDT, Butifos)	0,36 p<0,005	0,37 p<0,005
Hardness of drinking water 6.0 -18.0 mgequiv / l	-0,2 p<0,001	0,17 p<0,001
Mineralization of drinking water 750-1800 mg / l	-	-0,09 p<0,005
The presence of nitrates in water 40-120 mg / l	-0,26 p<0,005	-
Chlorides in drinking water 143 + 10.6 mg / dm ³	-0,21 p<0,005	-
Sulphates in drinking water 700.0 + 36.2 mg / dm ³	-0,06 p<0,001	0,14 p<0,001
Water supply for the population 56 - 95%	0,34 p<0,001	0,19 p<0,001

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Next, we conducted a study to identify the correlation between blood pressure parameters and age groups of examined children in the Aral Sea region.

According to the results of the study, a correlation between the group of children of the age group of 6-10 years and average blood pressure ($R = 6,2$) was revealed. As for the general group of children aged 11-14 years living in the Aral Sea region, correlation dependencies between all blood pressure indicators were also found.

The data obtained confirm the existence of a relationship between negative factors and the incidence of the population living in the Aral Sea [2; eight]. The quality of drinking water is considered as the highest priority problem of ecological and environmental disruption in the South Aral region.

Conclusions. Our research confirms the well-known fact about the pronounced effect of such a factor as the availability of tap water for the general childhood morbidity, which confirms the vital need to provide the population with a centralized water supply [2, 5, 6, 7].

Thus, the health status of children and their physical development, i.e. biological and physiological processes that determine the growth and development of children, their functional state of the circulatory system, are more directly or indirectly associated not only with environmental factors, but also with the socio-hygienic living conditions. Information and facts indicating the impact of social risk, i.e. socio-hygienic and living conditions for the physical development and health status of children, serve as a scientific basis for planning and conducting recreational activities.

References

- [1] Абдиров Ч.А., Агаджанян Н.А., Северин А.Е. Экология и здоровье человека: - Нукус: Каракалпакстан, 1993.- 184 с.
- [2] Атаназаров К.М. Экологическая роль биогенных элементов поверхностных вод низовьев Амударьи в условиях антропогенного пресса: Автореф. ... канд. биол. наук.- Ташкент, 1999.- 23 с.
- [3] Баранов А.А., Цыбульская И.С., Альбицкий В.Ю. и др. Здоровье детей России: (Состояние и проблемы) // Под редакцией академика РАМН Баранова А.А.- Москва, 1999. - 76 с.
- [4] Безруких М.М., Фарбер Д.А. Физиология развития ребенка. - М.-2000.- 168-169 с.
- [5] Ещанов Т.Б., Бисалиев Н.Б. Здоровье населения Республики Каракалпакстан при сложившейся экологической ситуации // Экологические основы изучения проблем Приаралья: Материалы науч.-практ. конф. с междунар. участием. – Нукус, 1999. - Т.2. - С. 34-35.
- [6] Камалов З.С. Влияние вредных факторов окружающей среды на некоторые показатели иммунитета взрослых и подростков // Актуальные проблемы гигиены, санитарии и экологии: Материалы науч.-практ. конф. – Ташкент, 2004. – С. 115-116.

- [7] Константинова Л.Г., Курбанов А.Б., Атаназаров К.М., Абсаттаров Н. Качество питьевой воды, состояние здоровья населения и прогноз заболеваемости населения Республики Каракалпакстан: // Экологические факторы и здоровье матери и ребенка в регионе Аральского кризиса: Материалы междунар. семинара. – Ташкент: ФАН, 2001. – С.87-95.
- [8] Курбанов А.Б., Ещанов Т.Б., Константинова Л.Г. и др. Гигиеническая оценка пестицидов, применяемых в Республике Каракалпакстан. – Нукус: Билим, 2002. - 75 с.