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P. M. Ivanov, A. F. Abramov, M. I. Tomsky, A. S. Golderova, A. N. Romanova, N. S. Kipriyanova, L.N. Afanasieva, V. M. Nikolaev, T. I. Nikolaeva, T. N. Zharnikova, N. N. Makarova, S. A. Myreeva

FACTORS OF THE ENVIRONMENT AND MORBIDITY OF THE POPULATION OF THE SOUTHERN INDUSTRIAL TERRITORY OF YAKUTIA WITH MALIGNANT NEOPLASMS

ABSTRACT

The authors present analysis of the degree of influence of anthropogenic and technogenic load on the state of the environment of the territory and the incidence of malignant neoplasms in the population of the districts of the Southern industrial zone of Yakutia.

Keywords: Southern industrial zone of Yakutia, neoplasms, environmental factors, morbidity.

INTRODUCTION

The territory of the industrial zone of South Yakutia (486.8 thousand km2), which includes Aldan, Neryungri, Tomponsky, Ust-Maysky districts, for many decades is experiencing a huge burden from the industrial-urban human activities. In these areas, the average annual temperature ranges from - 6 ° C (Lensky) to - 1.7 ° C (Tomponsky). By the level of the average annual temperature, the Aldan district is relatively moderate, Neryungri, Ust-Maysky is relatively extreme, and the Tomponsky region is to extremes. The level of heat supply in the Ust-Maysky region is more favorable for the development of agriculture, the sum of the average daily temperatures here ranges from 1647.0 to 1764.5 °C. In Aldan, Neryungri, and Tomponsky districts, heat supply is estimated as «inadequate» (Σ T> o5 is from 1365 to 1577°C), and the average January temperature is often lowered to -30°C. The level of supply with precipitation is estimated as «relatively low» in Ust-Maysky (260.0 mm), and «moderate» in Neryungri (520.3 mm) areas. The capacity of permafrost soils ranges from 120 to 250 m.

In Southern Yakutia the mining industry is developed: in Neryungri district - coal mining, in Aldansky - gold mining, mica, in addition, there are rail and road transport. From traditional industries - reindeer husbandry, hunting, there is some development of agriculture, herd horse breeding. In the Tomponsky region, coal and gold mining are developed, from traditional industries - reindeer herding, meat and milk cattle breeding, herd horse breeding. In the Ust-May district there is the Dzhugdzhursky knot for the extraction of gold and antimony.

The purpose of the study is to analyze the degree of influence of anthropogenic, technogenic factors caused by industrial-urban human activity on the incidence of malignant neoplasms (MN) in the population of Southern Yakutia.

MATERIALS AND METHODS

The materials of reporting of the Yakut republican oncological dispensary for the period of 1989 - 2010 are analyzed. The materials of the State report of the Ministry of Nature Protection of the Republic of Sakha (Yakutia) for the period 2010 - 2014 were used. [9,10], statistical data of the Territorial authorityof the Federal State Statistics Service for the RS (Y) [4,5], the results of their own research [1, 2, 6, 7]. Assessment of the impact of anthropogenic and man-made loads on the state of the environment (OS) is carried out using the methods developed by EI. Burtseva [3]. The statistical data were processed according to the standard method using the «Statistical» software package.

RESULTS AND DISCUSSION

The environment of the territories of the industrial regions of South Yakutia is experiencing tremendous anthropogenic and technogenic stresses from the industrial and urban human activities.

Medico-demographic indicators and anthropogenic load on the state of the regions. The population of the regions of South Yakutia increased by 154.4 thousand (67.3%) by 1990 compared to 1959, which is connected with the development of the mining industry and led to an increase in the intensity of anthropogenic and technogenic loads on the OS of the districts . By 2012, the population as compared with 1990 decreased by 54.0 thousand people. On 6,1%.

In the industrial regions of South Yakutia, the predominant nationalities are Russian and other newcomers, attracted to work in extractive industries (Table 1).

After 1990, in connection with the collapse of the mining industry from the industrial regions of South Yakutia, by 2012, 121,400 people left the RS (Y) area, mostly young people of working age. According to the calculation, the density of the population in the Neryungri district is high, in the Aldan - middle, Tomponsky and Ust-May districts - low.

According to the Republican statistic data, the indigenous population in the zone of South Yakutia ranges from 3.5% in the Neryungri district to 25.4% in the Tomponsky region, and relatively low birth rates for children are recorded in the Aldan and

Earlier, we found that the maximum incidence of MN of women's reproductive organs in the republic is registered in industrial regions, where the majority of the population are visitors who work at mining enterprises [8-10]. It was found that with the decline in the birth rate of children is associated with an increase in the incidence of women with MN of the reproductive organs (r = -0.68), primarily of the breast (r = -0.62).

Economic and technogenic stress on the environment of the districts. The environment of the territory of industrial regions is experiencing a high man-caused strain on the part of mining enterprises, emissions of pollutants into the atmosphere, discharges of polluted sewage, an increase in the areas of disturbed land and transport load (table 2).

Agriculture load of a surrounding medium of territories slight as in these areas the livestock production and reindeer breeding (tab. 3) is developed.

Evaluation of the influence of district-forming factors on the state of the environment. In industrial regions of South Yakutia, the main area-forming factor is the industrial-urban type of nature use.

Table 1

Medico-demographic indicators of the population in industrial regions of South Yakutia per 1000 population, Stat. Yearbook of the RS (Ya), 2009, 2012; Demographic Yearbook of the RS (Ya)

Content	Years	Districts			
		Aldan	Neryungri	Tom-ponsky	Ust-May
Fertility of children	1990	15,7	15,9	19,9	17,5
	2000	10,6	11,1	13,4	10,3
	2005	12,0	11,5	11,6	10,5
	2011	13,0	13,0	15,4	14,3
Mortality of the population	1990	8,1	3,6	6,0	6,0
	2000	13,7	6,7	10,7	13,6
	2005	14,8	8,7	11,2	13,2
	2011	14,6	9,6	12,1	15,7
Population increase	1990	7,6	12,3	13,9	11,5
	2000	-3,0	4,3	2,7	-3,3
	2005	-2,8	2,9	0,5	-2,8
	2011	-1,6	3,4	3,3	-1,4
Yakuts and indigenous peoples,%	1990	7,3	3,5	25,4	16,6
	2011	9,2	3,9	45,6	33,2
Russian and other visiting nationalities , %	1990	92,7	96,5	75,6	83,4
	2011	90,8	96,1	54,4	66,8
Population density, people. per 1 km2	1990	0,41	1,21	0,17	0,22
	2011	0,27	0,82	0,10	0,08
Scale of ranking	1990	3	4	2	3
	2011	3	4	1	1
Load on the environment	1990	Me	Mi	Mu	Me
	2011	Me	Mi	L	L

Note. In Table. 1-4: H- high, Mu - moderately the under, Mi- moderately increased; I - intense, Rs - relatively satisfactory, Rt - relatively tense; Me - medium, L – low

Table 2

Technogenic loads in industrial regions of South Yakutia

Indicator	Total for Southern Yakutia	Districts			
		Aldan	Neryungri	Tomponsky	Ust-May
The mountain weight taken from an earth subsoil till 2002, million m3	1693,4	1096,6	439,0	36,7	121,1
Emissions of air pollutants for 2011-2014, thousand tons	270,7	60,6	150,7	38,3	21,1
% Captured and purified	139,4	23,0	92,6	5,3	18,5
Including sulfur dioxide, thousand tons	24,2	4,1	16,8	2,1	1,2
Carbon monoxide, thousand tons	84,9	32,0	19,8	20,9	12,2
Nitrogen oxides, thousand tons	60,4	6,2	50,6	2,0	1,6
Volatile organic compounds + hydrocarbons, thousand tons	3,5	0,4	2,3	0,6	0,2
Solids, thousand tons	96,8	17,2	60,6	12,8	6,2
Effluent discharge into surface water, million m3	255,9	62,9	157,4	7,4	28,2
Including the share of polluted water, %	262,6	81,1	39,2	98,5	43,8
Disturbed lands, hectar	17985	8861	8296	515	313
Load on the environment	Mi	H	H	Mu	Mi
State of the environment	Rt	I	I	Rs	Rt

Note. In Table. 1-4: H- high, Mu - moderately the under, Mi- moderately increased; I - intense, Rs - relatively satisfactory, Rt - relatively tense; Me - medium, L – low

Based on a comprehensive assessment of the environmental conditions of the industrial areas of South Yakutia, the environmental conditions of the Aldan and Neryungri areas are estimated as tense, Ust-Maysky as relatively tense, and Tomponsky as relatively satisfactory.

The results of the assessment of the effects of regional environmental factors on individual territories should be taken into account when developing scientifically based prevention measures aimed at improving the quality of environmental protection measures.

Morbidity of the population with malignant neoplasms. Throughout the analyzed period (1989-2010), almost everywhere in the territories included in the industrial zone of South Yakutia, there was an increase in the incidence of heart failure (table 4). Thus, by the 2001-2010 period, In comparison with 1989-1998, the incidence of malignant neoplasms per 100,000 population increased significantly - in Aldansky by 93.1 (with an average annual growth rate of 4.20%), in Neryungri district 118.4 (7.50) , In the Tomponsky region 68.7 (3.90), in Ust-Mayskiy 66.5 (4.35).

In the areas of the industrial zone, the growth of general indicators of the oncological morbidity of the population was due to the high average annual growth rates of indicators for malignant neoplasms of the digestive tract, the indices for individual regions range from 1.35 (Tomponsky) to 6.20% (Neryungrinsky).

The same situation develops when analyzing the dynamics of the incidence of malignant neoplasms of the respiratory system (from 0.96 - Ust-May to 4.00% - Tomponsky), the female breast (from 2.15 - Ust-May to 9.95% - Neryungrinsky) and urinary organs (5.55 - Aldan to 16.6% - Neryungri district).

In conclusion, we note that the presented materials suggest that in the zone of industrial regions of South Yakutia, one of the main reasons for the increase in the incidence of malignant diseases may be environmental contamination of the territories of the districts as a consequence of the industrial-urban nature use.

As a result of human economic activity, the state of the environment of the Aldan and Neryungri areas is estimated as tense, Ust-Maysky is relatively tense, the Tomponsky region is relatively satisfactory. Consequently, as the degree of environmental contamination increases, the incidence rates of malignant neoplasms significantly increase, which is confirmed by the results of the analysis of the dynamics of the morbidity of the population of the zone of South Yakutia, calculated for 100 thousand, for the periods from 1989-1998 and 2001-2010.

According to the analysis, the incidence rates of malignant neoplasms in the population of the Neryungri district increased by more than 2 times, Ust-Maysky by 1.8 times, Tamponsky and Aldansky by 1.5 times, at the expense of the growth of tumors considered Indicators that indirectly determine the level of environmental pollutants.

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Table 3

Load of agriculture in the industrial regions of South Yakutia

District	Yaers	Cattle		Horses		Reindeer		Arable land			Assessment of the load of agriculture
		Total head of livestock	Load on the environment	Total head of livestock	Load on the environment	Total head of livestock	Load on the environment	Yaers	total head of livestock	Load on the environment	
Aldan	1995	1847	L	435	Mu	13757	Mi	1990	2312	Me	Mu
	2008	567	L	598	L	2207	L	2008	1859	Me	L
	± cattle	-280		+163		-11550		±hectare	-453		
Neryungri	1995	512	L	24	L	11886	Mi	1990	518	L	L
	2008	180	L	4	L	6922	Me	2008	65	L	L
	± cattle	-332		-18		-4964		±hectare	-453		
Tomponsky	1995	5952	Mu	2058	Mu	20730	H	1990	2325	Me	Me
	2008	3090	L	1582	Mu	20545	H	2008	2318	Me	Me
	± cattle	-2862		-476		-185		±hectare	-7		
Ust-May *											

Note: * There is no statistical data

Table 4

Morbidity of the population of Southern Yakutia by malignant neoplasms and its average annual growth rate from 1989 to 1998 and from 2001 to 2010, per 100 thousand people

Localization	Years	District			
		Aldan	Neryungri	Tomponsky	Ust-May
Malignant neoplasms - total (C00-97)	1989-1998	183,7	111,7	144,7	124,5
	2001-2010	276,8	230,1	213,4	191,0
	growth rate	4,20	7,50	3,90	4,35
Head and neck (C00-14)	1989-1998	10,6	5,6	13,0	7,4
	2001-2010	6,8	4,5	6,9	4,5
	growth rate	4,35	-2,02	-6,20	-4,85
Organs of digestion - total (C15-25)	1989-1998	71,9	32,1	50,4	41,8
	2001-2010	94,4	61,8	57,6	57,8
	growth rate	2,75	6,70	1,35	3,30
Respiratory organs - total (C32-34)	1989-1998	36,5	23,6	29,9	30,7
	2001-2010	50,3	33,5	42,6	33,7
	growth rate	3,60	3,55	4,00	0,95
Bones and articular cartilages (C40-41)	1989-1998	1,4	1,0	2,6	1,4
	2001-2010	2,2	2,1	2,6	3,5
	growth rate	4,65	8,60	0,05	9,60
Soft tissues (C46-49)	1989-1998	0,0	0,0	0,9	0,7
	2001-2010	0,8	0,9	2,0	1,7
	growth rate	*	*	8,30	9,25
Skin (including melanoma) (C43-46)	1989-1998	6,7	5,8	4,4	3,9
	2001-2010	14,6	13,4	9,2	6,9
	growth rate	8,10	9,75	7,65	5,85
Female breast (C50)	1989-1998	31,3	23,7	25,4	23,3
	2001-2010	40,3	61,2	37,7	28,8
	growth rate	2,55	9,95	4,55	2,15
Female reproductive organs - total (C53-56)	1989-1998	66,5	43,3	52,6	41,6
	2001-2010	96,1	109,1	78,0	68,4
	growth rate	4,20	9,70	4,50	5,65
Male genital organs - total (C61-63)	1989-1998	7,0	3,1	1,8	0,0
	2001-2010	7,7	14,4	1,3	6,6
	growth rate	1,05	16,60	-2,55	*
Urinary organs - total (C64-67)	1989-1998	9,8	6,3	4,8	3,3
	2001-2010	16,8	14,6	15,7	14,7
	growth rate	5,55	8,75	12,60	16,15
Central nervous system (C70-72)	1989-1998	2,5	3,4	2,2	2,3
	2001-2010	2,8	6,1	3,9	6,1
	growth rate	1,15	6,00	5,90	10,25
Thyroid gland (C73)	1989-1998	1,9	1,6	2,6	2,5
	2001-2010	3,4	3,2	5,2	7,8
	growth rate	5,95	8,05	8,05	12,05
Hemoblastoses (C81-96)	1989-1998	8,3	6,4	7,4	4,3
	2001-2010	12,6	11,6	13,1	8,6
	growth rate	4,75	6,15	5,90	8,05

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Table 5

The annual incidence of malignant neoplasms in Southern Yakutia in 2006-2015, (per 100 000 population)

Localization	RS(YA)	Zone of southern Yakutia	District			
			Aldan	Neryungri	Tomponsky	Ust-May
Men						
All malignant neoplasms(C00-97)	149,9±0,18	307,8±0,66*	398,5±1,37**	264,6±0,83**	258,8±1,94**	328,4±2,84**
Including: Lip (00)	0,7±0,01	1,6±0,05*	1,9±0,09**	1,3±0,06**	1,5±0,15	2,5±0,25**
Tongue and oral cavity (C01-09)	3,1±0,03	7,2±0,10*	8,9±0,20**	7,0±0,13	2,9±0,21**	7,4±0,43
Pharynx (C10-14)	2,0±0,02	3,1±0,07*	5,2±0,16**	1,6±0,06**	4,4±0,25**	4,9±0,35**
Esophagus (C15)	7,1±0,04	9,9±0,12*	13,7±0,25**	6,5±0,13**	13,1±0,44**	17,2±0,65**
Stomach (C16)	15,8±0,06	30,2±0,21*	46,2±0,47**	23±0,24**	21,8±0,56**	29,4±0,85**
Colon (C18)	5,4±0,03	13,0±0,14*	15,5±0,27**	11,6±0,17**	10,2±0,39**	17,2±0,65**
Rectum (C19-21)	6,5±0,04	16,9±0,15*	17,9±0,29	19,9±0,23**	5,8±0,29**	2,5±0,25**
Liver (C22)	11,0±0,05	8,2±0,11*	9,9±0,22**	5,4±0,12**	13,1±0,44**	17,2±0,65**
Pancreas (C25)	5,4±0,03	10,6±0,12*	10,8±0,23	9,6±0,16**	11,6±0,41	17,2±0,65**
Larynx (C32)	3,5±0,03	9,0±0,11*	8,9±0,20	8,8±0,15	11,6±0,41**	7,4±0,43**
Lung (C33,34)	32,0±0,08	63,9±0,30*	84,8±0,63**	51,5±0,36**	71,3±1,02**	61,3±1,23
Bone and cartilages (C40-41)	1,3±0,02	2,0±0,05*	1,4±0,08**	2,1±0,07**	1,5±0,15**	4,9±0,35**
Skin melanoma (C43)	1,4±0,02	2,1±0,05*	2,4±0,11*	1,8±0,07**	1,5±0,15**	4,9±0,35**
Skin (C44-46)	3,1±0,03	6,6±0,10*	4,7±0,15**	7,2±0,14**	5,8±0,29**	12,3±0,55**
Soft tissue (C46-49)	5,0±0,03	12,1±0,13*	8,5±0,20**	14±0,19**	10,2±0,39**	17,2±0,65**
Prostate gland (C61)	7,1±,04	14,0±0,14*	17,4±0,29**	14±0,19	5,8±0,29**	9,8±0,49**
Testicle (C62)	1,3±0,02	2,3±0,06*	1,9±0,09**	2,8±0,09	0,0±0,00	2,5±0,25
Kidney (C64)	5,9±0,04	12,4±0,13*	12,7±0,24	12,4±0,18	8,7±0,36**	17,2±0,65**
Bladder (C67)	6,3±0,04	15,0±0,15*	16±0,27	15,3±0,20	10,2±0,39**	14,7±0,60
Central nervous system (C70-72)	3,4±0,03	7,1±0,10*	5,7±0,16**	9,1±0,15**	0,0±0,00	7,4±0,43
Thyroid gland (C73)	1,1±0,02	2,0±0,05*	2,8±0,11**	1,3±0,06**	4,4±0,25**	0,0±0,00
Hemoblastoses (C81-96)	8,2±0,04	18,8±0,1*	17,4±0,29	17,6±0,21	21,8±0,56**	31,9±0,88**
Women						
All malignant neoplasms(C00-97)	225,4±0,21	302,5±0,64*	341,0±1,27**	293,5±0,84**	250,3±1,90**	283,8±2,67**
Including: Lip (00)	0,2±0,01	0,3±0,02	0,9±0,07**	0,0±0,00	0,0±0,00	0,0±0,00
Tongue and oral cavity (C01-09)	2,6±0,02	2,8±0,06*	4,7±0,15**	1,4±0,06**	1,4±0,14**	10,0±0,50**
Pharynx (C10-14)	0,8±0,01	0,9±0,03	0,9±0,07	1,0±0,05	1,4±0,14	0,0±0,00
Esophagus (C15)	4,3±0,03	3,6±0,07*	6,1±0,17**	1,9±0,07**	4,3±0,25**	7,5±0,43**
Stomach (C16)	13,9±0,05	18,5±0,16*	25,0±0,34**	16,6±0,20**	11,5±0,41**	15,1±0,62**
Colon (C18)	13,7±0,05	22,0±0,17*	27,4±0,36**	20,0±0,22**	17,3±0,50**	22,6±0,75
Rectum (C19-21)	10,0±0,05	15,6±0,14*	22,6±0,33**	12,8±0,17**	8,6±0,35**	20,1±0,71**
Liver (C22)	12,8±0,05	6,5±0,09*	12,3±0,24**	3,1±0,09**	8,6±0,35**	7,5±0,43
Pancreas (C25)	7,3±0,04	9,0±0,11*	9,0±0,21	9,3±0,15	5,8±0,29**	12,6±0,56**
Larynx (C32)	0,6±0,01	0,7±0,03	0,9±0,07	0,7±0,04	0,0±0,00	0,0±0,00
Lung (C33,34)	19,0±0,06	18,1±0,16	23,6±0,33**	15,0±0,19**	15,8±0,48**	25,1±0,79**
Bone and cartilages (C40-41)	1,2±0,02	1,1±0,04	0,9±0,07**	1,4±0,06	0,0±0,00	0,0±0,00
Skin melanoma (C43)	1,9±0,02	5,4±0,0*	12,3±0,24**	3,1±0,09**	0,0±0,00	2,5±0,25**
Skin (C44-46)	4,1±0,03	9,0±0,11*	8,0±0,19	10,5±0,16**	5,8±0,29**	5,0±0,35**
Soft tissue (C46-49)	6,2±0,04	13,7±0,14*	11,3±0,23**	16,4±0,20**	8,6±0,35**	7,5±0,43**
Mammary gland (C50)	40,2±0,09	58,6±0,28*	41,0±0,44**	67,5±0,40**	74,8±1,04**	30,1±0,87
Uteral cervix (53)	19,9±0,06	27,6±0,19*	30,2±0,38**	25,0±0,24**	27,3±0,63	42,7±1,04
Body of the womb (54)	10,2±0,05	18,6±0,16*	21,7±0,32**	18,3±0,21	12,9±0,43**	15,1±0,62
Ovari (56)	11,0±0,05	12,0±0,13	9,0±0,21**	13,3±0,18**	14,4±0,46**	10,0±0,50**
Kidney (C64)	5,8±0,03	4,2±0,08*	5,7±0,16**	4,0±0,10	1,4±0,14**	2,5±0,25**
Bladder (C67)	5,6±0,03	8,8±0,11*	9,9±0,22**	9,0±0,15	2,9±0,20**	10,0±0,50**
Central nervous system (C70-72)	3,9±0,03	4,6±0,08*	2,4±0,11**	5,7±0,12**	4,3±0,25	5,0±0,35
Thyroid gland (C73)	6,5±0,04	8,9±0,11*	7,5±0,19**	9,3±0,15	5,8±0,29**	17,6±0,66**
Hemoblastoses (C81-96)	9,8±0,04	11,0±0,12*	9,9±0,22**	12,6±0,17**	7,2±0,32**	7,5±0,43**

Note. The difference of indexes statistically is significant ($p < 0.05$) – in relation to national average (*) and srednezonalny (**) to indexes.

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Information about authors:

Yakutsk, Republic Sakha (Yakutia), Russia:

IVANOV Peter Mikhaylovich. – D. Med. Sc, Professor of Medical University of NEFU, senior researcher YSC CMP, petr_ ivanov_38@mail.ru;

ABRAMOV Alexey Fedorovich - D. Biol. Sc, Professor., Yakut research institute of agriculture of the Russian academy of agricultural sciences;

TOMSKY Mikhail Innokentievich - D. Med. Sc, Director of YSC CMP;
GOLDEROVA Aitalina Semenovna - D. Med. Sc, chief researcher of YSC CMP; ROMANOVA Anna Nikolaevna. - D. Med. Sc,, chief researcher of YSC CMP;
NIKOLAEV Vyacheslav Mikhailovich - Cand of Biol. Sc, senior researcher of YSC CMP;
KIPRIYANOVA Nadezhda Sidorovna - D. Med. Sc, Professor Medical University of NEFU:
NIKOLAEVA Tatiana Ivanovna – Cand. Med. Sc., deputy chief doctor of Yakut Republican Oncology Center (YROC),
ZHARNIKOVA Tatyana Nikolaevna - Cand of Med. Sc., head of the surgical department of YROC,
MAKAROVA Natalia Nikolaevna - Cand of Med. Sc., head of the gynecology department YROC,
MYREEVA Svetlana Anatolievna - Cand of Med. Sc, surgeon-oncologist of YROC.

ORIGINAL RESEARCHES

E.P. Borisova, E.S. Kylbanova

VALUE OF ENVIRONMENTAL FACTORS IN THE YAKUTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND CHRONIC BRONCHITIS IN COMBINATION WITH METABOLIC SYNDROME

ABSTRACT

Objective. To assess the influence of environmental factors in the Yakuts with the combination of chronic obstructive pulmonary disease and chronic bronchitis with metabolic syndrome.

Materials and methods. A comprehensive examination of 148 patients was performed on the basis of the emergency department of the Republican Hospital No. 2 - the Center for Emergency Medical Care in Yakutsk. The main group consisted of 88 patients with metabolic syndrome in combination with chronic obstructive pulmonary disease (COPD) and chronic bronchitis (CB) of Yakutia. The average age was 50.9 ± 0.91 years, for gender: women 69.3%, men 30.7%. The comparison group consisted of 60 patients of Yakut nationality with COPD and chronic bronchitis without metabolic syndrome. The average age of 48.9 ± 1.35 years was consistent with the age of the main group, the gender composition of women was 80%, men 20%. Patient survey was carried out taking into account the developed questionnaire, approved by the ethical committee, which contained questions on the blocks: socio-demographic characteristics, anamnestic data, heredity research, behavior and health.

Results. In the course of the study, it was revealed that for such environmental risk factors as physical activity, smoking, alcohol consumption, the frequency of occurrence in the groups does not differ. At the same time, a higher index of a smoker and fewer hours spent on physical activity a week are more common in Yakuts with chronic obstructive pulmonary disease and chronic bronchitis with a metabolic syndrome, which negatively affects the risk of cardiovascular complications in this category of patients.

Conclusion. Thus, we have identified a significant contribution of environmental factors, in particular low physical activity, to the development of MS and a negative characteristic for a greater number of pack-years in individuals with CK / COPD in combination with MS.

Keywords: metabolic syndrome, chronic obstructive pulmonary disease, chronic bronchitis, environmental factors.

Diseases of the respiratory system in the Republic Sakha (Yakutia) occupy one of the leading places in the structure of morbidity and determine to a large extent the level of temporary disability, disability and mortality of the population.

According to WHO, chronic obstructive pulmonary disease (COPD) is one of the most common diseases, it is expected to become the third leading cause of death in 2020. Over the past decade, the concept of COPD has been recognized as a disease with systemic manifestations including cardiovascular pathology, cachexia, muscle dysfunction, osteoporosis, anemia, clinical depression, metabolic disturbances and endothelial dysfunction [7].

Currently, the metabolic syndrome (MS) is seen as a «21st century pandemic» by the WHO experts. Its prevalence among the adult population of Russia according to the data of the VNOK, 2009, is 20-40% and more often it occurs in middle-aged and older people. The prevalence of MS according to the criteria of the International Diabetes Federation among the aboriginal population of Yakutia is 8.8% [5].

However, currently the peculiarities of the combined course of the pathology of the respiratory tract with MS in the domestic science are devoted to single studies and there is no data on this combined pathology in the Yakut ethnic group.

The aim of the study was to assess the influence of environmental factors in the Yakuts with the combination of chronic obstructive pulmonary disease and chronic bronchitis with metabolic syndrome.

MATERIALS AND METHODS OF RESEARCH

A comprehensive examination of 148 patients was performed on the basis of the emergency department of the Republican Hospital No. 2 - Center for Emergency Medical Care in Yakutsk. All patients signed informed consent to participate in the survey. The research was carried out within the framework of the research project «Metabolic syndrome and chronic non-infectious diseases among the inhabitants of Yakutia». The approval of the local ethical committee of the Yakutsk Scientific Center of Complex Medical Problems of the Siberian Branch of the Russian Academy of Medical Sciences was obtained.

The main group consisted of 88 patients with metabolic syndrome in combination with chronic obstructive pulmonary disease (COPD) and chronic bronchitis (CB) of Yakutia. The average age was 50.9 ± 0.91 years, for gender: