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EPIDEMIOLOGICAL ASPECTS OF HEMOBLASTOSIS IN THE REPUBLIC SAKHA (YAKUTIA)

ABSTRACT

Analyzed results of 1780 morbidities with lymphatic and blood-forming tissue malignant tumours of the Republic Sakha population in the period of 1991-2010 are presented. Most of them 968 (54.4%) are men and 812 (45.6%) are women. Morbidity of men and women of all ages with hemoblastosis had a tendency to increase. Populous, territorial and temporal morbidity regularities are set up.

Keywords: hemoblastosis, prevalence, dynamics, prognosis.

PREFACE

Cancer pathology is referred to the most significant problems of modern medical science and practice because of its morbidity and mortality tendency to go up in many countries [3].

About 0.5 mln new cases of MT were registered in 2010 in Russia, that is by 15.1 % higher than in 2000 (449 th.) including 24.6 thousand new patients with haemoblastosis. A general increase tendency of MT morbidity is characteristic for blood system tumour. In 2000-2010 increase by 18.9% of haemoblastosis morbidity, including 15.7 % of men and 21.9 % of women is registered in Russia. In a general structure MT morbidity of men haemoblastosis is in the 7th place and of women in the 9th place (accordingly 4.5 and 5.9 %) [2].

In CIS a number of new patients is rather different: 3% in Kyrgystan, 11% in Uzbekistan. A maximum average age of people suffering from lymph was in Byelorussia [56], in Russia [54], a minimum age in Azerbaijan [43], in Kyrgystan [45]. According to the official 2008 data in Russia a portion of haemoblastosis was rather high in both men and women groups including lymphleukoma (23.6 %), lymph-reticulum sarcoma (29.6 %) and lymphgranularmathosis (13.2 %).

Leukemia was in the 1st place (30.1% - boys and 29.3% - girls), lymph was in the 3d place (14.5 and 10.3%) in the morbidity structure with MT among children. In the age group of 15-39 lymph was in the 1st place among men MT (16.9%) and women MT in the 3d place (9.3%). The highest data are registered in Magadan (15.4 -100000 men, 8.2- 100000 women, minimum data - the Jewish Autonomous Region (2.5 and 1.7- 100000 people [1]).

RESEARCH AIM. To find out temporal, territorial, populous regularities of lymphatic and blood-forming tissue MT morbidity of the population living in severe climatic conditions of Yakutia.

MATERIALS AND METHODS

During a twenty-year analysis (1991-2010) a general increase of patients with the first diagnosis of MT is 17.8% (1668 patients in 1991 and 2030 patients in 2010) including 12.9% of men and 22.5% of women. Dispensary documents of 37380 patients, out of them 1780 (4.76 +- 0.03) with lymphatic and blood-forming tissue MT were analyzed. Most of them were men 968 (54.4%), women-812 (45.6%). The twenty-year analysis (1991-2010) of haemoblastosis morbidity allowed to find out the main tendency of dynamics and to prognosticate its possible characteristic till 2020. The morbidity prognosis was done with the help of MS EXCELL 40 program.

RESULTS AND DISCUSSION

Frequency of haemoblastosis in oncologic morbidity in the Republic Sakha (Yakutia) differs in a wide range (3.7-5.8%) taking the 6th position (4.7%) after MT of lungs (17.8%), stomach (11.5%), mammary gland (8.12%), liver (7.12%) and gullet (6.15%).

Among 37.4 th. patients with the first MT diagnosis 910 (2.43 ± 0.04%) patients (in average 45 patients a year) consulted about lymph: lymph-reticulum sarcoma - 408 (1.09 ± 0.02), lymphgranularmathosis (Khodzkin disease) - 303 (0.81 ± 0.02) and multiple myelitis -199 (0.53 ± 0.02). Among the patients with malignant lymph there were men (56.0%) and women (44.0%).Table 1,Picture 1.

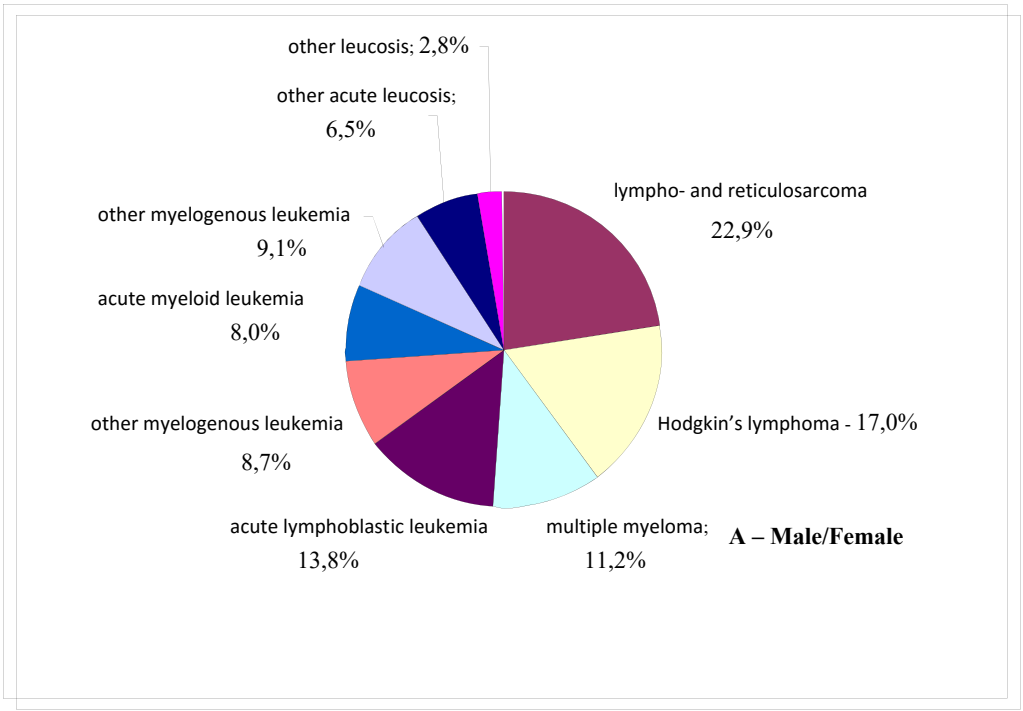
Table 1

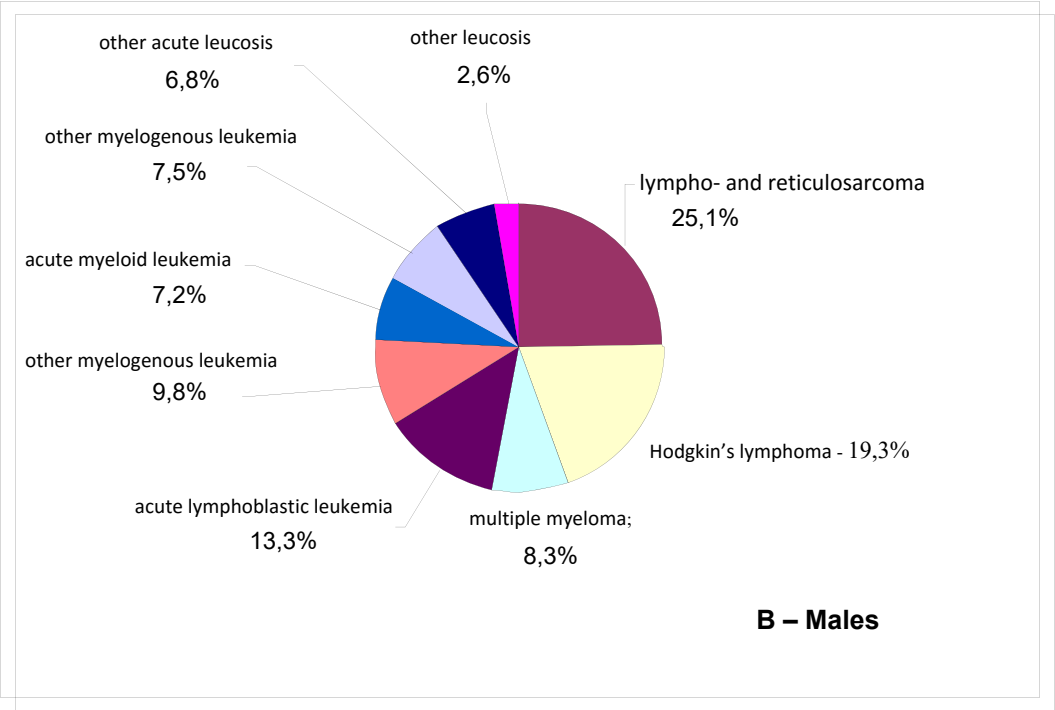
Structure dynamics of the Republic Sakha (Yakutia) population morbidity with malignant tumour in the period of 1991-2010 (Population 100.000)

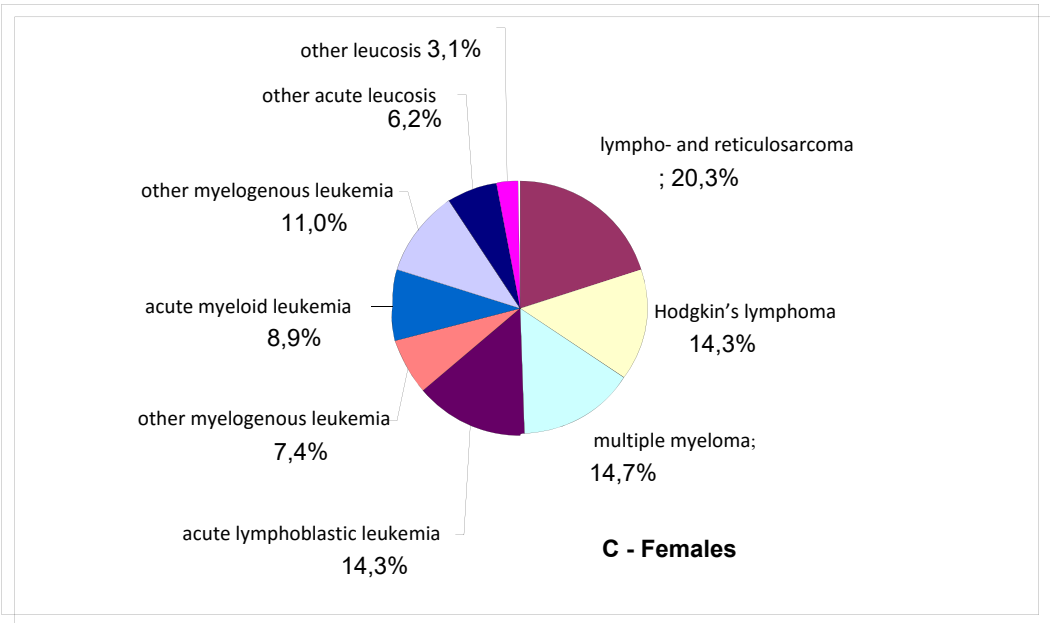
Localization (ICD-10)	1991-2010	Including:	
		1991-2000	2001-2010
All Population			
All neoplasms (C00-97)	37380(100,0)	17781(100,0)	19599(100,0)
Including:			
Haemoblastosis total	1780(4,76±0,03)	789(4,44±0,03)	991(5,06±0,03)
Including: – lymphoma	910(2,43±0,04)	421(2,37±0,04)	489(2,50±0,04)
lympho- and reticulosarcoma	408(1,09±0,02)	170(0,96±)	238(1,21±0,03)
Hodgkin's lymphoma	303(0,81±0,02)	178(1,00±0,02)	125(0,64±0,02)
multiple myeloma	199(0,53±0,02)	73(0,41±0,01)	126(0,64±0,02)
leukemia	870(2,33±0,05)	368(2,07±0,03)	502(2,56±0,04)
acute lymphoblastic leukemia	245(0,66±0,02)	113(0,84±0,02)	132(0,67±0,02)
other lymphatic leukemia	155(0,41±0,01)	42(0,24±0,01)	113(0,58±0,02)
acute myeloid leukemia	142(0,36±0,01)	81(0,46±0,02)	61(0,31±0,01)
other myelogenous leukemia	162(0,43±0,02)	53(0,30±0,01)	109(0,56±0,02)
other acute leucosis	116(0,31±00,01)	66(0,37±0,01)	50(0,26±0,01)
other leucosis	50(0,13±0,01)	13(0,07±0,01)	37(0,19±0,01)
Males			
Including:	18863(100,0)	9155(100,0)	9708(100,0)
Including:			
Haemoblastosis total	968(5,15±0,16)	426(4,73±0,67)	542(5,59±0,23)
Including: lymphoma	510(2,71±0,12)	235(2,60±0,16)	275(2,83±0,17)
lympho- and reticulosarcoma	243(1,29±0,08)	96(1,10±0,10)	145(1,49±0,12)
Hodgkin's lymphoma	187(1,01±0,07)	112(1,23±0,11)	75(0,77±0,09)
multiple myeloma	80(0,41±0,05)	25(0,27±0,05)	55(0,57±0,08)
leukemia	458(2,44±0,11)	191(2,13±0,14)	267(2,75±0,17)
acute lymphoblastic leukemia	129(0,67±0,06)	58(0,62±0,08)	71(0,73±0,09)
other lymphatic leukemia	95(0,49±0,05)	26(0,28±0,05)	69(0,71±0,09)
acute myeloid leukemia	70(0,36±0,04)	40(0,41±0,06)	30(0,31±0,06)
other myelogenous leukemia	73(0,39±0,04)	21(0,26±0,05)	52(0,54±0,07)
other acute leucosis	66(0,39±0,04)	37(0,48±2,07)	29(0,30±0,06)
other leucosis	25(0,13±0,03)	9(0,09± 0,03)	16(0,17±0,04)

Females			
All neoplasms (C00-97)	18517(100,0)	8626(100,0)	9891(100,0)
Including:			
Haemoblastosis total	812(4,30±0,15)	363(3,79±0,19)	449(4,63±0,21)
Including: lymphoma	400(2,15±0,10)	186(1,99±0,14)	214(2,21±0,15)
lympho- and reticulosarcoma	165(0,87±0,07)	72(0,75±0,09)	93(0,96±0,10)
Hodgkin's lymphoma	116(0,63±0,06)	66(0,71±0,08)	50(0,52±0,07)
multiple myeloma	119(0,65±0,06)	48(0,53±0,07)	71(0,73±0,09)
leukemia	412(2,25±0,11)	177(1,97±0,14)	235(2,42±0,16)
acute lymphoblastic leukemia	116(0,62±0,06)	55(0,59±0,08)	61(0,63±0,08)
other lymphatic leukemia	60(0,31±0,04)	16(0,16±0,04)	44(0,45±0,07)
acute myeloid leukemia	72(0,40±0,05)	41(0,46±0,07)	31(0,32±0,06)
other myelogenous leukemia	89(0,48±0,05)	32(0,35±0,06)	57(0,59±0,08)
other acute leucosis	50(0,30±0,04)	29(0,36±0,06)	21(0,22±0,05)
other leucosis	25(0,13±0,03)	4(0,04±0,02)	21(0,22±0,05)

Fig. 1. Structure of annual morbidity with lymphatic and blood-forming tissue malignant tumours of the Russian Federation (1991-2010).







In both groups 870 patients (2.33 ± 0.05) had leukemia, 245 (0.66 ± 0.02) had acute leukemia, 155 (0.41 ± 0.01) – other lymphleukemias, 142 (0.36 ± 0.01) – acute myelitisleukemia, other acute leukemias-116 (0.31 ± 00.01), 50 (0.13 ± 0.0) - other leukemias.

Populous characteristic of other nosological forms of haemoblastosis of men and women among other locations is rather interesting. Thus, men had a lymph 1.3 times more frequently (2.71 ± 0.12%) than women (2.15 ± 0.10%), lymph-reticulum sarcoma 1.5 times (accordingly 1.29 ± 0.08 and 0.63 ± 0.06%). Frequency of multiple myelitis was exception where coefficient - 1:15 (0.41 ± 0.05 and 0.65 ± 0.06%) was found out.

Comparative MT morbidity analysis of man and woman lymphatic and blood-forming tissue singled out a higher lymph level of men than of women (accordingly 2.71 ± 0.12 and 2.15 ± 0.10) ($p<0.05$), at the

same time coefficient difference of morbidity with leukemia is not expressed brightly (-2.44 ± 0.11 and 2.25 ± 0..11% p>0.05). Out of some nosological forms of man's leukemia a portion of acute lymphleukemia is higher (0.67 ± 0.06 – men and 0.62 ± 0.06% - women), other lymphs (0.49 ± 0.05 and 0.31 ± 0.04% and other acute leukamias (0.39 ± 0.04 and 0.30 ± 0.04%). Meanwhile acute myelitisleukemia (0.36 ± 0.04%- men and 0.40 ± 0.05%- women) other myelitisleukemias)accordingly 0.39 ± 0/04 and 0.48 ± 0.05%, other leukamias (o.13 ± 0.03 and 0.13 ± 0.03%) are found out more frequently in woman population.

Annual data of the first MT diagnosis of lymphatic and blood-forming tissue and its populous characteristic are presented in Picture 2.

Fig.2. Annual age data of morbidity with malignant tumours depending on a sex (2001-2010)

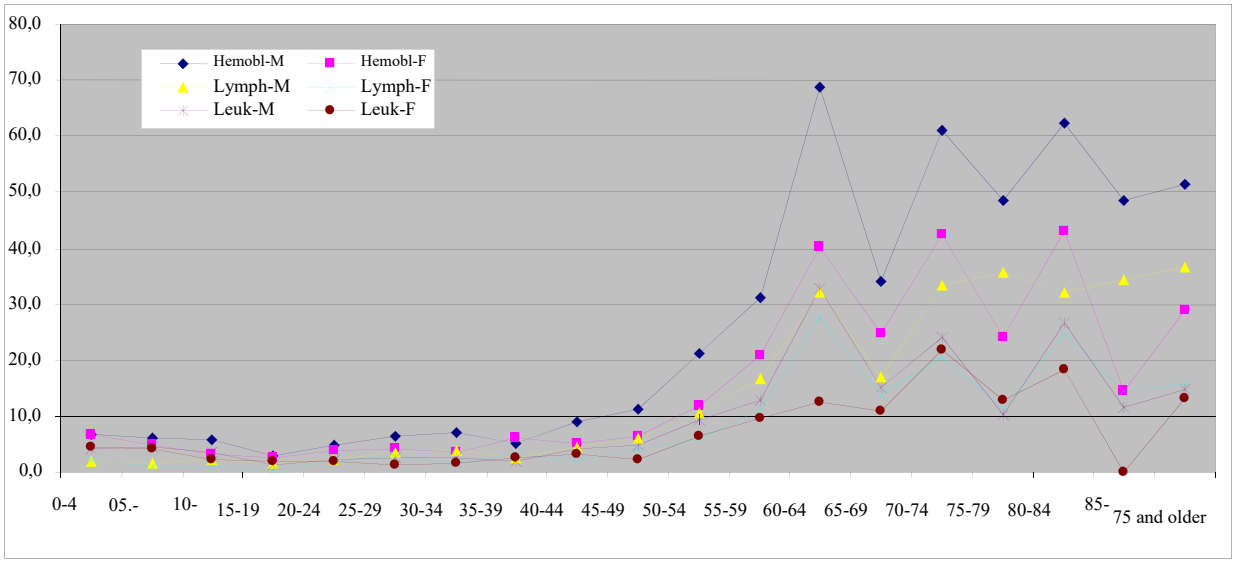
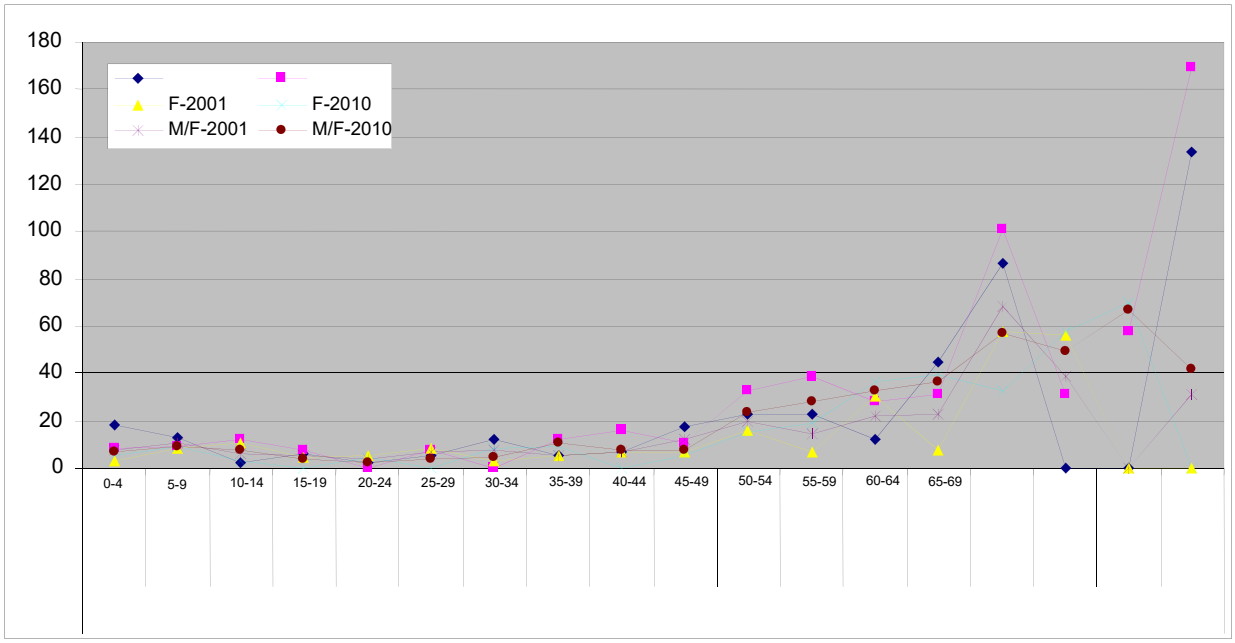


Fig. 3. Morbidity of different age-sex groups of the Republic Sakha population with lymphatic and blood-forming tissue (2001 and 2010) (Population 100.000)



Out of different nosological haemoblastosis forms in both groups due to its data Nekhodzin lymph and other lymphatic MT (22.9%), lymphgranularmathosis (17.0) and acute lymphleukemia (13.8%) occupy the first three places. Coefficients of other MTs decrease: multiple myelitis and immunoproliferative MT (11.2) and other myelitis leukemias (9.1), other lymphleukemias (8.7), acute myelitisleukemia (8.0), other acute leukemias (6.5) and other leukemias (2.8%). Table 2.

Table 2

Structure of morbidity with lymphatic and blood-forming tissue malignant tumours of men and women in the Republic Sakha (Yakutia) (1991-2010) n (o/o)

Localization	Males/Females		Males		Females	
	Republic of Sakha (Yakutia)	Russian Federation*	Republic of Sakha (Yakutia)	Russian Federation*	Republic of Sakha (Yakutia)	Russian Federation*
Haemoblastosis total	1780(100,0)		968(100,0)		812(100,0)	
Including:						
lymphoma	910(51,1)	55,6	510(52,7)	44,0	400(49,3)	57,1
lympho- and reticulosarcoma	408(22,9)	31,1	243(25,1)	31,5	165(20,3)	30,7
Hodgkin's lymphoma	303(17,0)	12,8	187(19,3)	12,5	116(14,3)	13,0
multiple myeloma	199(11,2)	11,7	129(13,3)	9,9	116(14,3)	13,4
leukemia	870(48,9)	44,5	80(8,3)	42,9	119(14,7)	56,0
acute lymphoblastic leukemia	245(13,8)	7,2	458(47,3)	7,8	412(50,7)	6,5
other lymphatic leukemia	155(8,7)	15,2	70(7,2)	16,6	72(8,9)	13,8
acute myeloid leukemia	142(8,0)	6,5	73(7,5)	6,2	89(11,0)	6,7
other myelogenous leukemia	162(9,1)	8,3	95(9,8)	7,8	60(7,4)	8,7
other acute leucosis	116(6,5)	3,0	66(6,8)	3,1	50(6,2)	2,9
other leucosis	50(2,8)	4,3	25(2,6)	4,4	25(3,1)	4,2

In Yakutia men fall ill with lymphs more frequently than women (52.7 % against 47.3 5) because of high morbidity data with Nekhodzin lymph and other MNT of lymphatic tissue (25.1 % against 20.3% -women) and lymphgranularmathosis (19.3% and 14.3%). Meanwhile women fall ill with multiple myelitis and immunoproliferative tumours frequently (4.7%).

In the regional conditions of Yakutia women demonstrated leukemia more frequently (50.7%) than men (47.3%) because of often women morbidity with acute lymphleukemia (14.3% against 13.3%), other myelitisleukemias (11.0 and 7.5%) and other chronic acute leukemias (3.1% and 2.6%).

It's interesting to show the results of comparative analysis of some nosological forms of haemoblastosis MT of different populous groups of the Republic Sakha and the Russian Federation. Thus, in the research period men's data with lymph diagnosis are 1.3:1.0 (here and further data are of the Republic Sakha) – annual of 1991-2010- 52.7% and in the Russian Federation of 2010 – 44.0%) These data are the results of morbidity with lymphgranularmathosis (1.5:1.0), acute leukemias (2.2 : 1.0), acute lymphleukemias (1.7:1.0) and myelitisleukemia (1.2:1.0).

Morbidity with lymphgranularmathosis (1.1:1.0), multiple myelitis (1.1:1.0), leukemia (1.1:1.0), other acute leukemia (2.1:1.0), other myelitisleukemia (1.3:1.0), acute myelitisleukemia (1.3:1.0) is very high in Yakutia in comparison with the Russian Federation.

Comparative analysis of morbidity with lymphatic and blood-forming tissue MT of different sex and age groups of the Republic Sakha population in 2001 and 2010 proves some increase of taken ill people especially of young people (till 19 years old) and older people (more than 50), (PICT.3,TABLE 3). During the research period a high level of average annual increase: men-(2.65% with 11.1 o/oooo in 2001, 14.4 o/oooo in 2010), women- (accordingly-0.75% with 9.5 to 10.2 o/oooo) was observed.

Table 3

Dynamics of morbidity of different age-sex groups with lymphatic and blood-forming tissue malignant tumours of the Republic Sakha population. (2001-2010)

Gender	Year	per 100000 of population																	Index	
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-75	75-79	80-85	85 and older	RF*	SF*/
Lymphatic and hematopoietic tissue (C81-96)																					
M/F	2001	7,7	10,5	6,2	5,2	3,8	6,6	7,7	5,1	6,5	12,1	19,4	14,3	22,4	22,5	68,1	38,6	0,0	31,0	10,3	10,7
	2010	6,9	9,0	7,5	3,9	2,2	3,8	4,2	10,4	7,9	7,9	23,4	27,8	33,0	36,3	57,3	49,2	66,5	41,8	12,2	11,9
Male	2001	17,9	13,0	2,0	6,2	2,5	5,1	12,0	5,0	6,5	17,3	23,1	23,0	12,5	44,7	86,5	0,0	0,0	134,0	11,1	13,6
	2010	8,1	8,8	11,8	7,7	0,0	7,6	0,0	12,0	16,2	11,0	32,4	39,1	28,0	30,9	101,0	30,9	57,6	169,2	14,4	15,3
Female	2001	3,1	8,0	10,6	4,2	5,2	8,4	3,2	5,2	6,6	7,1	15,9	6,7	30,3	7,6	57,8	55,9	0,0	0,0	9,5	9,1
	2010	5,6	9,2	3,1	0,0	4,5	0,0	8,4	8,8	0,0	5,0	15,5	18,8	36,8	39,8	32,6	57,8	70,1	0,0	10,2	9,3
Lymphoma (C81-96)																					
M/F	2001	3,1	1,3	1,0	0,0	2,5	2,7	4,6	3,8	3,3	9,7	14,6	10,8	14,0	18,0	18,6	0,0	0,0	31,0	5,1	5,1
	2010	1,4	0,0	1,5	2,6	1,1	2,5	1,4	5,9	4,7	2,6	6,9	13,9	24,0	24,2	36,5	33,3	0,0	1,4	5,8	5,6
Male	2001	9,0	2,6	0,0	0,0	2,5	2,5	9,0	2,5	4,3	12,3	19,8	15,3	12,5	33,6	34,6	0,0	0,0	134,0	6,6	7,9
	2010	2,7	0,0	3,0	5,1	0,0	5,1	0,0	6,0	9,7	2,7	11,8	23,5	14,0	15,4	72,1	30,9	57,6	0,0	7,0	7,2
Female	2001	0,0	0,0	2,1	0,0	2,6	2,8	0,0	5,2	2,2	7,1	9,5	6,7	15,2	7,6	9,6	0,0	0,0	0,0	3,6	3,3
	2010	0,0	0,0	0,0	0,0	2,3	0,0	2,8	5,9	0,0	2,5	2,6	6,3	31,6	29,9	16,3	43,4	23,4	0,0	4,7	4,3
Leukemia (C91,0-95 1-9)																					
M/F	2001	4,6	9,2	5,2	5,2	1,3	4,0	3,1	1,3	3,3	2,4	4,9	3,6	8,4	4,5	49,5	38,6	0,0	0,0	5,2	5,7
	2010	5,5	9,0	6,0	1,3	1,1	1,3	2,8	4,4	3,2	5,2	16,5	13,9	9,0	12,1	20,8	9,8	33,3	41,8	6,4	6,3
Male	2001	9,0	10,4	2,0	6,2	0,0	2,5	3,0	2,5	2,2	4,9	3,3	7,7	0,0	11,2	51,9	0,0	0,0	0,0	4,5	5,7
	2010	5,4	8,8	8,9	2,6	0,0	2,5	0,0	6,0	6,5	8,2	20,6	15,7	14,0	15,4	28,8	0,0	0,0	169,2	7,4	8,2
Female	2001	3,1	8,0	8,5	4,2	2,6	5,6	3,2	0,0	4,4	0,0	6,4	0,0	15,2	0,0	48,2	55,9	0,0	0,0	5,8	5,9
	2010	5,6	9,2	3,1	0,0	2,3	0,0	5,6	2,9	0,0	2,5	12,9	12,5	5,3	10,0	16,3	14,5	46,8	0,0	5,5	5,1

* Rough Figures, */ Standardized Figures

In the period of 1991-2010 haemoblastosis was observed in all age groups not depending on a sex. The most affected group of both populations is age of 50 -55.6% (in the Russian Federation in 2010 - 69.3%). There were 202 patients of the age 0 to 17, that is 12.9% of morbidity with haemoblastosis in the

Republic (in the Russian Federation -7.2%) TABLE 4. Thus, in the regional conditions of Yakutia young people run the risk to fall ill with haemoblastosis more frequently than young people of the same age in the whole country (1.8 times).

According to the analysis by 2020 the data level of morbidity with haemoblastosis will exceed the first level (1991) twice in both groups in the Republic Sakha. TABLE 5.

Extent of lymphatic and blood-forming tissue MT has a brightly expressed medico-geographical, medico-social conditionality. TABLE 6

A high level of haemoblastosis morbidity is found out in Eastern (10.1 o/oooo), Southern (11.3) zones and in big industrial centres (10.4) with developed enterprises of extractive industry and a large number of new-comers. TABLE 7.

In Table 7 analysis of regional data differences of haemoblastosis morbidity is presented taking into account a present-day administrative-territorial divisions of the Republic Sakha territory. The analysis found out the highest data morbidity with lymphatic and blood-forming tissue MT in Aldan (12.3), Anabar (14.9), Verkhnekolymsk (12.1), Tompo (13.1), Lensk (14.2), Mirny (11.7), Neryungri (11.6).

Table 4

Annual morbidity of different age-sex groups of the Republic Sakha population with lymphatic and blood-forming tissue malignant tumours (1991-2010)

Gender	Index		per 100000 of population													
			до 17 л	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75 и ст.
Haemoblastosis																
	n	1 648	212	50	61	67	63	63	90	125	190	193	179	123	130	102
M/F	RF	10,20	3,06	4,02	4,34	5,27	5,22	5,61	6,72	9,13	16,60	26,43	52,28	29,27	51,75	37,50
	%	100,0	12,9	3,0	3,7	4,1	3,8	3,8	5,5	7,6	11,5	11,7	10,9	7,5	7,9	6,2
	n	892	117	25	33	41	42	28	59	75	113	105	101	57	55	42
Male	RF	11,35	3,02	4,35	4,74	6,39	6,93	5,02	9,00	11,38	21,30	31,30	68,66	33,96	60,91	51,40
	%	100,0	13,1	2,8	3,7	4,6	4,7	3,1	6,6	8,4	12,7	11,8	11,3	6,4	6,2	4,7
	n	755	92	21	28	28	22	36	37	49	78	87	83	66	72	55
Female	RF	8,60	2,46	3,56	3,73	4,20	3,45	6,01	5,12	6,51	11,99	20,81	40,14	24,69	42,27	28,90
	%	100,0	21,5	4,9	6,6	6,6	5,2	8,4	8,7	11,5	18,3	20,4	19,4	15,5	16,9	12,9
Lymphoma																
	n	851	63	17	30	43	36	36	45	76	97	106	107	67	67	61

M/F	RF	5,27	1,04	1,19	2,13	3,38	2,98	3,20	3,36	5,55	8,47	14,52	31,25	15,94	26,67	22,43
	%	100,0	7,4	2,0	3,5	5,1	4,2	4,2	5,3	8,9	11,4	12,5	12,6	7,9	7,9	7,2
	n	465	38	13	16	23	25	16	31	42	60	59	50	30	32	30
Male	RF	5,59	1,48	1,41	2,17	3,39	3,90	2,71	4,47	6,02	10,68	16,61	32,10	16,88	33,47	36,71
	%	100,0	8,2	2,8	3,4	4,9	5,4	3,4	6,7	9,0	12,9	12,7	10,8	6,5	6,9	6,5
	n	383	25	4	14	20	11	20	14	32	37	47	57	37	35	30
Female	RF	4,36	0,47	0,97	1,86	3,00	1,73	3,34	1,94	4,25	5,69	11,24	27,57	13,84	20,55	15,76
	%	100,0	6,5	1,0	3,7	5,2	2,9	5,2	3,7	8,4	9,7	12,3	14,9	9,7	9,1	7,8
Leukemia																
	n	797	149	33	31	24	27	27	45	49	93	87	72	56	63	45
M/F	RF	4,93	2,02	2,82	2,20	1,89	2,24	2,40	3,36	3,58	8,13	11,91	21,03	13,33	25,08	16,54
	%	100,0	18,7	4,1	3,9	3,0	3,4	3,4	5,6	6,1	11,7	10,9	9,0	7,0	7,9	5,6
	n	427	79	12	17	18	17	12	28	33	53	46	51	27	23	12
Male	RF	5,13	1,37	2,94	2,30	2,65	2,65	2,03	4,04	4,73	9,44	12,95	32,74	15,19	24,05	14,68
	%	100,0	18,5	2,8	4,0	4,2	4,0	2,8	6,6	7,7	12,4	10,8	11,9	6,3	5,4	2,8
	n	372	67	17	14	8	11	16	23	17	41	40	26	29	37	25
Female	RF	4,24	1,99	2,59	1,86	1,20	1,73	2,67	3,18	2,26	6,30	9,57	12,57	10,85	21,72	13,14
	%	100,0	18,0	4,6	3,8	2,2	3,0	4,3	6,2	4,6	11,0	10,8	7,0	7,8	9,9	6,7

Table 5

Dynamics of morbidity of the Republic Sakha population with lymphatic and blood-forming tissue malignant tumours in 2001 and 2013 and its possible characteristic in 2020 (population 100000)

Year	M/F						Male						Female					
	Hemoblastosis		Lymphoma		Leukemia		Hemoblastosis		Lymphoma		Leukemia		Hemoblastosis		Lymphoma		Leukemia	
	RF*	GS*	RF	GS	RF	GS	RF	GS	RF	GS	RF	GS	RF	GS	RF	GS	RF	GS
1991	6,9	8,6	3,4	4,0	3,5	4,6	7,0	10,3	3,4	4,1	3,6	6,2	6,9	8,0	3,4	4,0	3,4	4,0
1992	8,2	9,2	4,0	4,4	4,2	4,9	8,9	9,9	5,1	5,5	3,8	4,3	7,5	8,3	2,9	3,2	4,6	5,1
1993	8,6	10,2	4,3	4,9	4,3	5,4	9,2	10,6	5,7	6,4	3,5	4,4	8,4	9,4	3,3	3,4	5,0	6,0
1994	7,5	8,7	4,4	5,2	3,1	3,7	8,9	11,3	5,7	7,0	3,2	4,3	6,2	6,8	3,2	3,7	3,0	3,1
1995	7,6	4,6	3,5	2,3	4,1	4,0	8,8	10,5	3,8	4,4	5,0	6,0	6,3	6,8	3,1	3,1	3,3	3,8
1996	6,7	7,7	3,5	3,9	3,2	3,6	8,4	10,5	4,7	5,8	3,7	4,7	5,0	5,5	2,3	2,4	2,7	2,8
1997	6,8	7,4	3,7	4,0	3,1	3,4	7,1	8,1	4,1	4,8	2,9	3,2	6,6	6,8	3,3	3,4	3,3	3,4
1998	6,5	7,0	3,8	4,1	2,8	2,9	7,8	8,5	4,2	4,5	3,6	4,0	5,3	5,5	3,4	3,4	2,0	2,1
1999	7,6	8,3	3,9	4,1	3,7	4,2	7,3	8,5	3,0	3,5	4,2	5,0	8,0	8,0	4,8	4,5	3,2	3,4
2000	7,3	7,2	4,0	3,9	3,3	3,3	8,8	8,9	5,3	5,3	3,5	3,6	5,8	5,1	2,6	2,5	3,2	2,9
2001	10,3	10,6	5,1	5,0	5,2	5,6	11,1	11,8	6,6	6,7	4,5	5,2	9,5	9,3	3,6	3,3	5,8	5,9
2002	7,0	5,6	3,4	3,0	3,7	2,6	7,2	6,7	4,1	3,2	3,1	3,5	6,9	6,6	2,6	2,5	4,2	4,0
2003	13,2	13,8	6,7	6,8	6,4	7,0	14,0	13,6	6,3	5,7	7,8	7,9	12,4	12,7	7,2	7,2	5,2	5,4
2004	7,6	7,6	4,1	4,1	3,5	3,4	9,3	9,0	5,2	4,8	4,1	4,2	6,0	5,8	3,1	2,9	2,9	2,8
2005	12,0	13,0	5,5	6,1	6,5	7,0	13,0	15,0	5,6	6,6	7,4	8,4	11,1	11,1	5,3	5,5	5,7	5,6
2006	7,6	7,9	3,9	4,1	3,7	4,3	9,1	9,8	4,8	5,0	4,3	4,8	6,1	6,0	3,1	3,1	3,1	3,7
2007	11,1	11,4	5,7	5,6	5,5	5,7	12,1	10,5	6,3	5,6	5,9	4,9	10,2	1,0	5,1	4,9	5,1	5,1
2008	10,4	10,5	4,7	4,6	5,7	5,9	12,2	12,5	6,3	6,2	5,9	6,4	8,8	8,3	3,3	3,1	5,5	5,2
2009	12,3	12,2	6,3	6,2	6,0	6,1	14,1	14,7	7,0	6,5	7,2	8,2	10,6	9,9	5,7	5,4	4,9	4,5
2010	12,2	11,7	5,8	5,7	6,4	6,0	14,4	13,5	7,0	6,6	7,4	6,9	10,2	9,3	4,7	4,4	5,5	4,9

2011	12,2	9,6	5,8	5,9	6,4	3,7	11,8	12,8	7,3	8,5	4,5	4,3	9,4	7,7	5,3	4,1	4,1	3,6
2012	10,6	11,1	6,3	5,6	4,3	5,6	11,8	12,6	5,5	5,5	6,3	7,1	11,6	13,5	6,2	7,8	5,4	5,7
2013	11,7	9,9	5,9	5,6	5,9	4,3	13,4	15,7	8,2	10,7	5,2	5,0	8,8	7,1	4,1	3,2	4,5	3,7
2020	**13,6**	**12,2**	**6,8**	**6,3**	**6,8**	**5,8**	**15,2**	**14,7**	**7,8**	**7,9**	**7,4**	**6,9**	**11,5**	**10,2**	**5,9**	**5,4**	**5,6**	**4,8**

*/ RF– Rough Figures, GS– Global Standard

Table 6

Annual morbidity of the Republic Sakha population with lymphatic and blood-forming tissue malignant tumours in the period of 2001-2010 (Population 100000)

Territory Area of Republic of Sakha(Yakutia)	Total		Male		Female	
	RF	GS	RF	GS	RF	GS
Lymphatic and hematopoietic tissue (C81-96)						
Polar	6,14	6,72	5,39	6,66	6,89	6,78
Eastern	10,12	9,88	10,73	12,33	9,46	8,83
Western	6,40	6,99	7,08	7,86	5,75	6,23
Central	7,94	8,80	8,62	9,91	7,27	7,76
Southern	11,32	11,03	13,41	13,81	9,27	8,60
Bigger citties	12,90	13,59	14,83	17,56	11,10	10,92
Republic of Sakha (Yakutia)	10,42	11,02	11,65	13,36	9,24	9,23
Lymphoma (C81-85. 88, 90, 96)						
Polar	3,19	3,35	3,43	3,62	2,95	2,91
Eastern	5,30	4,50	4,67	3,98	5,98	5,17
Western	3,15	3,55	3,54	3,94	2,78	3,13
Central	3,94	4,57	4,36	5,21	3,53	4,01
Southern	6,04	5,69	7,93	8,29	4,19	3,84
Bigger citties	6,24	6,50	7,35	8,81	5,20	5,08
Republic of Sakha (Yakutia)	5,15	5,41	5,92	6,82	4,41	4,39
Leukemia (C91-93, 94.0-5, 7, 95.0-2, 7, 9)						
Polar	2,95	3,09	1,96	2,30	3,94	3,87
Eastern	4,82	5,38	6,07	8,35	3,49	3,66
Western	3,25	3,45	3,54	3,92	2,98	3,10
Central	4,00	4,29	4,26	4,86	3,74	3,75
Southern	5,28	5,34	5,49	5,52	5,09	4,75
Bigger citties	6,66	7,07	7,48	8,75	5,90	5,81
Republic of Sakha (Yakutia)	5,27	5,62	5,73	6,57	4,82	4,85

Table 7

Annual morbidity of the regional population with lymphatic and blood-forming tissue malignant tumours in the Republic Sakha (Yakutia) (2001-2010) (Population 100000)

Ulus (Districts)	Lymphatic and hematopoietic tissue (C81-96)			Из них					
				Lymphoma (C81-90, 96)			Leukemia (C91-95)		
	M/F	Male	Female	M/F	Male	Female	M/F	Male	Female
Abyisky	10,6	4,3	16,4	2,1	0,0	4,1	8,4	4,3	12,3
Aldansky	12,3	15,6	8,8	6,1	7,7	4,5	6,1	8,1	4,1
Allaikhovsky	5,8	5,9	5,8	2,9	0,0	5,8	2,9	5,9	0,0
Amginsky	8,7	12,1	4,5	2,9	6,0	0,0	5,8	6,0	5,6
Anabarsky	14,9	14,9	10,0	2,5	5,0	0,0	9,9	9,9	10,0
Bulunsky	1,0	0,0	2,1	1,0	0,0	2,1	0,0	0,0	0,0
Verkhnevilyusky	5,6	6,7	3,6	1,9	2,9	0,9	2,8	3,8	1,8
Verkhnekolymsky	12,1	17,0	3,6	6,9	10,2	3,5	3,5	6,8	0,0
Verkhoyansky	5,1	5,9	4,4	2,9	4,4	1,5	2,2	1,5	2,9
Vilyusky	6,6	7,3	6,8	5,1	5,6	4,5	1,9	1,6	2,3
Gornyi	2,6	3,6	1,7	2,6	3,6	1,7	0,0	0,0	0,0
Zhigansky	4,6	4,6	0,0	0,0	0,0	0,0	2,3	4,8	0,0
Kobyasky	4,2	4,3	4,2	2,1	1,4	2,8	2,1	2,9	1,4
Lensky	14,2	15,2	9,8	6,5	8,9	4,1	5,9	6,3	5,6
Megino-Kangalasky	8,4	8,2	6,6	3,7	3,8	3,6	3,4	4,4	2,4
Mirninsky	11,7	12,6	9,4	5,5	6,9	4,0	5,5	5,6	5,4
Momsky	10,6	8,6	12,5	4,3	4,3	4,2	8,5	4,3	8,5
Namsky	6,5	8,7	6,5	2,3	1,9	2,7	5,1	6,8	3,6
Neryungrinsky	11,6	15,3	8,4	5,2	6,9	3,7	6,6	8,6	4,7
Nizhnekolymsky	8,4	6,8	10,0	6,7	6,8	6,7	1,7	0,0	3,3
Nyurbinsky	5,8	8,7	2,3	1,5	3,2	0,0	3,9	5,5	2,3
Oimyakonsky	8,2	6,4	10,2	4,8	5,1	4,4	3,4	1,3	5,9
Olekminsky	7,3	8,8	7,8	4,0	4,4	3,6	4,4	4,4	4,3
Oleneksky	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Srednekolymsky	6,0	4,9	7,0	4,8	4,9	4,7	1,2	0,0	2,3
Suntarsky	7,5	5,6	9,2	4,3	2,4	6,1	3,1	3,2	3,1
Tattinsky	10,2	7,4	10,6	4,2	3,7	4,7	4,8	3,7	5,9
Tomponsky	13,1	11,8	12,9	5,2	2,6	7,8	7,2	9,2	5,2
Ust-Aldansky	7,2	6,5	6,9	3,6	4,6	2,6	3,1	1,8	4,3
Ust-Maisky	8,6	8,6	5,4	4,3	3,3	5,4	2,6	5,0	0,0
Ust-Yansky	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Khangalasky	8,3	8,3	8,3	4,0	4,9	3,0	4,3	3,3	5,3

Churapchinsky	9,8	6,3	11,2	7,2	4,2	10,2	1,5	2,1	1,0
Ev-Bytantaisky	14,2	14,4	14,5	3,6	7,2	0,0	10,9	7,2	14,5
Yakutsky	13,8	13,9	12,7	5,8	6,6	5,2	7,1	7,3	7,0
Republic of Sakha (Yakutia)	10,4	11,1	9,3	4,7	5,3	4,1	5,2	5,7	4,8
Russia (2000)	13,7	14,8	12,7	7,2	7,7	6,7	6,5	7,1	6,0

Above mentioned regions refer to the territories with developed gold-, diamond-, coal extractive infrastructure. Similar territorial version is found out in analysis of lymph and leukemia morbidity.

Thus, results of retrospective morbidity analysis of lymphatic and blood-forming tissue MT of the Republic Sakha population stress brightly expressed regional and populous conditionality of haemoblastosis extent. Therefore, the first task in making up a regional program aimed at perfection of onkoepidemiological situation in the region is to work out scientifically based measures of prophylaxis against factor influence of environment and negative moments of anthropogenic origin of haemoblastosis morbidity.

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