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Malignant tumors morbidity of the Republic Sakha (Yakutia) population in the beginning of the third millennium (2001-2010)

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Retrospective analysis of 16.6 thousand cases of malignant tumor morbidity of Yakutian population during the period of 2001-2010 has been conducted. First decade is characterized by existence of positive tendency in general oncologic disease dynamics, clearly marked by sex-age and territorial conditionality. By 2015 predicted level will be 1.2 times higher than initial rates in 2001.

Keywords: tumors, prevalence, prognosis.

Introduction: About 10 millions of new cases of malignant tumor and more than 6 million deaths from them are detected every year. (IARC, 2007)

According to official statistics in Russia, about 2.79 million patients with detected diagnosis were on the books in the end of 2010 that is 22.5% higher than rates of 2001. (Chissov V.I., Starinsky V.V., Petrova G.V., 2012).

Research Objective. Clarifying population, territorial and time regularity of oncologic disease of Yakutian population and make prognosis.

Materials and methods. Retrospective analysis of report materials of YaROD, that include 19.6 thousand cases of malignant tumor in Republic Sakha (Yakutia) during the period 2001-2010. Statistical processing of materials is carried out according to generally accepted method using application program package "Statistika".

Results and discussion. Beginning of third millennium (2001-2010) in Yakutia is characterized by quite high growth rate (7.5%) of absolute number of patients with firstly detected diagnosis of malignant neoplasm which was basically developed due to relatively higher rates of growth in women (8.2%) than in men (6.8%). Meanwhile during this period according to State Committee for Statistics of Republic Sakha (Yakutia) in rates, characterizing population of Yakutia, negative growth of average annual population (men – 5.9%, women – 1.2%) has been observed, that shows the true growth of oncologic diseases rates.

Analysis of oncologic diseases in Republic in 2010 allows noting, that men like in previous years have high specific weight of malignant tumors of digestive (35.3%) and respiratory (26.0%) apparatus. Urogenital system carcinoma has quite high aggregate indices, which are more than 7.2% of all neoplasms in men. Lung cancer (23.1%), stomach cancer (9.9%), oesophageal cancer (6.8%), hepatic cancer (6.4%) as before hold leading positions in structure of oncologic diseases in men. Next places in order of priority are divided as follows: hemoblastosis cancer (6.6%), prostate cancer (4.6%), central nervous system cancer (4.5%), straight (4.4%) and segmented intestine (4.0%) cancer, skin cancer (3.4%), pancreatic gland cancer (3.3%), laryngeal cancer (2.8%), clear-cell carcinoma (2.5%) (fig.1)

Breast cancer is leading form of oncologic pathology in women (14.7%). Second and third places are lung cancer (8.1%) and cervical cancer (7.8%). Specific weight of pancreas cancer

(3.8%), thyroid cancer (3.2%) and clear-cell carcinoma (2.5%) is quite high. In total women population of Republic has very high occurrence of diagnosed cases of cancer pathology of reproductive system, which reaches 32.7%. In structure of oncologic disease this population has high specific weight of malignant neoplasms of digestive apparatus (29.5%).

Comparative analysis of disease structure allows to state, that men had more nosological entity of malignant tumor than women. Exceptions were malignant tumor of segmented intestine, breast and thyroid. In particular specific weight of digestive apparatus cancer in women is 1.2 times lower than in men. As noted above, almost every fourth carcinoma detected in men is in respiratory apparatus, while lung cancer in women is diagnosed more than 3 times rarer (8.2%).

In 2010 standardized index (SI) of men malignant tumor disease in Yakutia totally was 250.1% that is 0.12% higher than in 2001 (249.8%), but women – 0.39% (179.6 and 178.9% respectively). In analyzed period SI of men testicular cancer increases 3.4 times, but central nervous system 2.3 times. Active growth of straight intestine cancer (53.8%), prostate cancer (34.0%), hemoblastosis (12.5%), lung cancer (8.8%) and segmented intestine cancer (7.2%) is registered. Negative dynamics of disease indices in men is observed during stomach cancer (-40.9%), labium cancer (-23.4%), malignant tumors of bones and articular cartilages (-22.9%), liver cancer (-22.1%), pancreatic gland cancer (-16.3%), laryngeal cancer (-9.6%), bladder cancer (-9.5%), oesophageal cancer (-4.5%) and skin cancer (-4.5%) (fig.1) It's important to note, that in spite of quite high average annual rates of decrease men oesophageal cancer indices in Yakutia are still higher among 79 regions of Russia and significantly exceed similar average federative rates (6.6%).

Considerable positive dynamic of women disease is observed during cancer of: bladder (1.7 times), uterine body (83.2%), central nervous system (74.1%), skin (25.4%), straight intestine (16.2%), uterine neck (14.8%). Less intensive average annual rate of growth is detected during clear-cell carcinoma (11.9%), segmented intestine cancer (2.7%) and hemoblastosis (2.2%). The highest average annual rate of decrease in this population is observed during lung cancer (-38.3%), oesophageal cancer (-26.1%), liver cancer (-15.8%), thyroid cancer (-15.6%), bones cancer (-14.9%) and stomach cancer (-11.8%). Quite high rate of decrease of disease indices is registered during pancreatic cancer (9.0%) and breast cancer (4.6%).

Sex and age morbidity rates of malignant tumor in population of Republic Sakha (Yakutia) in 2001 and 2010 by 5 years age groups are shown in figure 2. Middle age of diseased in 2010 was 59.0 years old (in Russia – 63.4) for men, for women – 59.7 (in Russia – 63.2) years old. Median value of age distribution is 55.3 (in Russia – 63.4) and 56.2 (in Russia – 63.3) years old respectively for men and women.

Analyzing dynamic of oncologic sick rate of men and women of Republic Sakha (Yakutia) in 2001-2010, one can state that both population groups in future will have growth of morbidity intensive and standardized indices (fig.3), having been observed during decades.

According to prognosis by 2015 growth rate of crude marker of all malignant cancers in men will be 24.6%, in women 18.0%, but predicted levels are 236.4% in men and 226.6% in women. Calculations show that growth rates of morbidity SI over specified period of time will be 1.9 and 3.5% respectively in both populations.

Morbidity trend extrapolation in 2001-2010 allows to note, that significant influence to formation of predicted level of oncologic morbidity in both population were exercised by tendency for rate decrease of digestive (food pipe, stomach, liver, pancreas) and respiratory apparatus.

According to results of SI in dynamic, there's prediction of 69.1% decrease of digestive apparatus cancer in men by 2015 at average annual decrease rate of -3.65%.

Expected level of digestive apparatus cancer in woman will be 90.3%, respiratory apparatus will be 74.8% from initial rates, and average annual rate of morbidity growth meanwhile will be up to -1.0 and -2.85%.

According to prognosis more active average annual growth rate of morbidity in men apparently will be during testicular cancer (11.6%), melanoma cancer (11.7%), straight intestine



cancer (6.3%), hemoblastosis (3.35%), segmented intestine cancer (2.7%), clear-cell carcinoma (2.05%), skin cancer (1.75%) etc.

Maximum predicted average annual growth rates in women apparently will be observed during soft tissues cancer (8.2%), straight intestine cancer (6.3%), uterine body cancer (4.05%), segmented intestine cancer (2.7%). Such dynamic trend of morbidity rates in this population will be also common during clear-cell carcinoma, brain cancer, other and unspecified parts of nervous system and breast cancer. Thus continuing decrease of digestive and respiratory cancer morbidity apparently will determine negative dynamic of oncologic sick rate till 2010 in both men and women population.

Ratios of crude marker and standardized rate of men and women population in Yakutia vary quite widely depending on nosological entity of tumor, age structure and residence of patients. The highest sick rates of oesophageal and stomach cancers are found in Transpolar Yakutia, confirming hypothesis about significant gradient of morbidity growth from south to north. It is important to state, that high sick rates in Transpolar, Central and Western Yakutia are formed due to increased rates of digestive (oesophagus, liver) and respiratory cancers. In big cities of republican subordination which are centers of mining industry, morbidity of under lip cancer, tongue cancer, mouth cavity cancer, segmented and straight intestine cancer, pancreatic cancer, laryngeal cancer, skin cancer and reproductive organs cancer is very high.

Results of component analysis show that beginning of third millennium is characterized by the fact, that growth of total number of patients with firstly detected diagnosis in men (6.67%) happened mostly due to "changes in number and age structure of population" (4.74%) than "disease risk" (1.93). In addition "disease risk" played significant role in positive dynamic of men morbidity of lung cancer (2.36), bladder cancer (1.95%), brain cancer (0.49%), straight intestine (1.57%), prostate cancer (1.28%), hemoblastosis (1.18%) and pancreatic cancer (0.9%). There is such tendency of gross growth components in tumor localization of: oesophagus (0.49%) and bladder (0.49%). Decrease of risk factor was the main reason of morbidity slowdown of thyroid cancer (-0.10%), clear-cell carcinoma (-1.08%), liver cancer (-1.37%), skin cancer (-0.10%) and stomach cancer (-4.71%) in this population (fig.4).

Gross growth of women sicken of malignant neoplasms (9.65%) is connected with changes in number and age structure (9.71%). In addition high coefficient of growth of people with firstly detected diagnosis of bladder cancer (3.82%), hysteroecarcinoma (2.55%), skin cancer (1.51%), cervical cancer (1.51%), central nervous system cancer (1.04%) to a great extent depended on action force of "disease risk" factors than "changes in number and age structure of population". Meanwhile different changes in population structure exerted material influence to the growth of number of women sicken of segmented (1.27%) and straight (1.16%) intestine cancer, breast cancer (0.70%) and hemoblastosis cancer (0.35%).

It is found that decrease of "disease risk" factor influence became the main reason for decrease of number of newly detected people with diagnosis of: thyroid cancer (-0.36%), oesophageal cancer (-0.58%), stomach cancer (-0.58%), clear-cell carcinoma (-3.01%) and lung cancer (-4.76%).

In summary for the purpose of ensure positive results in improvement work in oncoemidemiological situation in Republic Sakha (Yakutia), it's necessary to make a point of present demographic process negative for Yakutia and step up the work of detection and removal of risks factors fostering the growth of malignant neoplasms diseases.

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Table 1. Dynamics of malignant neoplasms morbidity patterns of Republic Sakha (Yakutia) population in 2001, 2010, %

1	2	Pattern	
		Men	Women
3	4	5	6
All neoplasms	2001	100,0	100,0
	2010	100,0	100,0
Including:			
Tongue, mouth cavity (C01-09, 46.2)	2001	2,27	1,37
	2010	1,81	1,35
Oral pharynx, nasal pharynx, hypopharynx (C10-13)	2001	1,08	0,21
	2010	1,31	0,39
Oesophagus (C15)	2001	6,80	3,79
	2010	6,84	2,99
Stomach (C16)	2001	15,87	7,89
	2010	9,96	6,76
Segmented intestine (C18)	2001	3,78	5,15
	2010	4,02	5,79
Straight intestine (C19-21)	2001	3,02	3,58
	2010	4,43	4,25
Liver (C22)	2001	8,75	6,52
	2010	6,74	5,98
Pancreas (C25)	2001	3,46	4,10
	2010	3,32	3,76
Throat (C32)	2001	3,02	0,21
	2010	2,82	0,10
Trachea, bronchi, lung (C33, 34)	2001	22,25	13,14
	2010	23,14	8,11
Skin neoplasms (C44, 46.0)	2001	3,78	3,47
	2010	3,42	4,44
Lacteal gland (C50)	2001	-	15,35
	2010	-	14,67
Uterine neck (C53)	2001	-	7,17
	2010	-	7,82
Uterine body (C54)	2001	-	2,94
	2010	-	4,83
Ovary (C56)	2001	-	4,94
	2010	-	5,51
Prostate gland (C61)	2001	3,56	-
	2010	4,63	-
Clear-cell carcinoma (C64)	2001	2,70	0,42
	2010	2,52	1,06

Central nervous system (C71,72)	2001	3,89	3,15
	2010	4,53	3,57
Thyroid (C73)	2001	0,86	3,79
	2010	0,70	3,19
Hemoblastosis	2001	5,83	4,94
	2010	6,64	4,83

Table 2. DYNAMICS AND RANK OF STANDARDIZED INDICES OF MALIGNANT NEOPLASMS MORBIDITY OF REPUBLIC SAKHA (YAKUTIA) POPULATION IN 2001-2010 (DISTRIBUTION ACCORDING TO AVERAGE ANNUAL RATE OF GROWTH RATING)

Localization	Morbidity in 100000 people		Place of morbidity rate		Growth (%)	Average annual rate of growth (%)	Place of growth value
	2001	2010	2001	2010			
M e n							
All neoplasms	249,8	250	-	-	0,12	0,05	-
Testis	0,56	1,90	17	17	239,29	13,00	1
CNS	3,55	8,11	14	11	128,45	8,60	2
Straight intestine	7,16	11,01	13	8	53,77	4,40	3
Prostate gland	11	14,84	6	6	34,91	3,40	4
Hemoblastosis	13,56	15,26	5	5	12,54	1,30	5
Lung	53,9	58,67	1	1	8,85	0,95	6
Segmented intestine	10,37	11,12	7	7	7,23	0,80	7
Clear-cell carcinoma	9,89	9,66	8	9	-2,33	-0,25	8
Skin	8,9	8,50	9	10	-4,49	-0,45	9
Oesophagus	20,32	19,40	4	4	-4,53	-0,45	10
Bladder	8,14	7,37	11	13	-9,46	-1,00	11
Throat	7,61	6,88	12	14	-9,9	-1,00	12
Pancreas	8,5	7,11	10	12	-16,35	-1,75	13
Liver	22,94	18,11	3	3	-21,05	-2,35	14
Bones and gristles	2,23	1,72	15	15	-22,87	-2,55	15
Lip (00)	0,94	0,72	16	16	-23,40	-2,65	16
Stomach	39,02	23,07	2	2	-40,88	-5,10	17
W o m e n							
All neoplasms	178,9	179,6	-	-	0,39	0,05	-
Bladder	0,73	2,02	18	17	176,71	10,70	1
Uterine body	4,93	9,03	15	7	83,16	6,25	2
CNS	2,89	5,03	16	16	74,05	5,75	3
Skin	6,3	7,9	13	10	25,40	2,30	4
Straight intestine	6,49	7,54	11	11	16,18	1,50	5
Uterine neck	11,64	13,36	5	3	14,78	1,40	6
Ovary	8,02	9,02	8	9	12,47	1,20	7
Clear-cell carcinoma	5,62	6,29	14	13	11,92	1,15	8
Segmented intestine	9,65	9,91	6	6	2,69	0,30	9
Hemoblastosis	9,14	9,34	7	8	2,19	0,25	10
Breast	26,44	25,21	1	1	-4,65	-0,45	11
Pancreas	7,67	6,98	9	12	-9,00	-0,95	12
Stomach	14,25	12,57	3	4	-11,79	-1,25	13
Bones and gristles	2,15	1,83	17	18	-14,88	-1,45	14
Thyroid	6,41	5,41	12	14	-15,60	-1,65	15
Liver	12,45	10,48	4	5	-15,82	-1,70	16
Oesophagus	7,16	5,29	10	15	-26,12	-3,00	17
Lung	24,94	15,39	2	2	-38,29	-4,70	18

Table 3. Malignant neoplasms morbidity indices of Republic Sakha (Yakutia) population by sex and age in 2001 and 2010

Localization	Year	Age																	Indices		
		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 и. ст.	ГП	СП
Men																					
All MN	2001	35,9	20,7	4,1	10,3	2,5	17,8	33,1	70,1	80,1	246,6	452,3	736,3	965,2	1543,6	1868,2	1880,5	2559,4	1742,6	189,7	249,8
	2010	32,3	23,4	17,7	15,4	8,6	12,7	19,5	59,9	97,4	187,0	433,6	719,9	1092,1	1481,9	1918,1	2130,3	1785,7	2030,5	216,5	250,1
Oesophageal	2001	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	9,9	19,8	61,4	37,6	179,0	207,6	208,9	365,6	268,1	12,9	20,3
	2010	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	20,6	62,6	70,0	92,6	173,1	370,5	115,2	507,6	14,8	19,4
Stomach	2001	0,0	0,0	0,0	0,0	0,0	0,0	6,0	5,0	15,2	46,9	82,5	69,0	162,9	279,6	276,8	459,7	274,2	268,1	30,1	39,0
	2010	0,0	0,0	0,0	0,0	2,2	0,0	2,8	6,0	9,7	24,7	50,1	70,4	98,0	92,6	201,9	308,7	230,4	0,0	21,6	23,1
Segmented intestine	2001	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,2	7,4	13,2	30,7	37,6	67,1	86,5	83,6	365,6	0,0	7,2	10,4
	2010	0,0	0,0	0,0	0,0	0,0	0,0	0,0	6,0	3,2	11,0	11,8	19,6	42,0	92,6	101,0	92,6	57,6	169,2	8,7	11,1
Rectal	2001	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	4,3	4,9	13,2	15,3	62,7	22,4	86,5	41,8	0,0	0,0	6,7	7,2
	2010	0,0	0,0	0,0	0,0	0,0	0,0	2,8	3,0	3,2	5,5	14,7	31,3	77,0	61,7	115,4	61,7	57,6	0,0	9,6	11,0
Liver	2001	0,0	0,0	0,0	2,1	0,0	0,0	0,0	7,5	4,3	22,2	29,7	46,0	75,2	156,6	242,2	208,9	548,4	0,0	16,6	22,9
	2010	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,2	19,2	35,4	31,3	77,0	169,8	101,0	154,4	230,4	169,2	14,6	18,1
Lung	2001	0,0	0,0	0,0	0,0	0,0	0,0	0,0	5,0	8,7	61,7	118,9	145,7	313,4	335,6	449,7	417,9	365,6	0,0	42,2	53,9
	2010	0,0	0,0	0,0	0,0	0,0	0,0	0,0	9,0	26,0	41,2	115,0	164,3	329,0	478,5	475,9	247,0	115,2	338,4	50,1	58,7
Prostate	2001	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,5	16,5	46,0	25,1	78,3	34,6	167,2	91,4	402,1	6,8	11,0
	2010	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	17,7	15,7	56,0	108,1	158,6	185,2	57,6	507,6	10,0	14,8
Clear-cell carcinoma	2001	0,0	0,0	0,0	0,0	0,0	0,0	3,0	5,0	2,2	4,9	13,2	53,7	37,6	89,5	34,6	83,6	91,4	0,0	7,4	9,9
	2010	5,4	0,0	0,0	0,0	2,2	0,0	0,0	6,0	9,7	19,2	11,8	50,9	14,0	30,9	72,1	61,7	115,2	0,0	9,8	9,7
Hemoblastosis	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
Women																					
All MN	2001	6,3	10,7	21,2	8,5	15,5	41,9	60,1	91,3	179,7	236,9	368,4	485,2	616,3	899,2	1263,0	1266,1	1110,0	564,7	191,6	178,9
	2010	19,6	12,2	6,1	8,0	15,9	29,8	47,5	117,6	144,7	190,4	322,2	463,8	805,1	866,6	1214,8	1272,0	1238,9	998,9	211,3	179,6
Stomach	2001	0,0	0,0	0,0	0,0	0,0	0,0	9,5	5,2	8,8	16,6	15,9	40,4	40,4	68,0	144,6	167,6	242,8	0,0	15,1	14,3
	2010	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,9	9,2	15,0	12,9	25,1	52,6	109,6	89,7	101,2	163,6	55,5	14,3	12,6
Segmented intestine	2001	0,0	0,0	0,0	0,0	0,0	5,6	0,0	5,2	6,6	4,7	15,9	33,7	20,2	68,0	77,1	130,3	34,7	40,3	9,9	9,6
	2010	0,0	0,0	0,0	0,0	0,0	0,0	0,0	5,9	9,2	2,5	12,9	37,6	52,6	49,8	65,2	86,7	187,0	0,0	12,2	9,9
Liver	2001	3,1	0,0	0,0	0,0	0,0	0,0	0,0	2,6	4,4	4,7	19,1	33,7	25,3	90,7	192,8	93,1	69,4	40,3	12,5	12,4
	2010	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,5	2,6	31,3	42,1	49,8	163,1	187,9	70,1	55,5	12,6	10,5
Lung	2001	0,0	0,0	0,0	0,0	0,0	0,0	0,0	5,2	6,6	16,6	22,2	60,7	106,1	219,1	241,0	242,0	208,1	121,0	25,2	24,9
	2010	0,0	0,0	0,0	0,0	0,0	0,0	2,8	2,9	9,2	2,5	12,9	21,9	89,5	119,5	114,1	187,9	187,0	111,0	17,1	15,4
Breast	2001	0,0	0,0	0,0	0,0	0,0	2,8	6,3	10,4	57,0	52,1	69,9	114,6	101,0	105,8	57,8	111,7	138,7	80,7	29,4	26,4
	2010	0,0	0,0	0,0	0,0	2,3	0,0	11,2	23,5	37,0	37,6	69,6	90,9	100,0	99,6	114,1	130,1	46,8	111,0	31,0	25,2
Cervical	2001	0,0	0,0	0,0	0,0	2,6	8,4	15,8	18,3	21,9	35,5	25,4	20,2	25,3	22,7	38,6	55,9	34,7	0,0	13,7	11,6
	2010	0,0	0,0	0,0	0,0	0,0	12,4	8,4	32,3	33,9	27,6	36,1	34,5	42,1	19,9	24,5	28,9	0,0	0,0	16,5	13,4
Hysterocarcinoma	2001	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	8,8	11,8	22,2	13,5	30,3	15,1	9,6	18,6	0,0	0,0	5,6	4,9
	2010	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,9	6,2	10,0	10,3	37,6	89,5	39,8	40,8	0,0	0,0	55,5	10,2	9,0
Ovarian	2001	0,0	0,0	2,1	0,0	0,0	2,8	3,2	5,2	17,5	23,7	28,6	6,7	35,4	37,8	19,3	0,0	0,0	0,0	9,5	8,0
	2010	0,0	0,0	0,0	2,7	0,0	2,5	8,4	5,9	6,2	12,5	36,1	31,3	36,8	39,8	24,5	0,0	23,4	55,5	11,0	9,0
Hemoblastosis	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	9,4
	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

Table 3. Dynamics of standartized indices of RS (Ya) population morbidity from malignant neoplasms in 2001-2010 and prognosis by 2015 (world standard in 100000 people)

Localization (ICD-X)	Years										prognosis by 2015
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Men											
All MN (C00-97)	249,8	244,2	267,2	259,1	270,8	248,1	262,0	243,0	256,4	250,1	254,5
Oesophageal (C15)	20,3	16,8	29,2	19,4	19,6	20,1	16,2	13,9	11,9	19,4	10,1
Stomach (C16)	39	38,2	35,5	36,4	34,9	28,0	31,5	29,9	30,6	23,1	18,3
Segmented intestine (C18)	10,4	11,6	11,1	9,9	12,8	9,3	13,9	13,1	12,7	11,1	13,3
Rectal (C19-21)	7,2	9,2	9,9	6,7	13,5	10,5	12,4	11,5	10,6	11	13,3
Liver (C22)	22,9	24,7	26,6	23,1	22,1	19,3	20,1	17,4	22,9	18,1	14,0
Pancreatic (C25)	8,5	10,9	9,4	9,2	10,4	6,0	8,9	8,9	8,6	7,1	5,9
Laryngeal (C32)	7,6	4,3	7,3	8,0	5,7	5,9	5,6	6,6	4,7	6,9	6,1
Lung (C33,34)	53,9	57,6	58,6	62,3	61,9	60,6	64,7	55,9	65,5	58,7	62,9
Bones and articular cartilage (C40-41)	2,2	3,9	4,9	3,1	2,6	3,0	7,3	2,0	1,6	1,7	0,9
Soft tissues (C46-49)	0,5	1,1	3,7	1,6	3,4	2,1	3,4	4,0	3,1	1,4	3,3
Skin melanoma (C43)	0,4	1,6	0,4	0,2	1,4	1,0	1,5	1,0	1,1	1,1	1,3
Other skin neoplasms (C44-46)	8,9	8,1	8,0	11,8	13,0	11,0	12,9	9,3	9,8	8,5	10,6
Prostate (C61)	11,0	3,8	5,6	9,6	7,3	8,0	11,0	5,7	8,7	14,8	16,5
Testicular (C62)	0,6	2,6	2,0	1,6	3,6	1,9	1,5	2,8	1,9	1,9	1,8
Clear-cell carcinoma (C64)	9,9	10,3	7,8	10,4	12,7	12,8	12,2	13,0	9,6	9,7	12,1
Bladder (C67)	8,1	7,0	5,8	5,9	6,4	8,1	7,5	5,1	5,5	7,4	6,6
CNS (C70-72)	3,6	4,0	4,9	4,4	5,2	3,1	5,5	4,0	3,9	8,1	6,7
Thyroid (C73)	1,6	0,3	1,3	2,1	0,6	2,0	1,5	1,5	0,9	1,2	1,6
Hemoblastosis (C81-96)	11,1	7,2	14	9,3	13,0	9,1	12,1	12,2	14,1	14,4	15,9
Women											
All MN (C00-97)	178,9	164,6	195,7	179,6	176,2	183,2	186,8	177,3	185,8	179,6	185,6
Oesophageal (C15)	7,2	4,4	7,5	3,5	4,4	4,2	4,0	3,9	3,9	5,3	2,7
Stomach (C16)	14,3	12,9	13,3	11,9	11,9	16,6	14,2	9,9	12,6	12,6	11,1
Segmented intestine (C18)	9,7	9,5	9,7	10,2	11,1	13,8	12,2	8,2	13,4	9,9	12,1
Rectal (C19-21)	6,5	7,1	10,5	6,0	9,1	10,6	8,0	7,3	7,3	7,5	7,7
Liver (C22)	12,5	9,6	14,0	10,5	10,2	13,1	10,6	13,2	11,2	10,5	10,8
Pancreatic (C25)	7,7	4,4	6,2	7,1	5,9	5,3	5,5	6,8	1,0	7,0	3,9
Lung (C33,34)	24,9	18,7	18,0	20,3	17,2	16,7	20,3	14,8	17,5	15,4	17,2
Bones and articular cartilage (C40-41)	2,2	2,3	1,8	1,2	2,3	1,2	0,9	0,8	1,0	1,8	1,5
Soft tissues (C46-49)	0,5	0,6	0,7	1,3	0,7	1,0	1,7	1,5	1,6	1,0	1,1
Skin melanoma (C43)	1,3	1,3	3,1	1,8	0,5	1,6	2,8	2,3	1,2	0,8	1,7
Other skin neoplasms (C44-46)	6,3	4,2	5,8	5,0	6,5	5,6	8,8	5,4	4,0	7,9	6,0
Breast (C50)	26,4	25,4	38,1	34,0	32,5	27,4	31,5	26,7	32,4	25,2	30,0
Cervical (53)	11,6	17,9	11,8	12,9	13,5	11,2	14,1	17,2	17,7	13,4	14,1
Hystero carcinoma (54)	4,9	6,1	6,7	7,4	8,2	8,1	5,0	10,0	7,6	9,0	7,3
Ovarian (56)	8,0	7,7	8,0	7,7	8,0	11,1	8,7	8,5	6,1	9,0	8,3
Clear-cell carcinoma (C64)	5,6	5,0	6,5	8,0	4,9	5,7	8,6	7,0	8,3	6,3	6,6
Bladder (C67)	0,7	1,6	2,0	0,5	0,7	1,6	1,2	1,1	0,4	2,0	1,2
CNS (C70-72)	2,9	1,8	4,2	2,1	3,4	2,3	2,7	3,5	3,5	5,0	3,1
Thyroid (C73)	6,4	5,8	5,5	10,0	7,1	6,2	5,4	6,3	5,3	5,4	6,3
Hemoblastosis (C81-96)	9,1	6,6	13,1	6,0	10,9	6,0	10,2	8,3	10,0	9,3	8,9

Table 4. Growth components of new detected patients for malignant neoplasms in RS(Ya) in 2001-2010 (% of initial level)

Tumor localization	Gross growth	incl.due to changes of	
		population number and age structure	disease risk
Men			
All MN (C00-97)	6,67	4,74	1,93
Lung (C33,34)	2,36	1,03	1,33
Bladder (C67)	1,96	0,28	1,68
CNS (C71,72)	1,86	-0,11	1,9
Rectal (C19-21)	1,57	0,08	1,49
Prostate (C61)	1,28	0,44	0,83
Hemoblastosis (81-96)	1,18	0,04	1,14
Pancreatic (C25)	0,79	0,29	0,49
Oesophageal (C15)	0,49	0,63	-0,13
Segmented intestine (C18)	0,49	0,28	0,21
Bones and soft tissues (C40, 41, 46-49)	0,29	-0,03	0,32
Laryngeal (C32)	0,00	0,22	-0,22
Thyroid (C73)	-0,10	-0,01	-0,09
Clear-cell carcinoma (C64)	-1,08	0,21	-1,29
Liver (C22)	-1,37	0,47	-1,84
Other skin neoplasms (C44)	-0,10	0,17	-2,27
Stomach (C16)	-4,71	0,59	-5,31
Women			
All MN (C00-97)	9,62	9,71	-0,09
Bladder (C67)	3,82	0,11	3,72
Hysterocarcinoma (C54)	2,55	0,30	2,25
Skin (C44)	1,51	0,59	0,92
Cervical (C53)	1,51	0,20	1,31
CNS (C71,72)	1,04	0,14	0,90
Segmented intestine (C18)	1,27	0,70	0,58
Rectal (C19-21)	1,16	0,67	0,49
Ovarian (C56)	0,81	0,11	0,71
Breast (C50)	0,70	1,33	-0,63
Bones and soft tissues (C40, 41, 46-49)	0,46	0,21	0,25
Hemoblastosis (81-96)	0,35	0,23	0,11
Liver (C22)	0,00	0,98	-0,98
Pancreatic (C25)	0,00	0,73	-0,73
Thyroid (C73)	-0,36	0,24	-0,59
Oesophageal (C15)	-0,58	0,47	-1,05
Stomach (C16)	-0,58	0,92	-1,49
Clear-cell carcinoma (C64)	-3,01	-0,13	-2,88
Lung (C33,34)	-4,76	0,87	-5,62