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ACTUAL TOPIC

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DYNAMICS OF ONCOLOGICAL DISEASES MORBIDITY INDICATOR OF CHILDREN AND ADOLESCENTS IN THE REPUBLIC SAKHA (YAKUTIA)

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ABSTRACT

We have analyzed the morbidity rates of oncological diseases of children and adolescents of the Sakha Republic for 2000 - 2015 according to hospitalization data in the Pediatric Center RH № 1-NCM.

The data of official medical statistics on the population's appeal to the medical and prophylactic institutions of the Sakha Republic are very contradictory and determine some morbidity dynamics. The data of hospitalized morbidity tend to increase and are mainly associated with the repeated income of children and adolescents contingent with a diagnostic and therapeutic purpose. The most real picture of the oncological morbidity extent in children and adolescents is given by the number of newly diagnosed neoplasms according to the data of the department in the Sakha Republic for children with oncological pathology. Annually about 30 cases of newly diagnosed tumors are noted. In the dynamics of the number of children and adolescents with oncopathology has a tendency to increase.

In our opinion, the real picture of oncological morbidity extent in the Sakha Republic (Yakutia) can be given by a single register of cancer patients created by using information technologies, which will take into account the personal data of patients with a mandatory indication of residence place, ethnicity, age, sex and other characteristics of the child.

Keywords: children, morbidity, oncology, Yakutia.

Introduction

The study of the cancer epidemiology in children and adolescents has special significance every year. Annually, the morbidity of malignant neoplasms in the Russian Federation is 15.0 per 100,000 people, about 3,500 children and adolescents with newly diagnosed neoplasms [5]. The oncogenesis processes of children are very interesting, because they have a rare probability of malignant neoplasm, selectivity of damage to certain organs and systems. One of the main points in conducting oncoepidemiological studies in children and adolescents is to elucidate the factors leading to oncological pathology. It can be environmental, genetic and other endogenous factors.

Meanwhile, the literature has few works devoted to the study of morbidity, mortality of children and adolescents from malignant neoplasms by regions of the Russian Federation. The reasons for this are not only a small number of cancer registers that control oncological morbidity and mortality in the field for a long time, but also the methodological level in the use of information bases in epidemiological studies in the Russian Federation [4]. Meanwhile, children and adolescents with oncological pathology in the Sakha Republic are observed in the only oncological unit of the Republican Hospital Pediatric Center №1-National Medicine centre. And this gives preconditions for the study of oncoepidemiology in children and adolescents.

We have analyzed the morbidity rates of oncological diseases of children and adolescents of the Sakha Republic for 2000 - 2015 according to hospitalization data in the Pediatric Center RH № 1-NCM.

Results

The general morbidity indicator of children under 14 in the Sakha Rebublic for the period 2000-2015 has increased by 70.8% (Table 1). Today, changes in the sickness structure of children are evident. Reduction in the overall children morbidity has occurred in such classes: «some infectious and parasitic diseases», «endocrine system diseases, eating disorders, metabolic and immunity disorders.» A significant increase in the overall morbidity in the following classes of diseases: «neoplasms», «diseases of the nervous system», «eye and

adnexa diseases», «ear and mastoid disease», «digestive diseases» and «diseases of the musculoskeletal system and connective tissue», «congenital anomalies». In the structure of the overall incidence of the «neoplasms» deseases group has increased from 4.4 per 1,000 children to 15.6 per 1,000 in 2015.

The overall morbidity rate of adolescents 15-17 years in the Sakha Republic is presented in Table. 1. The investigated indicator for the interesting period of time has increased in such disease classes as «neoplasms», «diseases of the musculoskeletal system» which has a three-fold increase in morbidity, «respiratory diseases», «ear and mastoid disease», «injuring and poisoning « have increased by 2 times. In the structure of the overall adolescents morbidity, the «neoplasm» disease group has increased from 2.4 per 1,000 to 11.8 in 2015.

Thus, there is an increase in the overall child and adolescents morbidity in the «neoplasm» disease group. Since the indicator of the overall morbidity depends on the population's circulation, it is clear that with the development of new approaches and principles of therapy for children and adolescents with oncological pathology, this indicator has the right to a tendency to increase, as there is a repeated appeal of this category of patients for diagnostic and therapeutic purposes.

The gender characteristics analysis of the child and adolescent malignant neoplasms morbidity revealed the following features. As shown in Table 2, the tendency towards an increase in the malignant neoplasms morbidity in boys is noted at the age of 15-19 years (10.6 in 2001, 19.8 per 100 thousand population in 2015). The dynamics shows a tendency to increase the morbidity of this contingent in the health system, so in 2001 it was 47.5; 2005. - 49.0; 2010. - 88.8; 2015- 50.9 per 100 thousand of the population.

The Table 3 presents the most frequent localizations of the malignant neoplasms in male children and adolescents. In the form of the most frequent localizations of the malignant neoplasms in male children and adolescents has following results in 2015 the I place - lymphomas (12,9); II - leukemia (11,0), III - malignant neoplasms of CNS (8,7), IV - malignant neoplasms of bone and cartilage (6.3 per 100 thousand population). Although, 2010 shows completely different structure: the 1st place - CNS; II - leukemia, III - lymphoma, IV - malignant neoplasms of bone and cartilage.

The detection of malignant neoplasms bone and cartilage in this contingent is relatively stable (2001-8.1, 2005-4.1, 2010-5.5, 2015-6.3 per 100 thousand Population). The most frequently recorded pathology is registered at the age of 15-19 years (2001-4.2, 2005-4.1, 2010-2.6, 2015-3.3 per 100 thousand population).

The detection of malignant neoplasms of CNS in this contingent is not stable, there are periods with the high incidence rate (2001-13,1, 2005-9,5, 2010-27,6, 2015-8,7 per 100 thousand population). In 2010 this pathology is most often detected in the group of children from birth to 9 years, so 0-4 years incidence rate is 10.8; 5-9 years - 11.7 per 100 thousand of the population. Most often, this pathology is recorded at the age of 15-19 years (2001-6.3, 2005-4.1, 2010-5.1, 2015-3.3 per 100 thousand population).

The leukemia morbidity in boys tends to decrease between 2010-2015 in the childhood and adolescence. In general, leukemia occupy the second place in the morbidity structure after lymphomas in 2015, and it should be noted that leukemia is detected in all age periods.

There is an increase in the children and adolescents morbidity in male lymphomas in dynamics since 2001, so in 2001, - 5.1; 2015 -12.9 per 100 thousand of the population. It increased almost two times. In general, lymphoma is detected in children 15-19 years.

As shown in Table 4, the most common malignant neoplasms detected at the age of 0-4 years, 15-19 years. In the dynamics there is a tendency to increase the malignant neoplasms morbidity among this contingent, so in 2001 it was 46.7; 2005. - 44.2; 2010. - 45.9; 2015 - 68.8 per 100 thousand of the population.

Table 5 presents the most frequent localizations of malignant neoplasms in children and adolescent females. In the structure of the most frequent localizations of malignant neoplasms in children and adolescents females by the end of 2015 the I place is leukemia (17.5), II - malignant neoplasms of CNS (14,2), III - malignant neoplasms of bone and cartilage (8.7 per 100 thousand population).

The detection of malignant neoplasms bone and cartilage in this contingent tends to increase (2001-6.3, 2005-9.8, 2010-5.5, 2015-8.7 per 100 thousand population). Most often, this pathology is recorded at the age of 15-19 years (2001-4.2, 2005-2.1, 2010-2.7, 2015-3.1 per 100 thousand population).

The detection of malignant neoplasms

Table 1

The indicator dynamics of the general child and adolescents morbidity for 2000-2015 in the Sakha Republic for the main diseases classes (per 1000)

Name of disease classes	2000	2005	2010	2015
General child morbidity from 0 to 14 years				
All diseases	1623,6	2195,2	2769,3	2773,3
C00-D48 Neoplasms	4,4	11,6	14,2	15,6
General adolescents morbidity 15-17 years				
All diseases	111,1	735,4	2001,6	2390,8
C00-D48 Neoplasm	2,4	7,7	7,1	11,8

Table 2

The morbidity rates of male children and adolescents with malignant tumors in 2001, 2005, 2010 and 2015. (per 100 thousand population) [1-3]

Age	2001	2005	2010	2015
0-4	17,7	14,3	32,3	14,3
5-9	7,4	8,8	23,4	7,9
10-14	11,8	7,4	17,7	8,9
15-19	10,6	18,5	15,4	19,8
Total	47,5	49,0	88,8	50,9

Table 3

The most frequent localizations of malignant neoplasms in male children and adolescent in 2001, 2005, 2010 and 2015 (per 100 thousand population) [1-3]

Age	2001	2005	2010	2015
Bone and cartilage				
0-4	…	…	…	…
5-9	…	…	2,9	…
10-14	3,9	…	…	3,0
15-19	4,2	4,1	2,6	3,3
Total	8,1	4,1	5,5	6,3
CNS				
0-4	2,9	2,9	10,8	2,4
5-9	…	...	11,7	…
10-14	3,9	2,5	…	3,0
15-19	6,3	4,1	5,1	3,3
Total	13,1	9,5	27,6	8,7
Leukemia				
0-4	10,4	8,6	5,4	2,4
5-9	2,0	…	8,8	5,3
10-14	6,2	2,5	8,9	…
15-19	…	4,1	2,6	3,3
Total	18,6	15,2	25,7	11,0
Lymphoma				
0-4	2,6	2,9	2,7	…
5-9	…	8,8	…	…
10-14	…	2,5	3,0	3,0
15-19	2,5	4,1	5,1	9,9
Total	5,1	18,3	10,8	12,9

of CNS in this contingent tends to increase (2001-4.8, 2005-5.2, 2010-11.4, 2015-14.2 per 100 thousand population). In 2010 this pathology is mostly detected in the children group of 0-4 years - the incidence rate is 5.6. In 2015 in the children group of 5-9 years - 5.5; 10-14 years - 6.2 per 100 thousand of the population.

In the dynamics of girls, the morbidity of leukemia tends to decrease: 2001-23.8; 2005-13.4; 2010-17.9; 2015-17.5. In general, leukemia occupies the first place in the structure of the malignant morbidity in girls.

The only multi-sectoral Pediatric center for specialized and high-tech care for children and adolescents operates in the Sakha Republic. Annually the PC enters 7,234 children (2000) to 10,228 children in 2015. The proportion of patients from the village is from 37.4% in 2000 up to 33.5% in 2015, due to the fact that 45% of the total child population lives in rural areas. About 60% are planned patients entering the profile departments. Emergency patients account for 40% of all hospitalized patients.

The structure of hospitalized patients in PC of the Republican hospital №1-NCM is presented in Table 6. The increase indicator of the total hospitalized morbidity in 2010 by 2015 was 337.8 per 100,000 children and adolescents (in 2010 - 3610.0, 2015 - 3947.8). The rate of hospitalized morbidity in children and adolescents has increased since 2010 for the following classes of diseases: diseases of the nervous system (by 185.6); diseases of the digestive system (22,2); diseases of the genitourinary system (79.9); diseases of the endocrine system, nutritional and metabolic diseases (14,7); neoplasms (57,8), including malignant ones (14,9). The structure of the hospitalized morbidity of children in 2015 has diseases of the nervous system (669.6 per 100,000 children's population) at the first place, respiratory diseases (511.9), respiratory diseases (503.8) at the second place, injuries and poisoning - the third place (5th place), diseases of the genitourinary system (403.5)- the fourth place, diseases of the digestive system (371.8) - the fifth.

In the structure of hospitalized morbidity, neoplasms has increased from 75.2 in 2001 up to 273.8 per 100 000 children in 2015, malignant neoplasms increased from 81.2 in 2010 up to 96.1 per 100,000 of the child population in 2015. This increase is most likely due to the multiplicity of children enrolling for diagnostic and therapeutic purposes

According to the oncology department data of the Pediatric Center of the Republican Hospital № 1-NCM, about 30 children and adolescents turn to a newly diagnosed disease every year. The most frequent localizations are leukemia, CNS tumors (Table 7).

Conclusions

The data of official medical statistics on the population's appeal to the medical and prophylactic institutions of the Sakha Republic are very contradictory and determine some morbidity dynamics. The data of hospitalized morbidity tend to increase and are mainly associated with the repeated income of children and adolescents contingent with a diagnostic and therapeutic purpose. The most real picture of the oncological morbidity extent in children and adolescents is given by the number of newly diagnosed neoplasms according to the data of the department in the Sakha Republic for children with oncological pathology. Annually about 30 cases of newly diagnosed tumors are noted. In the dynamics of the number of children and adolescents with oncopathology has a tendency to increase.

Table 4

The rate of malignant neoplasms morbidity in children and adolescence females[1-3]

Age	2001	2005	2010	2015
0-4	6,3	6,0	19,6	24,9
5-9	10,7	12,2	12,2	8,2
10-14	21,2	15,5	6,1	15,5
15-19	8,5	10,5	8,0	20,2
Total	46,7	44,2	45,9	68,8

Table 5

The most frequent localizations of malignant neoplasms in children and adolescent females [1-3]

Age	2001	2005	2010	2015
Bone and cartilage				
0-4	…	…	2,8	2,5
5-9	…	…	…	…
10-14	2,1	7,7	…	3,1
15-19	4,2	2,1	2,7	3,1
Total	6,3	9,8	5,5	8,7
CNS				
0-4	…	…	5,6	2,5
5-9	2,7	3,1	…	5,5
10-14	2,1	…	3,1	6,2
15-19	…	2,1	2,7	…
Total	4,8	5,2	11,4	14,2
Leukemia				
0-4	3,1	…	5,6	5,0
5-9	8,0	9,2	9,2	2,7
10-14	8,5	…	3,1	3,1
15-19	4,2	4,2	…	6,7
Total	23,8	13,4	17,9	17,5

Table 6

Hospitalized children morbidity in the Sakha Republic according to the data of the Pediatric Center RH № 1-NCM(per 100,000 children's population)

Name of diseases classes according to ICD X	2001	2010	2015
Total, incl.	2387,6	3610,0	3947,8
J00-J99			
Diseases of the respiratory system	383,4	528,8	511,9
S00-T98			
Injury, poisoning and certain other consequences of external causes	327,0	514,8	503,8
G00-G99			
Diseases of the nervous system	228,9	484,0	669,6
Q00-Q99			
Congenital malformations, deformations and chromosomal abnormalities	150,4	372,8	356,3
K00-K93			
Diseases of the digestive system	286,6	349,6	371,8
N00-N99			
N00-N99	226,6	323,6	403,5
Diseases of the genitourinary system			
E00-E90	112,9	232,4	247,1
Endocrine, nutritional and metabolic diseases			
C00-D48	75,2	216,0	273,8
Neoplasms	-	81,2	96,1
Incl. malignant neoplasms			
L00-L99			
Diseases of the skin and subcutaneous tissue	161,6	193,2	168,1
H60-H95			
Diseases of the ear and mastoid process	118,9	171,2	52,7
I 00-I99			
Diseases of the blood and blood-forming organs	67,2	149,2	127,0

Table 7

The structure of newly diagnosed neoplasms

Localization	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Leukemia	9	9	12	5	15	4	11	9	8	12
Tumors of the CNS	6	6	12	6	7	5	11	4	3	9
Neuroblastoma	1	1	2	4	2	1	3	1	1	2
Kidney formation	1	1	2	3	1	2	-	2	1	2
Soft tissue tumor	3	3	-	-	1	1	-	3	1	2
Lymphoma	-	2	-	1	1	1	2	2	2	2
Osteosarcoma	2	1	1	2	1	-	-	2	1	1
Retinoblastoma	-	-	1	-	-	1	1	3	2	2
Hepatoblastoma	1	1	-	1	1	-	2	1	2	
Tumor of germic etiology	1	1	1	1	-	-	-	2	1	1
Thyroid gland swelling	-	-	-	-	-	2	-	1	1	-
Tumors of the pancreas	2	-	-	1	-	1	-	-	-	-
Swelling of the ovary	1	-	-	-	-	2	-	-	-	-
Ewing's sarcoma	-	-	-		1	-	-	1	-	-
Total	27	25	31	24	30	20	30	31	23	33

In our opinion, the real picture of oncological morbidity extent in the Sakha Republic (Yakutia) can be given by a single register of cancer patients created by using information technologies, which will take into account the personal data of patients with a mandatory indication of residence place, ethnicity, age, sex and other characteristics of the child.

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RESULTS OF COCHLEAR IMPLANTATION IN THE REPUBLIC OF SAKHA (YAKUTIA)

ABSTRACT

The article discusses the priorities of cochlear implantation (CI) in the RS (Ya). The results of the CI in Yakutsk to 11 children are presented. All patients in the preoperative period underwent general clinical examination, examination of ENT organs, earmicroscopy, acoustic impedance measurement, a study of otoacoustic emission and short-latency auditory evoked potentials research. A computed tomography of temporal bones with a 2 mm cut thickness was also performed. All patients were examined by a speech therapist and the faculty for the purpose of determining the level of general development, auditory and speech perception and development of speech.

All patients were operated using Neurelec implants (France).

The need for further introduction of high-tech care for children to improve the quality of life was noted.

Keywords: cochlear implantation, sensorineural hearing loss, inner ear.