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He is a unique

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“...Is one of the best specialists doctors of the YaSSR”

Memory

Professor V.I. Astafijev (80th anniversary)

To the memory of our colleague T.P. Starostina



THE MACROSCOPIC EXAMINATION OF THYROID GLAND OF THE REPUBLIC SAKHA (YAKUTIA) ADULT POPULATION

Egorova A.I., Garmaeva D.K

The authors submitted results of the macroscopic study of thyroid gland of native and non-native population of the Sakha Republic (Yakutia). Absolute and relative differences in size and weight parameters of thyroid gland in men depending on ethnicity are established.

Keywords: thyroid gland, morphometry, size and weight parameters.

INTRODUCTION

Nowadays the humanity of the planet faces serious environmental problems adversely affecting end ecology, especially the stability of the chemical composition of the body, which is one of the most important and obligatory condition for its normal functioning. Since the majority of regions of the Russian Federation is characterized by deficiency of iodine in water and soil, the diseases associated with deficiency of the trace element, are a serious medical and social problems as they influence not only the health of the population, but also the intellectual level of the society [9, 5,3].

Deficiency of iodine in nature results in the transformation of the thymus thyroid gland (TG) which is characterized by proliferative changes of individual elements in the system of tireon, accompanied by a violation of normal hemotissue relations providing optimal tropics, differentiation and functional viability of specialized structures [7,11].

For the last years the Republic of Sakha (Yakutia) has been a territory with a significant deficiency of iodine in nature and is characterized by a high prevalence of thyroid disease in children and adults [2,4,8,10]. In addition to the deficiency of iodine and other trace elements in the environment, the organism as a whole and, in particular, the thyroid is affected by other specific factors of Yakutia: extreme temperature and light regimes, evident seasonal climate anomalies in the geomagnetic field [1].

The aim of the study was to investigate the macroscopic parameters of the thyroid gland of indigenous and non indigenous adults in the endemic region for example, Yakutsk, Sakha Republic (Yakutia).

MATERIALS AND METHODS

The City Bureau of Forensic Medicine and Pathology Department of the Republican Hospital number 1- NCM investigated 53 thyroid gland (TG) of males who died suddenly as a result of coercive actions in Yakutsk, aged 20 - 70 years old, including 7 (13.2 %) aged 20-29 years, 30 - 39 years old - 8 (15.1%), 40 - 49 years old - 10 (18.8 %), 50 - 59 years old - 10 (18, 8%), 60 - 69 years old - 10 (18.8%), 70 years and older - 8 (15.1%). They were identified into two groups : those indigenous (Yakutia) - 21 (39.6 %) , newcomers (Russian , Tatar, Chuvash) - 32 (60.3 %). Autopsies were performed during the first 12-24 hours after the death. Information about the material was obtained from autopsy. According to reports, the males were not registered at endocrinologists. The macroscopic description of the thyroid gland (a common look-and- cut), and the linear dimensions of both lobes (length, width, thickness) were the object of the study. We estimated absolute mass (AM) (r) and relative (RM) of the thyroid gland (%) were used in the calculation of formula [6]:

$$RM = \frac{AM_{thyroid}}{BW} \times 100\%$$

RESULTS AND DISCUSSION

At the surveyed groups on gross examination the thyroid gland is located on the anterior surface of the trachea. All of the studied cancer had two-lobe structure connected by an isthmus. The thyroid



gland was surrounded by the visceral fascia of the neck and is enclosed in a fibrous capsule. Breast tissue to the touch had a mild elastic consistency on the cut surface of fine-grained, reddish - brown color.

Since the dimensions of the thyroid gland are the key indicators of morphology and function of the state, we have studied the linear parameters and the absolute and relative weight of the thyroid gland in indigenous and migrant populations in different age groups. Thus, we studied medium-sized height, width and thickness of both the lobes of thyroid (cm), and found out depending on the age we found out that the height of the left lobe of the thyroid at the age of 20-29 , 40-49 , 50-59 , 70 years and older of indigenous population was 1.2-1.4 times less than the newcomers. While, the ages of non indigenous population was 30-39 and 60-69 come population is 1.2 times lower than the native population (Table 1). Research of right lobe of thyroid height showed a similar trend in the age groups. The indigenous population , in the age of 20-29 , 40-49 , 50-59 , 70 and older the right lobe of thyroid height of 1.08 - 1.2 times was less than in non-aboriginal population. Non indigenous population at the age of 30-39 and 60-69 was 1.0-1.1 times less than indigenous.

In the study of the transverse dimension of performance shares thyroid revealed that the width of the left lobe of the thyroid gland in the indigenous population less than that of the alien : the age of 20-29 and 50-59 in 1.1 times, 40-49 in 1.03 times , 70 years and older 1.2 times . While at the age of 30-39 and 60-69 width of left lobe of thyroid in non indigenous population is 1.1 and 1.0 times less than in the native population. Width of right lobe of thyroid in the indigenous population in all age groups was less than in newcomers.

Anteroposterior size indicators of thyroid in native population also had minor differences in comparison with the second group. Thus, thickness of thyroid in non- indigenous population in the age of 20-29 and 30-39 was 1.3 and 1.1 times less than that in native population. In other age periods of the thickness of the thyroid in the indigenous population was less than in non- indigenous population.

The comparative analysis of thyroid mass, depending on ethnicity, showed (Fig. 1, 2), that in the age of 20-29 years the absolute weight of thyroid gland in the indigenous population was in 1.3 times lower than in the non- indigenous population, while the relative thyroid weight in the natives was in 1.2 times bigger. At the age of 30-39 years, the absolute and relative weights were lower in non- indigenous population (1.2 and 1.1 times, respectively). The following age groups did not have the same trend in quantitative terms of the absolute and relative thyroid weight, according to ethnicity. So in the indigenous population there is a tendency to an increase in thyroid absolute mass compared with the non-indigenous, and in those aged 50-59 years in 1.2 times the relative mass of the thyroid gland is larger. At the age of 70 years and older absolute and relative masses of thyroid gland were less than in non- indigenous populations (1.8 and 1.2 times, respectively).

CONCLUSION:

As a result of morphometric study the quantitative index of the thyroid gland, depends on age and ethnicity. It was revealed that the indigenous population of the dimensional parameters height of the right and the left lobe of the transverse size of the share of the thyroid at the age periods of 20-29 , 40-49 , 50-59 , 70 and are less than in non- indigenous population. Indicators of anteroposterior size of the thyroid in non-aboriginal population in the age of 20-29, 30-39 are less than the native, in the other age groups, there is a tendency to increase, in comparison with the indigenous.

Comparative analysis of thyroid mass in dependence of ethnicity showed differences in parameters of thyroid absolute and relative masses which depend on age. At the age of 20-29, 30-39, absolute and relative weight of the thyroid gland is less than in the natives, whereas at the age of 40-49, 50-59 and 60-69 years there is a tendency of a slight increase in the absolute mass, and there is a reduction at the age of 50-59, 60-69 years and the increase of the relative weight of the thyroid in the indigenous population, compared with non- indigenous population. At the age of 70 and



older, thyroid weight in non- indigenous population is slightly larger than in the indigenous.

Taking into consideration the fact that thyroid performs an essential role in the adaptive reactions of the organism, the results can be the basis for further histological examination of the thyroid gland in indigenous and in non- indigenous population in the Republic of Sakha (Yakutia).

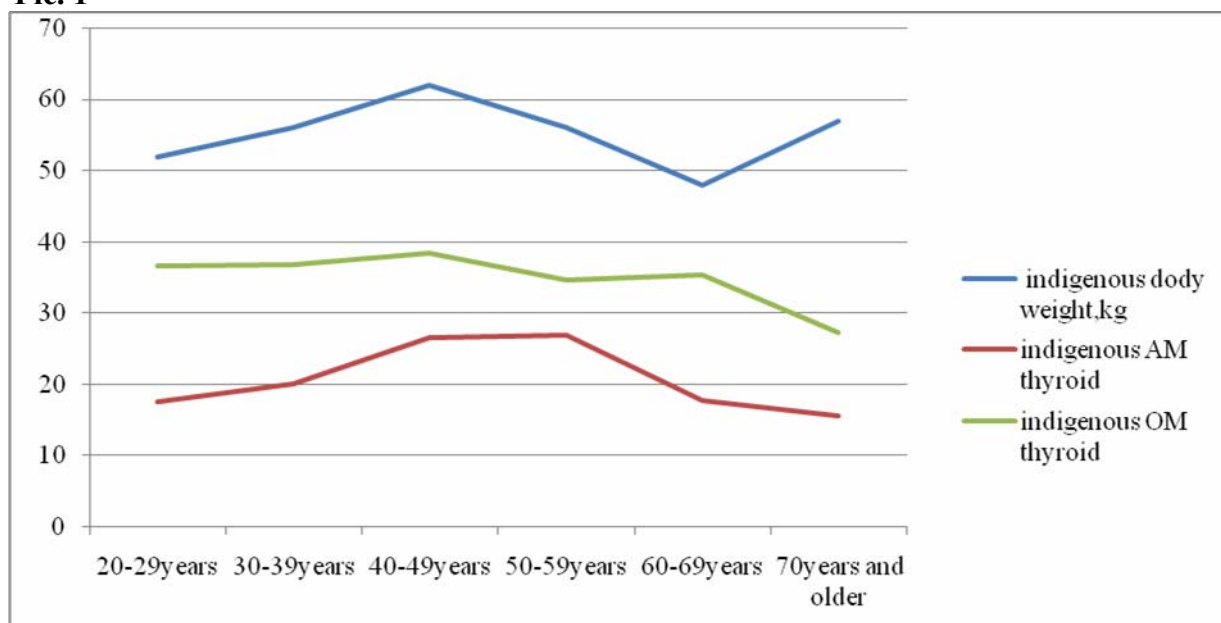
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Table

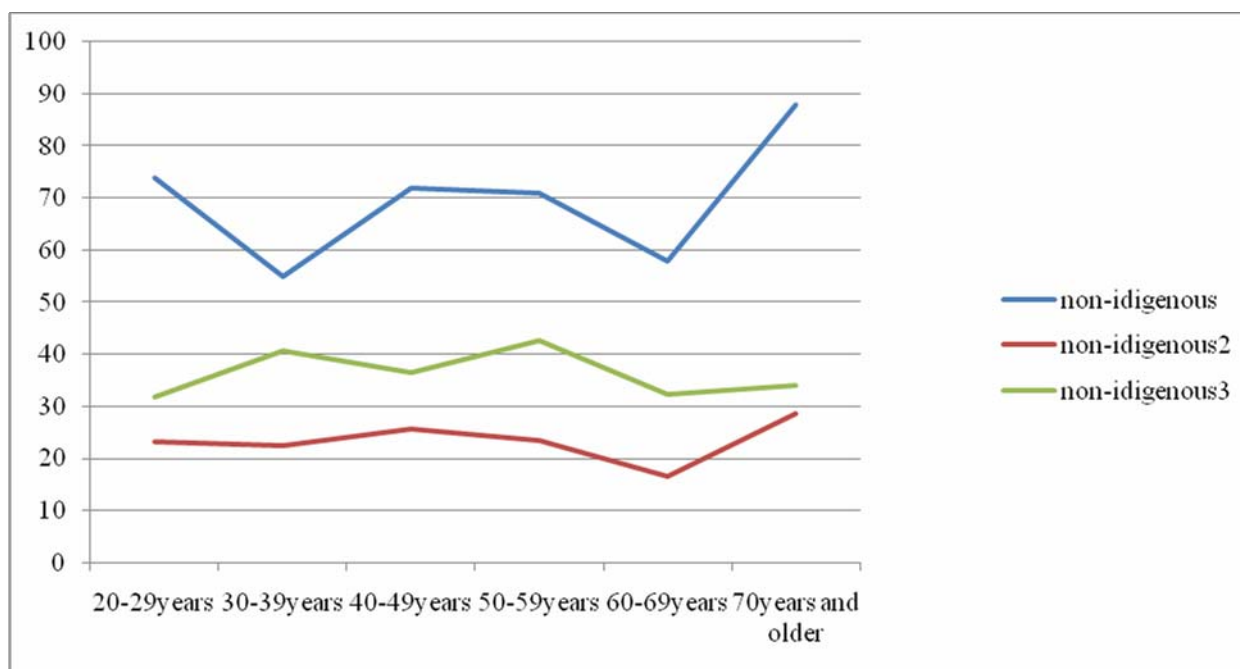
Average dimensions of height, width, thickness of both lobes of the thyroid (cm) depending on the age

Parameters of the thyroid gland	Ethnos	20-29 years	30-39 years	40-49 years	50-59 years	60-69 years	70 years and older
Height of the left lobe	indigenous	4,2	5,0	4,7	4,2	4,7	4,5
	newcomers	5,7	4,2	5,8	5,0	4,6	5,2
Height of the right lobe	indigenous	4,6	5,2	5,0	4,2	4,7	4,7
	newcomers	5,6	4,7	5,4	5,2	4,3	5,8
Width of the left lobe	indigenous	2,8	2,7	2,8	2,7	3,1	2,5
	newcomers	3,0	2,4	2,9	3,0	3,0	3,2
Width of the right lobe	indigenous	2,8	3,0	3,1	3,0	3,1	2,7
	newcomers	3,4	3,1	3,2	3,6	3,3	3,7
The thickness of the thyroid gland	indigenous	1,5	1,7	1,4	0,9	1,1	1,0
	newcomers	1,1	1,5	1,6	1,9	1,0	1,4

Pic. 1

Mean body weight (kg), the average thyroid AM and OM of indigenous Sakha (Yakutia).

Pic. 2



Mean body weight (kg), the average thyroid AM and OM of non-indigenous population of Sakha (Yakutia).

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INDICATORS OF THE ANTIOXIDANT SYSTEM OF THE RED BLOOD CELLS IN PATIENTS WITH LUNG CANCER

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Summary

This paper presents the results of glutathione study in the patients with lung cancer. 40 patients with lung cancer admitted to the Yakut Republican Oncology dispensary with lung cancer diagnosis were examined. The control group of 60 patients was matched for age, sex and ethnicity. The main criterion for the selection of control group was absence of oncologic diseases. Research material was venous blood taken from the ulnar veins.

The intensity of free radical oxidation of lipids was determined by the spectrophotometric methods on accumulation TBA – active products (TBA-AP). The antioxidant defense quotients were determined by the activity of glutathione peroxidase, glutathione reductase, glutathione transferase, concentration of reduced glutathione.

The results show the intensification of free radical oxidation of lipids and depletion of glutathione system in the organism.

Keywords: glutathione, glutathione peroxidase, glutathione reductase, glutathione transferase, reduced glutathione.

Introduction

Special attention in the pathogenesis of cancer has been given to the role of oxidative stress in the body. Nowadays it is regarded as the universal unspecific mechanism of initiation of tumoral stature [1,13,7]. Active oxygens' molecules and reactions of peroxide lipid oxidation can be

regarded as universal mechanism of tumoral transformation denotating spontaneous or induced carcinogenesis [6,11,4,5].

As long as free-radical reactions generate numerous pathologic changes there must be a system deterring excessive formation of radicals. Antioxidant system controls intensity of free-radical reactions in intracellular and extracellular space of organism [1,2,3]. System of glutathione can give the significant information about condition of antioxidant system in organism of patients with lung cancer [6].

The objective of research is the studying of level of reduced glutathione, glutathione transferase, glutathione peroxidase, glutathione reductase in patients with lung cancer.

Research material and methods

40 patients with lung cancer admitted to the Yakut Republican Oncology dispensary with lung cancer diagnosis were examined. The control group of 60 patients was matched for age, sex and ethnicity. The main criterion for the selection of control group was absence of oncologic diseases. Research material was venous blood which was taken from the ulnar veins.

The intensity of free radical oxidation of lipids was determined by the spectrophotometric methods on accumulation TBA – active products (TBA-AP) [8]. The antioxidant defense quotients were determined by the activity of glutathione peroxidase [8], glutathione reductase [8], glutathione transferase [10], concentration of reduced glutathione [9].

Statistical analysis of the data was performed using statistical software application package SPSS for Windows 10.0. There were used standart methods of variation statistic: calculation of average values, standart errors, 95% confidential interval. The reliability of differences between means were evaluated using the criterion Student's t-distribution for independent samples.

Results and discussion

We observed an increase in the intensity of free radical oxidation in examined group of lung cancer patients. So in the body of patients the average content of TBA-AP in the blood was 1.5 higher than reference value (1.61 ± 0.10 mmol/l) and equal to 2.39 ± 0.32 mmol/l.

System status was evaluated by the concentration of reduced glutathione and enzyme activity: glutathione transferase, glutathione peroxidase, glutathione reductase.

It is known that in conditions of oxidative stress the erythrocytes are strengthened, hydrogen peroxide and other lipoperoxidase are compounded. Glutathione peroxidase provides the destruction of peroxidase in erythrocytes. The value of the activity of glutathione peroxidase in blood erythrocyte of patients was 3.2 times (0.19 ± 0.001 mmol/min*gHb) lower than the same period in control group (0.61 ± 0.005 mmol/min*gHb) ($p=0.025$).

Except of glutathione peroxidase, a family of glutathione transferase present in the cells, the

main function is – to protect cells against xenobiotics and lipid peroxidation products through their recovery, compounding to substrate of molecule glutathione or nucleophilic substitution of hydrophobic groups [3,14]. Unlike glutathione for which the best substrates are hydrophilic hydroperoxide, glutathione transferase do not react with hydrogen peroxide, but effectively reduced hydroperoxide polyunsaturated fatty acids (linoleic and arachidonic) phospholipid hydroperoxide and mononucleotide and DNA, participating in their repair. In addition glutathione transferase conjugate with reduced glutathione toxic products of lipid peroxidation (nonene, dotsenali) facilitating their removal from the body. The significance of a multigene family of glutathione transferase in cell protection in the development of different types of cancer is confirmed in many studies [16,15,12].

In our study, the average activity of glutathione transferase in cancer patients actually did not differ from controls. So in the body of patients with a tumor activity of glutathione transferase was 2.42 ± 0.01 mol/min*gHb, in control group – 2.44 ± 0.07 mol/min*gHb.

In studying of reduced glutathione's content we have found its concentration in tumor patients significantly ($p=0.042$) decreased by 1.4 times compared with the control group (2.32 ± 0.09 mmol/gHb) and equal to 1.65 ± 0.01 mmol/gHb. Decrease in the erythrocytes of reduced glutathione in patients with lung cancer can probably be caused by the high consumption rate and its low rate of recovery. The maintenance of high level of reduced glutathione due to the recovery of his disulfide form is provided by the glutathione reductase. In the studied group of patients the activity of glutathione reductase was ($p=0.038$) lower than the control significance (6.8 ± 0.30 mol/min*gHb) 1.6 times and amounted to 4.30 ± 0.05 mol/min*gHb. There is no regeneration of glutathione in blood erythrocytes in patients with oncopathology. The reason of this phenomenon is insufficient regeneration of NADPH in the pentose phosphate pathway

Thus, the results of our study showed patients with lung cancer have depletion of glutathione, as evidenced by reduction in the concentration of reduced glutathione, glutathione peroxidase enzymes activity and glutathione reductase. But the level of activity of glutathione transferase did not differ from the average significance of this indicator in the control group.

Conclusions

1. It was found an increase in the concentration of TBA-AP in the blood of patients with lung cancer by 1.5 times as compared with those without cancer pathology that tells about intensification of free radical oxidation.

2. The depletion of glutathione as evidenced by decreased activity of enzymes of glutathione reductase and decrease in the concentration of reduced glutathione were observed in the body of patients with lung cancer.

3. The activity of glutathione do not differ from the significance of this indicator in the control group while depletion of glutathione in patients oncopathology.

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**Characteristic of body mass index of
female population of the Sakha Republic during the various periods of ontogenetic cycle**

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Summary. Results of overall dimensions, body mass index of 1638 women of the Sakha Republic (Yakut, Caucasoid, been born and constantly living in Yakutia) are presented. Ethno-age features of dimensional indicators, body mass index, frequency of deviations of BMI from normal indicators (the insufficient mass of body, surplus of weight of body, obesity) in various ethnic and age groups of women of the Sakha Republic are revealed. The revealed age distinctions have the same character in both ethnic groups.

Keywords: anthropometry, body mass index, woman of the Sakha Republic.

Introduction

Questions of obesity, insufficiency of weight of a body, maintenance of normal indicators of weight of a body draw to themselves attention of experts of various areas of health care and physical culture. Influence of the listed deviations of weight of a body on a state of health, duration and quality of life, risk of emergence and the course of diseases is indisputable to that numerous literary data [1, 5, 7] testify. In this regard research of anthropometrical indicators of the population is actual. Thus at an assessment of anthropometrical indicators it is necessary to consider age, sexual, ethno-territorial features [6, 10]. The Sakha Republic is the region with severe climatic conditions of accommodation which in aggregate with modern social and economic conditions, nature of a food, level of physical activity have direct impact on development of a human body [8]. In this regard the purpose of our research were an assessment of dimensional indicators (length and the weight of a body), body mass index (Kettle-2 index) of women aged from 21 till 90 years of the Sakha Republic, identification of deviations from norm during the various periods of an ontogenetic cycle of adult women.

Materials and methods

We carried out the analysis of anthropometrical indicators of 1638 women of the Sakha Republic (1227 women of the Yakut nationality and 411 Caucasian women). According to an age periodization ontogenesis of the person, accepted at the VII All-Union conference on problems of age morphology, physiology and biochemistry of the Academy of Sciences of the USSR (1965), the surveyed women treated four age groups: To the I period of mature age (21-35 years), II period of mature age (36-55 years), elderly (56-74) and senile to the age periods (75-90 years). All women were born and constantly lived in the territory of Yakutia. On the social status the surveyed women are students of internal and correspondence forms of education of various faculties of the highest and average special educational institutions of Yakutsk, workers, employees, pensioners of various

districts of the Sakha Republic. Anthropometrical measurements were carried out by V.V.Bunak's (1931) [2] admitted to scientific research institute of Anthropology of the Moscow State University (1981) according to requirements to carrying out anthropometrical researches the technique. The index assessment was carried out on the Kettle-2 index (to body mass index, BMI). According to WHO (World Health Organization) recommendations (1989), BMI is less than 18,5 assumes existence at surveyed the chronic power insufficiency (CPI), BMI is more than 25 testifies to existence of excess weight, BMI is more than 30 points to obesity existence.

The received material was processed by a method of variation statistics. Nature of distribution of each sign on the subsequent calculation of size M and its error of m , an average square deviation δ , coefficient of a variation of a sign of V became formed. For an assessment of a normality of distribution of data Kolmogorov-Smirnova criterion was used. In work methods of parametrical and nonparametric statistics were used. The assessment of group distinctions was carried out by t -criterion to Stewdent and to Mann-Whitney's U -criterion [3]. Reliable considered distinction 2.5 between compared ranks with level of reliable probability of 95% ($p < 0,05$).

Results and discussion

The analysis of dimensional indicators of the surveyed women revealed that in group of women of the Yakut nationality average values of length of a body of women of the surveyed age groups authentically ($p < 0,001$) differ (tab. 1). So, the greatest length of a body ($159,3 \pm 0,3$ cm) was registered in group of women of the I period of mature age, and the smallest ($149,1 \pm 0,3$ cm) – at women of senile age. In group of Caucasian women length of a body of women of I and II periods of mature age authentically didn't differ, but was authentically above similar indicators of women of the senior age groups. Distinctions in indicators of length of a body of the population of various age groups, changes of the average sizes of a body of individuals from generation to generation are explained by the phenomena of a secular trend and come to light in various regions of the world [4]. In our research secular manifestations of length of a body are revealed in both ethnic groups.

It is known that age variability of weight of a body of women is connected with hormonal transformations, reduction with age level of physical activity, delay of metabolic processes. Existence of ethno-territorial rates of age changes of weight of a body causes scientific interest. The analysis of weight of a body of women of the Sakha Republic revealed the following nature of age variability. Indicators of weight of a body authentically increase from the first period of mature age by the II period of mature age; authentically decrease from elderly to senile irrespective of an ethnic origin. The researches conducted in Krasnoyarsk territory, revealed similar age changes of length and weight of a body with the maximum indicator of weight of a body at advanced age [9]. In our research of reliable distinctions between average values of weight of a body of women of the II

period mature and elderly age groups in both ethnic groups it isn't revealed.

The analysis of indicators of BMI revealed that normal value of body BMI (18,5-25) was revealed at 765 women that made 46,7% of the surveyed women. BMI less than 18,5 (CPI existence) was defined at 81 women that made 4,9% of the surveyed women. Surplus of weight – at 521 (31,8%), obesity – at 271 (16,6%) women. The analysis of indicators of BMI depending on age revealed that average values of BMI authentically increase from the I period of mature age to elderly and decrease at senile age in both ethnic groups.

Assessment of frequency of registration of normal weight of a body and deviations from it at women of various ethnic groups I revealed the following features. Among women of Yakut (n=1227) normal value of BMI is revealed at 50,4% of women (fig. 1), among women of the Russian nationality - at smaller percent (35,5%) women (fig. 2). In both ethnic groups of CPI it was noted in a small amount (5,7% of Yakut women and 2,7% - Caucasian women). Obesity is revealed at 13% of Yakut and 27,3% of Caucasian women. Thus, extreme deviations from norm of weight of a body in the form of CPI were noted more often at Yakut, in the form of obesity – at Caucasian women.

Research of the age characteristic of BMI in the surveyed ethnic groups revealed intergroup distinctions of a share of persons with BMI. So, in both ethnic groups the share of persons with CPI is more in group of women of the I period of mature age, decreases in the senior age groups with increase at senile age. The share of persons with obesity increases from the I period of mature age to elderly and decreases to the senile. It is established that extreme options (CPI, obesity) met in smaller percent of cases, than norm and surplus of weight of a body in all surveyed ethno-age groups.

At the comparing frequency of deviations of BMI among women of the Sakha Republic Caucasoid group and women of Krasnoyarsk territory the same nature of variability of BMI is revealed. However pays attention the fact of bigger percent of elderly Caucasian women (been born and constantly living in the Sakha Republic)) with normal BMI (38,8%), than in Krasnoyarsk territory (8,7%) [9].

Conclusions

Thus, we revealed age features of dimensional indicators and an body mass index of women of the Sakha Republic of two ethnic groups (the Yakut, Caucasoid), been born and constantly living in Yakutia. Age features of length and the masses of a body which are characterizing authentically by higher average values of length of a body of young women in comparison with similar indicators of women of the senior age groups are revealed. Indicators of weight of a body authentically increase from the I period of mature age by the II period of mature age, authentically decrease from



advanced age to senile irrespective of an ethnic origin. The increase in average values of BMI from the I period of mature age to elderly and reduction to senile age is defined. Average values of body built index, frequency of deviations of BMI from normal indicators in various ethnic groups are established. Research of the age characteristic of body built index revealed intergroup distinctions of a share of persons with body built index deviations (CPI, surplus of weight of a body, obesity) in various stages of an ontogenetic cycle of women. The revealed age distinctions have the same character in both ethnic groups. It is established that extreme deviations of body built index from norm (CPI, obesity) met in smaller percent of cases, than norm and surplus of weight of a body in all ethno-age groups. Thus deviations from norm of weight of a body in the form of CPI were noted more often at Yakut, in the form of obesity – at Caucasoid in all age groups.

The provided data testify to existence of ethno-age variability of overall dimensions, BMI which needs to be considered at an assessment of the physical status of the population experts of various areas of medicine, health care, physical culture and sport.

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Table 1

**Anthropometrical indicators of women of the Sakha Republic
of various ethno-age groups**

Age period	Yakut				Caucasian			
	Mature I (n=288)	Mature II (n=475)	Elderly (n=284)	Senile (n=180)	Mature I (n=54)	Mature II (n=226)	Elderly (n=98)	Senile(n=33)
Length of body, cm	159,3±0,3	157,8±0,2	153,8±0,3	149,1±0,3	159,6±0,6	161,1±0,5	157,2±0,7	156,4±1,0
Mass of a body, kg	59,0±0,6	63,0±0,5	62,2±0,6	54,2±0,9	65,3±1,6	71,7±0,9	70,4±1,6	63,9±2,5
BMI	23,2±0,2	25,2±0,1	26,2±0,2	24,2±0,3	25,6±0,6	27,7±0,3	28,5±0,7	26,2±1,1

Fig. 1

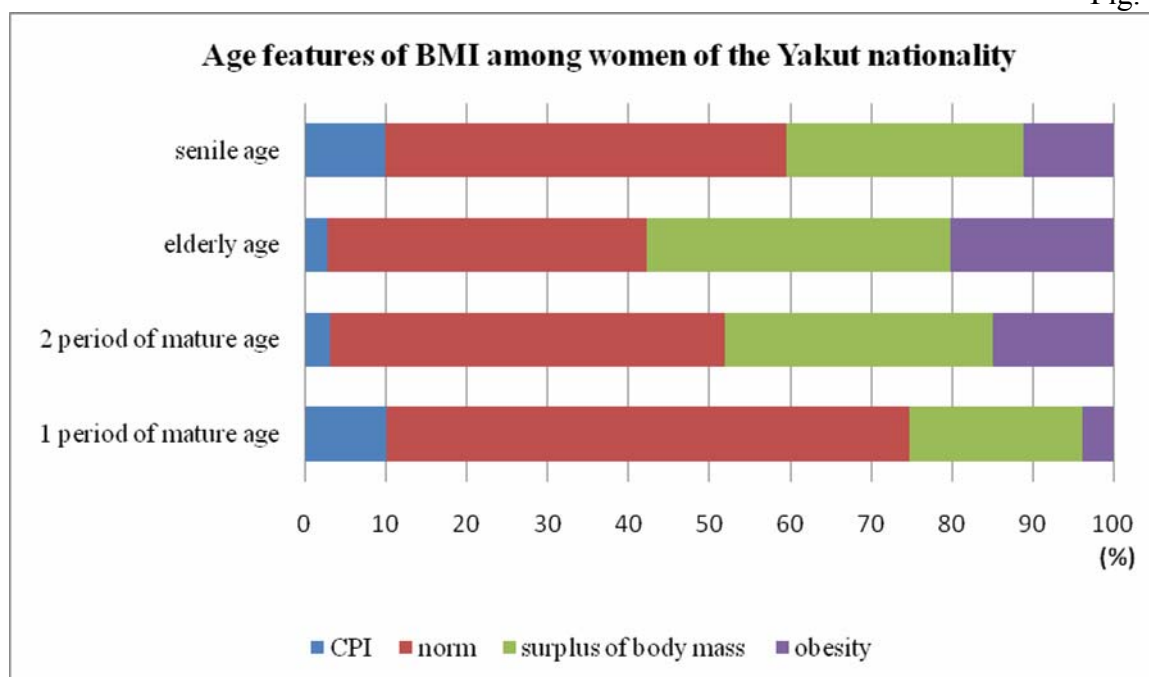
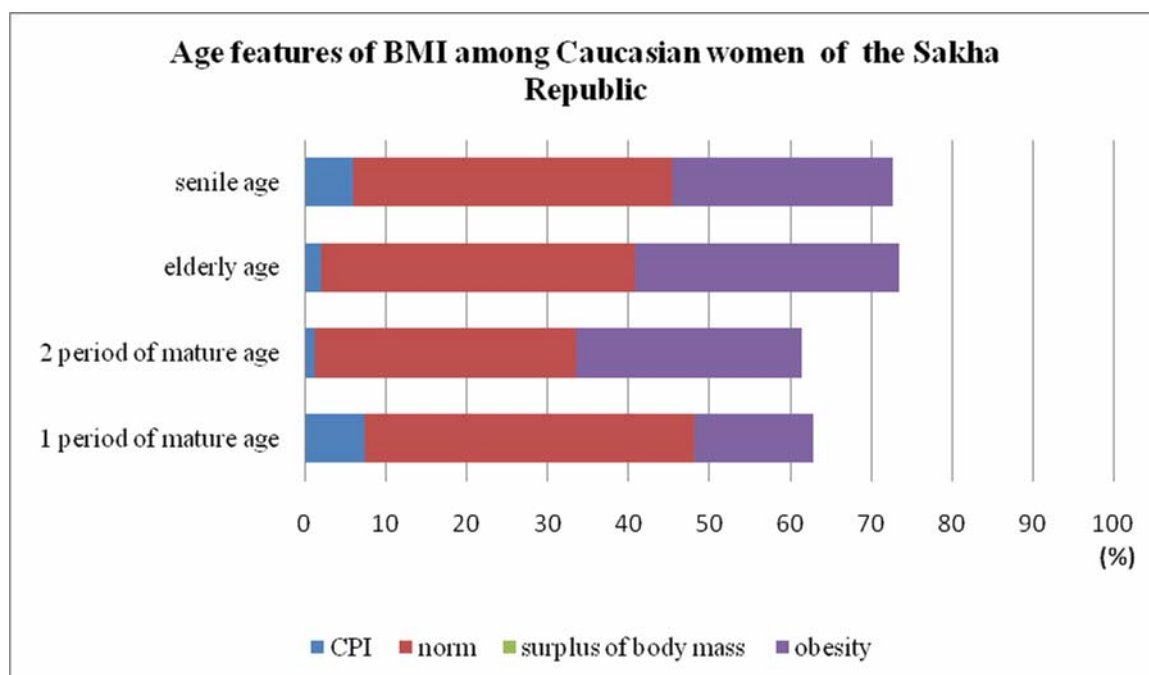


Fig. 2



PREVALENCE OF HBV AND HCV INFECTION MARKERS AMONG PATIENTS WITH 2 TYPE DIABETES

Savvin R.G., Maximova S.S.

ABSTRACT

We studied frequency of HBV and HCV markers and biochemical profile of patients with type II diabetes (T2DM). There were examined 207 patients from different regions of Yakutia who were being consulted at Republican Endocrinology Hospital since January to May 2013 in Yakutsk. Among examined patients there is a high contamination with hepatitis B (71.5 %), C (10.8 %) or mixed viruses (7.5 %). The frequency of serological markers of viral hepatitis B and C among patients with T2DM is four times higher than among general population in the Republic. Combination of pathology (diabetes + Viral hepatitis) worsens liver and kidneys functions. Thus it can be considered that viral hepatitis is a risk factor for diagnosing and progressing of diabetes.

Keywords: markers of viral hepatitis B and C, diabetes, risk factor.

INTRODUCTION

In the XXI century along with threat of infectious diseases there is diabetes threatening international community. Diabetes is the most dangerous non-communicable disease with epidemic growth rate spread all over the world [6,7].

Risk factors for diabetes in childhood are infectious diseases such as red measles, mumps etc., including viral hepatitis.

Viral hepatitis is a serious public health problem because of its epidemic spread, ubiquitous detection and high level of morbidity with wide variability of disease progress from oligosymptomatic to fulminating forms with acute liver failure.

In Russia, the situation on viral hepatitis (VH) with parenteral mechanism of pathogens transmission is extremely unfavorable. Such situation fully applies to the population of the Republic of Sakha (Yakutia). For decades in the Republic there has been recorded high incidence of hepatitis B 2-3 times higher in accordance to All-Russian parameters. There is a trend to chronic viral hepatitis B and C growth.

Currently there is suggested a role of viral hepatitis in initiation of processes leading to development of diabetes. It is also known that hepatitis adversely affect the course of diabetes [5]. Clinicians noted interactions of these two problems about 40 years ago [2, 3, 4]. However, pathogenetic significance of such a frequent association of viral liver disease and diabetes so far has not been sufficiently studied yet [1].

Research objective: to study the incidence of HBV and HCV markers of infection and

biochemical profile in patients with type 2 diabetes mellitus (T2DM).

Tasks:

- To determine the frequency of HBV and HCV infections in patients with type 2 diabetes;
- To study the biochemical parameters of blood in patients with type 2 diabetes who are infected with hepatitis viruses B and C.

MATERIAL AND METHODS

The study included 207 patients with type 2 diabetes from different regions of Yakutia, who came to the Yakutsk Republic-wide Endocrinology Clinic during the period from January to May 2013 and submitted to a biochemical blood assay. 19.8% are men, 80.2 % are women. Mean age is $64,2 \pm 1,7$ years. For the comparison there was a group of 88 patients with dyscirculatory encephalopathy who were treated at Day Hospital of the Institute of Health, and 9167 people from various regions of the Sakha Republic (Yakutia). A study for the presence of markers of hepatitis B virus was done among all patients with type 2 diabetes and for the presence of markers of hepatitis C virus was done among 93 patients. We also ran biochemical blood assay resulting in the following: ALT - 200, AST - 198, chlorides - 164, cholesterol - 199, sugar - 200, Calcium - 139, protein - 200, urea - 201, bilirubin - 198.

Methods:

- Seroscopy using the immunoenzyme method to detect markers of parenteral viral hepatitis was conducted in immunology laboratory of the scientific institute "Health institute" (SIHI), NEFU.
- Related test systems of ZAO «Vector - Best" were used.
- Biochemical studies were conducted in the laboratories of the Republic-wide Endocrinology Clinic.
- Statistical methods. As the software statistical analysis of research materials we used the software package Statistica 8.0. The following methods of statistical analysis were applied: checking the normalcy of the distribution of quantitative traits using the Kolmogorov-Smirnov test with the Lilliefors correction and the Shapiro-Wilk test; checking the equality of the general variance using the Fisher's exact test; descriptive statistics; analysis of contingency tables; rank correlation analysis; the Mann-Whitney nonparametric variance analysis; comparing proportions test. Selected options listed below, have the following designations: M - mean, s - standard deviation, n - the size of the analyzed subgroups. The critical significance value was taken as 5%.

RESULTS AND DISCUSSION

In the result of studies HBs-antigenemia (HBsAg) was detected in 8.2% of patients with type 2 diabetes (Fig.1). Most of patients were infected with hepatitis B virus (HBV): in 71.5% there were identified antibodies to HBV cor-antigen (a-HBcorIgG) (Fig. 2); 10.8% of patients were

infected with hepatitis C virus (a-HCV) (Fig.3); 7.5% of patients had mixed infection with hepatitis B and C viruses (Fig. 4). The data obtained was compared to results of similar studies in Irkutsk region (Fig. 5). As can be seen from the figure, contamination with hepatitis B virus (HBV) among patients with type 2 diabetes (T2DM) in Yakutsk more than three times higher than among patients with type 2 diabetes in Irkutsk ($p = 0.0002$). Contamination with hepatitis C virus (HCV) and mixt infection is also slightly higher (4.8 and 5.4% respectively) but differences were not statistically significant ($p = 0.22$ and 0.06 respectively). When comparing the frequency of viral hepatitis (VH) among patients with diabetes mellitus and dyscirculatory encephalopathy differences were also not statistically significant (Table 1). In control group HBs-antigenemia was met slightly less (2.5%, $p = 0.2$), whereas the detection rate of a-HBcorJgG and a-HCV was much lower (4.5 and 4.7 times respectively, $p < 0.0001$). Average biochemical profiles of patients with type 2 diabetes and viral hepatitis are given in Table. 2. As seen from the table, the average blood glucose was above target, other parameters did not exceed normal range. The rank correlation analysis (Spearman) between all biochemical parameters revealed a positive correlation only between ALT and AST transaminases ($\rho = 0,6$; $p < 0.0001$).

We also studied influence of VH on biochemical profile of patients with type 2 diabetes. There was revealed that HBs-antigenemia level of creatinine in patients with type 2 diabetes is much higher than its absence (108.6 versus 96, $P = 0.009$) (Fig. 6). There was also higher AST level (37.6 vs. 21.1, $p = 0.022$) (Fig. 7). This once again proves that in combined pathology (diabetes mellitus + viral hepatitis) harmful interference on liver and kidney function increases.

CONCLUSION

There is a high contamination with parenteral viral hepatitis B (71.5%), C (10.8%) and both viruses (7.5%) among patients with type 2 diabetes. The frequency of serological markers detection of viral hepatitis B and C among patients with type 2 diabetes was four times higher than in general population of the Republic. Combined pathology (diabetes + viral hepatitis) worsens liver and kidneys functions. Thus, it can be assumed that viral hepatitis is a risk factor for nogenesis of diabetes. Hereafter there is recommended monitoring study for pre-diabetes among patients with chronic viral hepatitis B, C and with past-infection of hepatitis B.

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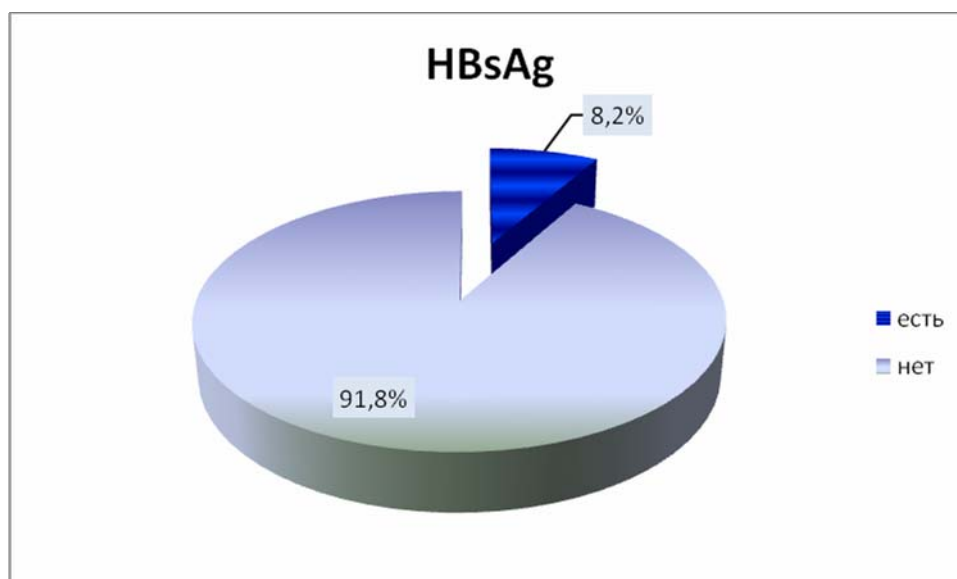


Fig. 1. Frequency of HBsAg among T2DM patients

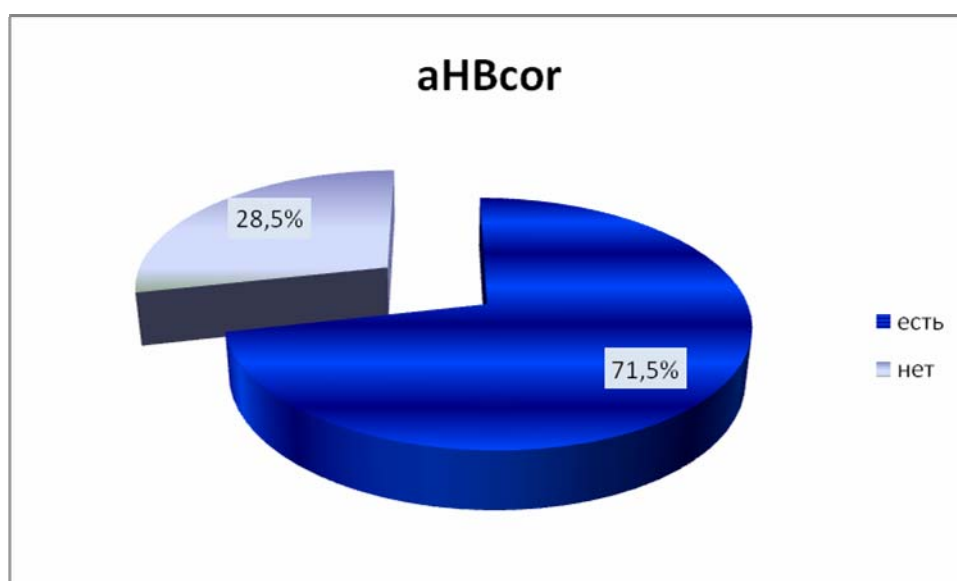


Fig. 2. Frequency of a-HBcor among T1DM patients

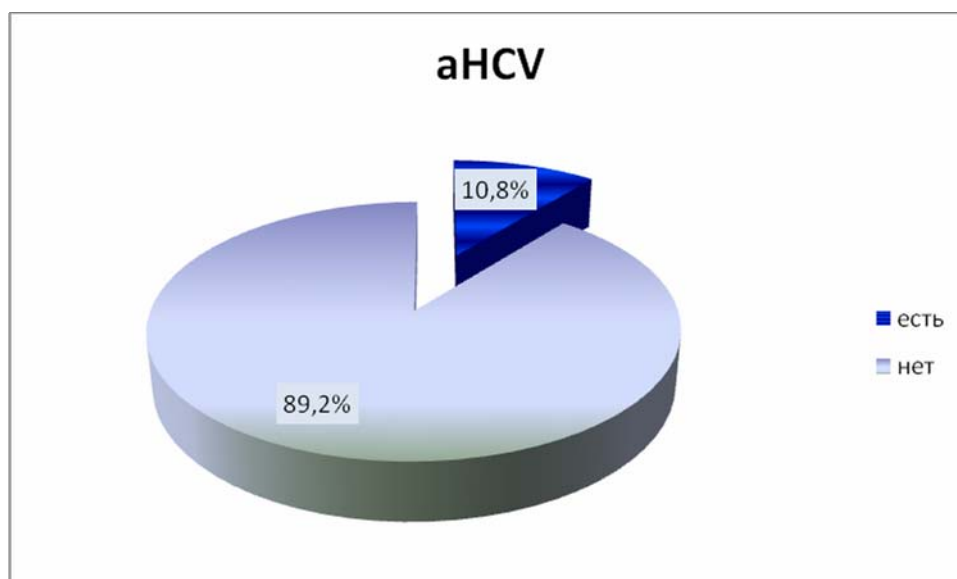


Fig. 3. Frequency of a-HCV among T1DM patients

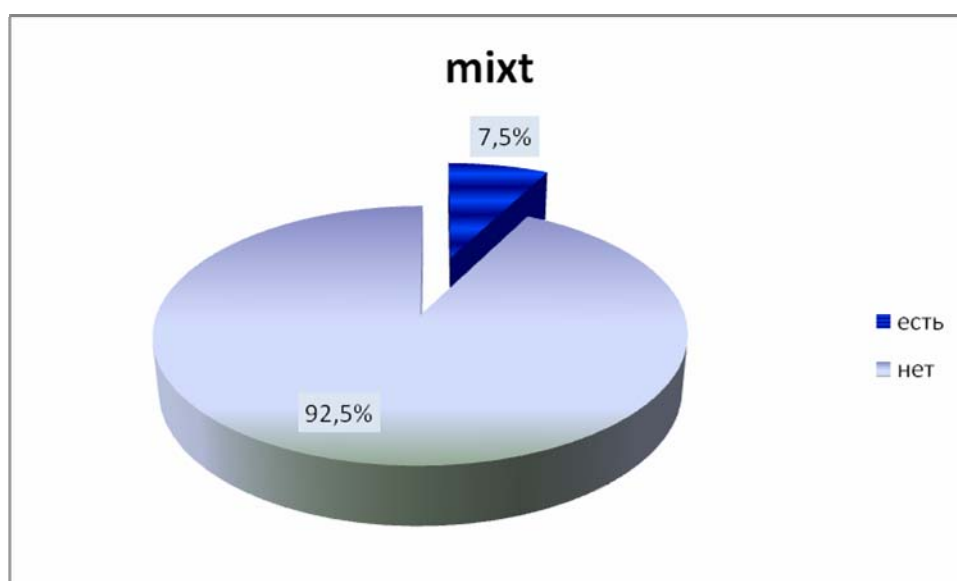


Fig. 4. Frequency of mixt infections among T2DM patients

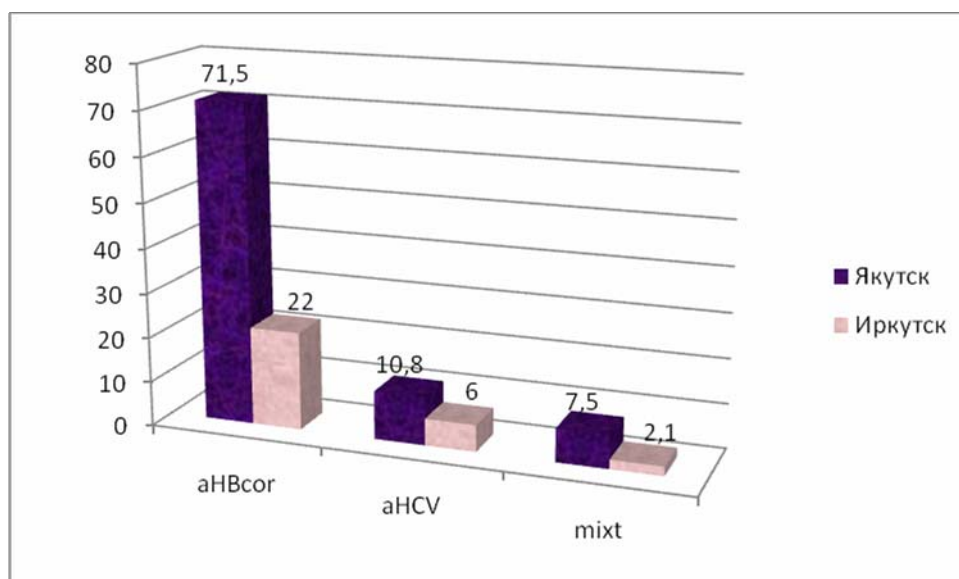


Рис. 5. Frequency of HBV and HCV - infections among patients with T1DM

Table 1

HBV and HCV- infections in different groups

	<i>Diabetes</i> (n=207)		Dyscirculatory encephalopathy (n=88)		chi-square	P	Test group (n=9167)		chi-square	P
	абс.	%	абс.	%			абс.	%		
HBsAg	17	8,2	4	4,5	0,8	0,4	524	5,7	1,9	0,2
a-HBcor	148	71,5	42	60,9	2,2	0,1	163	15,9	276,6	<0,0001
a-HCV	10	10,8	2	2,6	3,2	0,07	92	2,3	23,6	<0,0001

Table 1

Biochemical profile under combined pathology VH + T1DM

Biochemical measurement	N	Percentiles		
		25%	Median	75%
ALT	200	14,2	21,8	33,1
AST	198	18,8	22,5	28,0
Chlorides	164	103,0	107,0	113,4
Cholesterol	199	4,0	4,4	5,0
Sugar	200	6,8	8,1*	10,4
Calcium	139	2,2	2,3	2,4



Protein	200	76,1	80,5	84,2
Urea	201	6,9	7,6	8,2
General bilirubin	198	11,0	13,0	15,3
Direct bilirubin	198	1,8	2,0	3,6

*- above normal

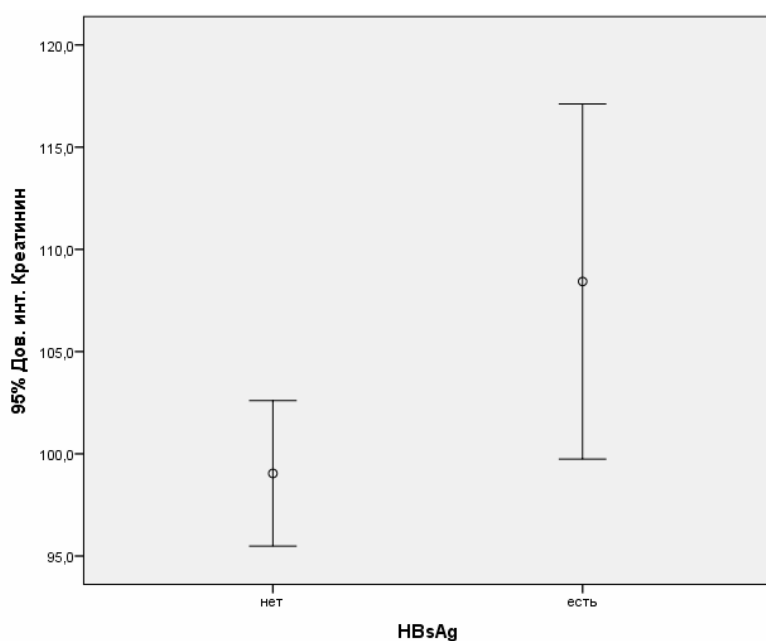


Fig. 6. Creatinine level according to HBsAg presence

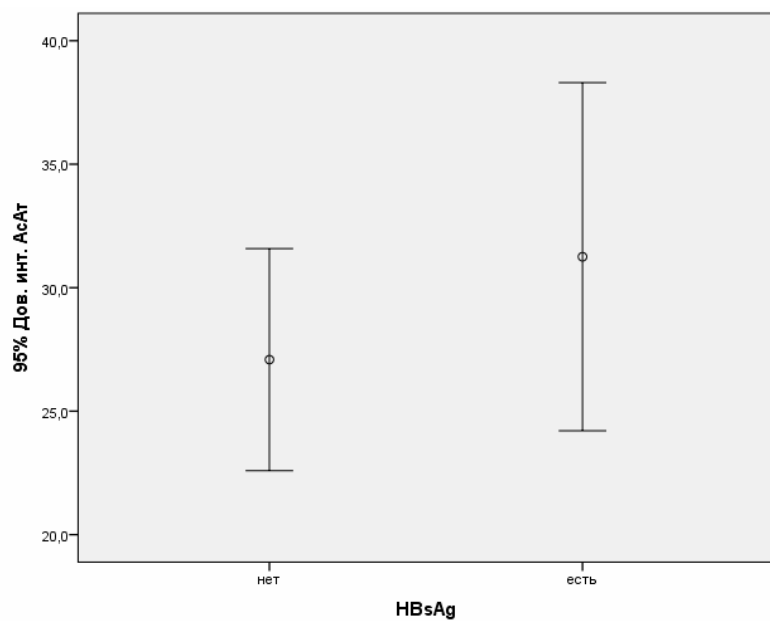


Fig.7. AST level according to HBsAg presence

UDC 618.2:616.36-002 (571.56)

U. R. Novgorodova

**THE COURSE OF PREGNANCY AND CHILDBIRTH IN WOMEN WITH VIRAL
HEPATITIS “B”
(ON THE EXAMPLE OF MATERNITY HOSPITAL IN YAKUTSK)**

Summary

To determine the influence of viral hepatitis “B” on pregnancy and childbirth, we studied individual records of pregnant women of the prenatal clinic of Yakutsk Clinical Hospital No. 3 and childbirth records of Yakutsk Clinical Hospital from 2003 to 2011 with a diagnosis of “viral hepatitis”, at various stages of pregnancy. It was found that acute viral hepatitis “B” adversely affect the course and outcome of pregnancy, which is shown by an increased risk of threatened miscarriage, threatened preterm labor. Chronic viral hepatitis “B” in childbirth increases the frequency of preterm rupture of membranes, bleeding in the early postpartum period. Viral hepatitis “B” affects the fetoplacental complex, which is manifested in chronic hypoxia, intrauterine growth retardation, and the possibility of transmission of the virus from mother to fetus.

Keywords: Viral hepatitis “B”, HBSAg, jaundice, complications of pregnancy and childbirth.

Introduction

According to a number of separate epidemiological studies from 50% to 82% of pregnant women have some kind of chronic diseases of the internal organs. Over the past 10 years extragenital morbidity has increased dramatically, including 4-fold increase in the pathology of hepato-biliary system. During normal pregnancy liver functions are not changed. However, during normal pregnancy the liver is under condition of tension of functional reserves. Therefore, in pregnant women in case of diseases of the hepato-biliary system or development of complications of pregnancy, compensatory and adaptive capacities of the liver dry out much faster than in the absence of pregnancy [7]. Liver pathology is one of the leading causes of maternal mortality from bleeding due to hepatitis and severe complications of pregnancy. The study of peculiarities of hepatitis in pregnant women is also relevant to the epidemiological vigilance in the whole region.

Purpose: To investigate the clinical features of pregnancy and childbirth in viral hepatitis “B” and find out the specifics of the early neonatal period in infants born to mothers with hepatitis “B”, as well as the possibility of perinatal transmission of HBsAg.

Materials: We studied individual records of pregnant women from the prenatal clinic at Yakutsk Clinical Hospital No. 3 (62 cases) and birth records of Yakutsk City Clinical Hospital from 2003 to 2011, 412 women with a diagnosis of “viral hepatitis”, at various stages of pregnancy. The share of chronic viral hepatitis was 93.6%, of acute viral hepatitis 6.4%. Also the analysis of 2 groups was carried out: basic - 62 individual case histories of pregnant diagnosed women and 62 pregnant women in control group, who were examined after with the suspicion of viral hepatitis. According to the results of clinical examination in the control group, suspicion of viral hepatitis has been cancelled and was not subject to further study.

Results of the study: The structure of acute viral hepatitis was dominated by acute viral hepatitis “B” in 46.1% of cases, in 3.3% hepatitis “A” was identified, “D” in 7.6%, “C” in 3.84%; 19.2% of cases were not verified. Acute viral hepatitis “B” was often recorded in the first trimester of pregnancy in 75%, in the 2nd trimester in 8.36%, in the 3rd trimester in 16.64% (Fig. 1).

During the analysis of the severity of the disease it was found that in pregnant women severe forms of acute viral hepatitis (AVH) dominated in 58.4%, moderate forms in 33.3%, mild forms in 8.3%. The most severe forms were registered in the 3rd trimester of pregnancy (Fig. 2)

. As for comparative analysis of the clinical picture of the AHB (acute hepatitis B) in pregnant women of the study group, there is marked dyspeptic syndrome in 83.3% of cases, asthenovegetative syndrome in 82.9 %, skin lesions in 41.7 % and 25.0 % recorded in the form of hemorrhagic syndrome, bleeding gums and nose bleeds, arthralgic option flow in 16.6 % of cases (Fig. 3).

In 2 cases pregnancy was terminated in pregnant women with acute viral hepatitis “B” for medical reasons, and there was 1 case of registered spontaneous abortion. The most common complications in patients with AVH were: threatened termination of pregnancy (33.3%), intrauterine fetal hypoxia (56.7%), intrauterine growth retardation (5%).

Infants of mothers with AVH did not show: yellowness of the skin, hepatomegaly, or other manifestations of perinatal hepatitis. The structure of chronic viral hepatitis in pregnant women is as follows: the largest percentage was shown by chronic viral hepatitis “B” - 64.3%, chronic hepatitis “C” - 13.9%, 5.3% of pregnant women had markers of viral hepatitis “B” and “C”; hepatitis “D” was found in 15.2%, not verified cases of chronic hepatitis were registered in 1.3% of pregnant women (Fig. 4).

Chronic hepatitis with minimal and mild degree of activity was found in 75.9% of cases, with moderate activity in 18.8%, with significant activity in 5.3% of the cases (Fig. 5).

Among pregnant women with chronic hepatitis “B” more often there were such symptoms as discomfort, heaviness in the right hypochondrium - 44.1%, weakness - 92.2%, itchy skin - 8.2%. Less commonly observed were such phenomena as yellowness of the skin - 20.8%, hepatomegaly - 9%, spider veins - 2.0%.

All pregnant women with HBsAg showed with the same frequency extragenital pathology, mainly in the gastrointestinal tract: chronic cholecystitis 8.2%, chronic gastritis 15.45%, biliary dyskinesia 12.7% and urinary system 44 %.

ALT levels during exacerbation of chronic hepatitis “B”, according to the results of biochemical tests, reached to 337 U/L, the level of bilirubin in the blood of pregnant women with chronic hepatitis “B” increased to 82 mmol/l. Also there were signs of hypoproteinemia and disproteinemia expressed in reduced albumin (17%) in blood and increase of the gamma globulin fraction (8%), and a slight increase in thymol test results (14%).

Childbirth in patients with chronic hepatitis “B” was accompanied by the following complications: premature rupture of membranes was noted in 18.3%, uterine inertia in 8.3%, early post-natal bleeding in 22.5%, fetal anomalies were not observed (Fig. 6).

An analysis of health status of children born to mothers with chronic hepatitis “B” showed that the proportion of premature infants in this group was low and amounted to 13.3%. At the same time, significantly higher was intrauterine hypoxia 58.3%, perinatal hypothermia 5.8%, feto-placental insufficiency in 22.6%, according to ultrasonic data.

The condition of babies born to mothers with hepatitis “B” was rated as satisfactory in 66.5%, moderate in 26.0%, and severe in 7.5% of newborns. On Apgar score in children born to mothers with chronic hepatitis “B”, the occurrence of low levels was higher than in the control group, but no significant differences between the groups were revealed. Of all newborns in question tests for HBsAg showed positive results in 6.8% (Fig. 7).

The data on the course of pregnancy in women with viral hepatitis “B” are the basis for the development and implementation in outpatient care diagnostics of targeted tactics for further examination after discharge from the hospital, clinical examination and rehabilitation therapy, focus on timely vaccination of newborns, prevention of complications of pregnancy, childbirth, and transmission of infection from mother to fetus.

Findings

1. The most common clinical variant of hepatitis “B” in pregnant women are chronic forms of the disease with minimal and mild degrees of activity.
2. Acute hepatitis “B” adversely affects the course and outcome of pregnancy, which is shown in an increased risk of threatened abortion, threatened preterm labor.
3. For women with chronic viral hepatitis “B” in labor there is an increased frequency of premature rupture of membranes, bleeding in the early postpartum period.
4. Viral hepatitis “B” affects the fetoplacental complex, which is manifested in chronic hypoxia, intrauterine growth retardation, and the possibility of transmission of the virus from mother to fetus.

Conclusion: Only timely pregravid preparation, right decisions made about the carrying of pregnancy and prevention activities, gentle and careful management of labor and postpartum period can increase probability of a favorable outcome for mother and fetus.

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Fig.1 The Frequency of Hepatitis by Trimesters

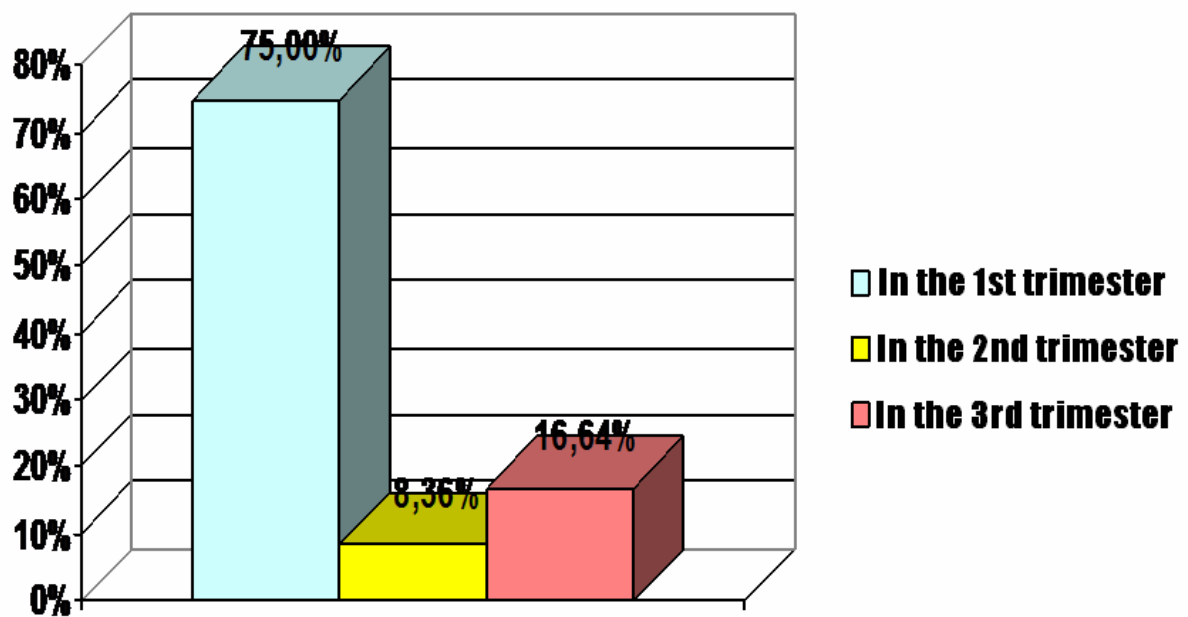


Fig.2 The Spread of Hepatitis by Cases Severity

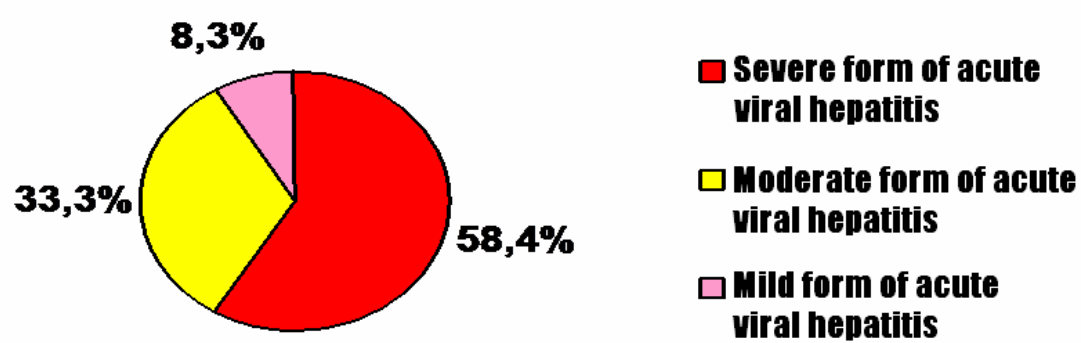




Fig.3 The Characteristic Hepatitis Syndroms

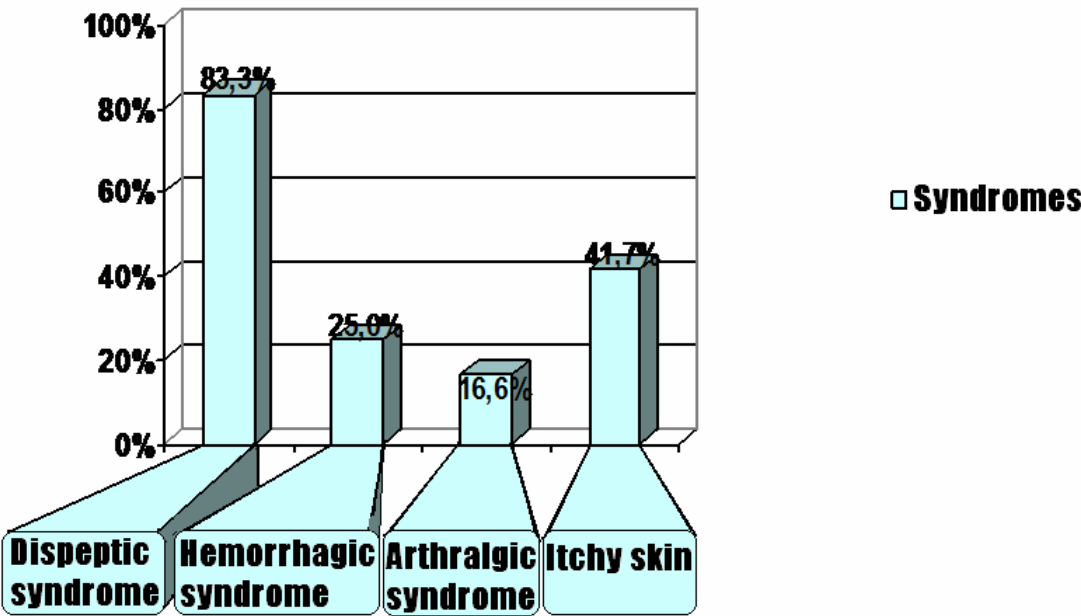


Fig.4 The Indicators of Hepatitis Frequency by Types

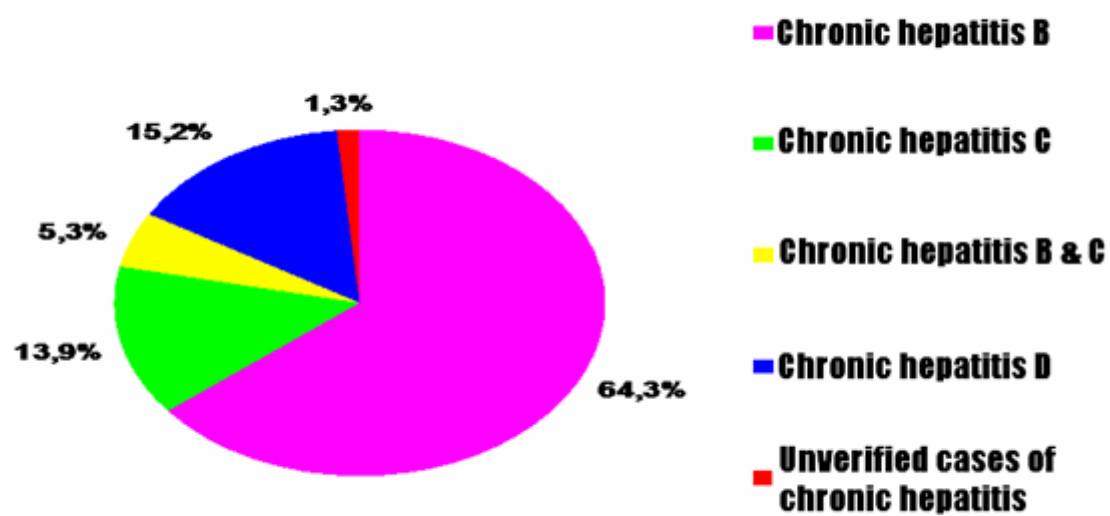


Fig.5 The Degree of Hepatitis activity

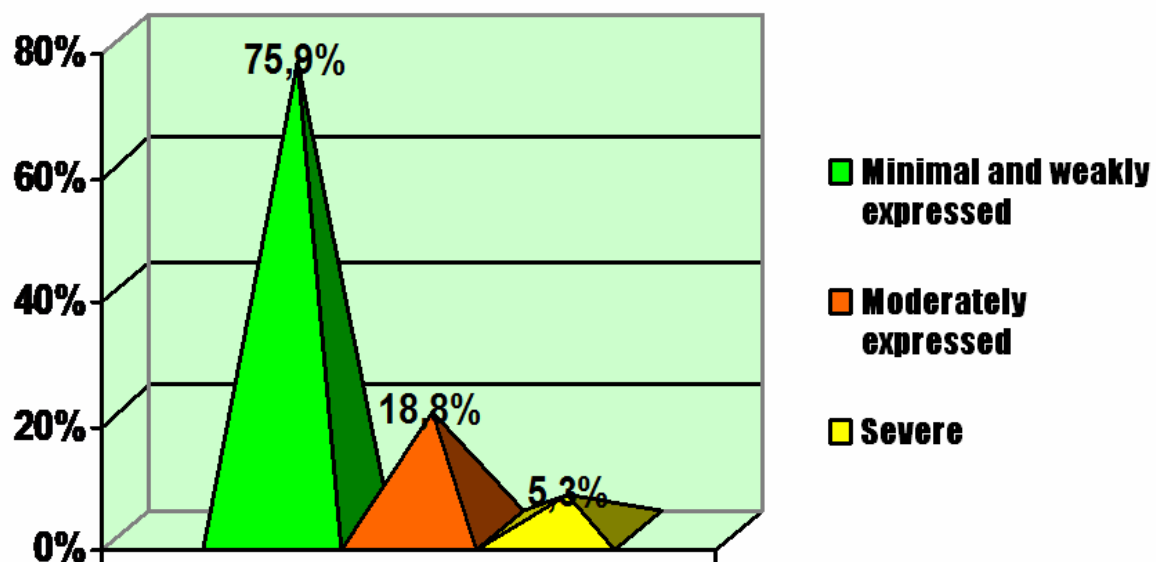


Fig.6 The frequency of complications in childbirth

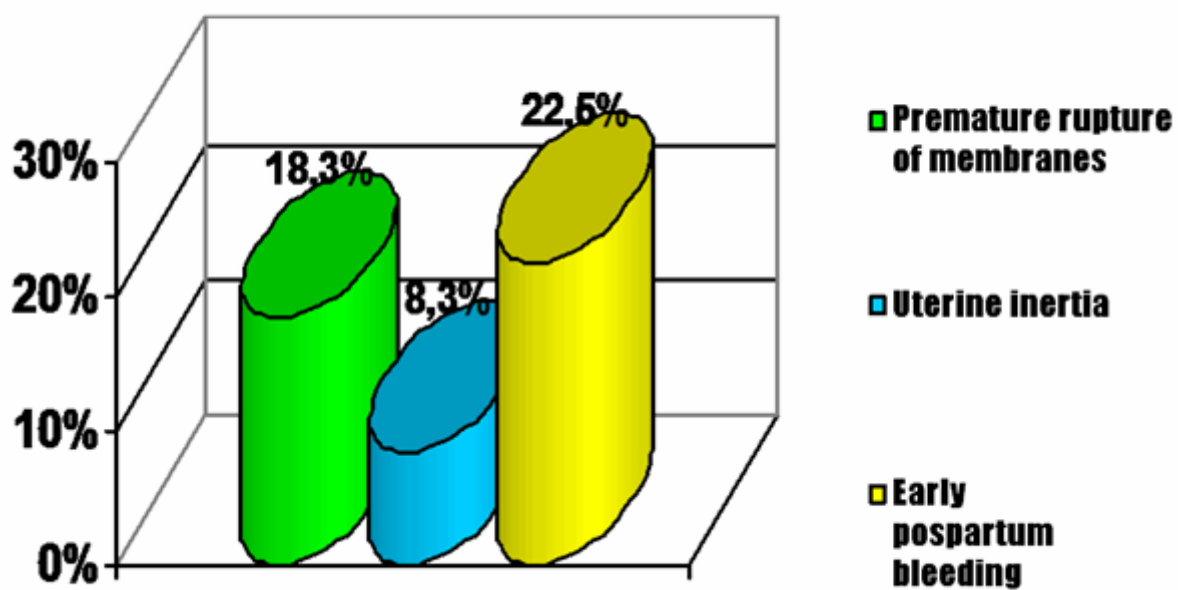
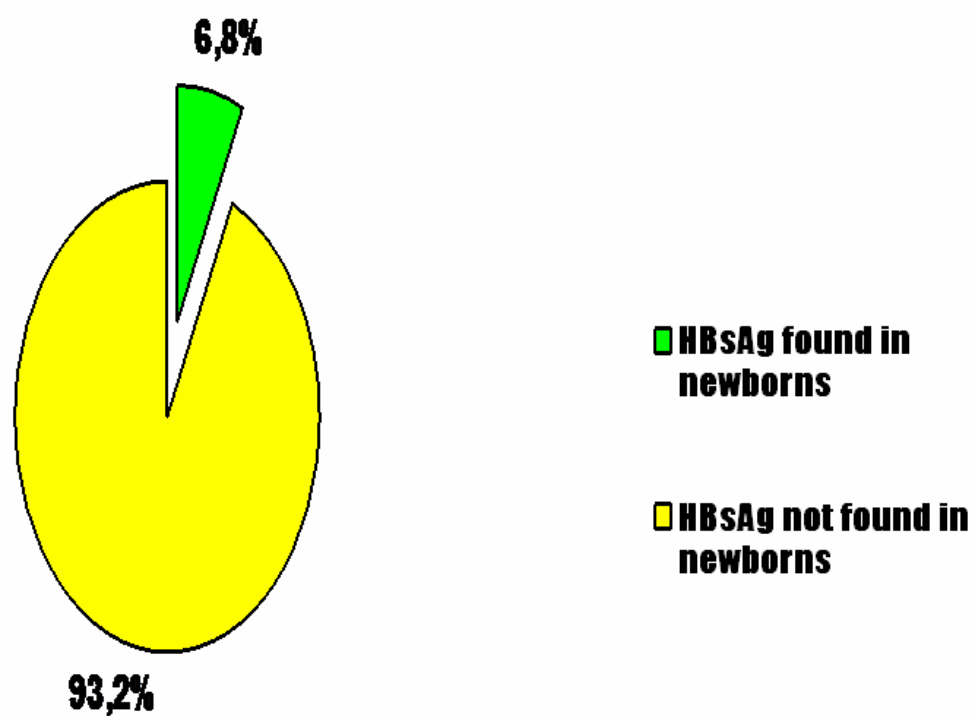


Fig.7 The Frequency of HBSAg Detection



THE ASSESSMENT OF HEMODYNAMICS AND FLUID BALANCE DISORDERS OF THE PREGNANT WOMEN WITH THE GESTOSIS DURING THE CESAREAN SECTION

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ABSTRACT

This research work is carried out in the Department of Anesthesiology, Intensive Care and Critical Care, Obstetrics and Gynecology in the Perinatal Centre of the National Centre of Medicine, Yakutsk, the Russian Federation. A prospective study in one hundred and forty women from 2010 to 2012 has been made. All study patients are divided into two groups: Group I - control group, comprising 79 healthy patients; II group – the main group, including 61 patients with gestosis.

The research of the central hemodynamic parameters and water balance was performed non-invasively using the cardio-respiratory device KM-AP-01 “DIAMANT” (City of St. - Petersburg) in the integral reography and impedansometry mode. As the above presented table shows, Group I is characterized by normal hemodynamic performance of the central and peripheral hemodynamics in the preoperative period but after the intraspinal anesthiathere is a slight increase in the heart rate an average of $93,9 \pm 15,67$ beats / min, against the background of the decline in the total peripheral resistance an average of $1114,67 \pm 409,66$ din * s * cm-5. At the time of the fetus extraction, there is some increase in indicators such as TPVR, CO, SV, but at the end of the surgery they are normalized. In group II, comprising the obstetric patients with gestosis, attention is to be drawn to the increased level of the total peripheral vascular resistance at all stages of the research, which peaks at the time of the fetus extraction, as TPVR averagely increases $2725,07 \pm 1591,47$ din * s * cm-5, CO $7,03 \pm 3,26$ l * min-1. This is due to the sharp changes in pre-and after load on the left heart and circulatory centralization. Volume of fluid and extracellular fluid, on the background of the lowered parameters of the intracellular liquid.

In group II, comprising the patients with gestosis, the TVF, INTRA figures have decreased on the background of the increased volume of blood and plasma. In the postoperative period in group I the increased figures of EXTRA, BV, PV, INTRA TVF during the cesarean decrease. In group II there is also an increase of EXTRA, BV, PV, but on the background of the decreased figures of INTRA and TVF. In general, in group I originally, at the end of the third trimester of pregnancy there is a relative hypovolemia. At the time of the operative delivery on the background of the infusion therapy, the blood output from the depot and the increase of the blood flow redistribution there is an increase of EXTRA, BV, PV, TVF indicators. However, in the postoperative period, these figures are slightly lower. In group II, comprising the patients with gestosis, there is hypervolemia due to the extracellular and total body fluid on the background of the intracellular fluid deficiency.

During the c-section there is a slight hypovolemia caused by the blood loss and the fluid redistribution by sectors. In the postoperative period, the volume of extracellular fluid, the volume of blood and the volume of plasma increase due to the compensatory mechanisms of the body and the continuing gestosis.

Keywords: Anesthesiology, gestosis, extracellular liquid, hemodynamic.

INTRODUCTION

The gestosis belongs to the most complicated part of the obstetrical pathology. Over the past five years its occurrence has increased and varies between 14 and 21%. The violation of the vascular permeability plays the main role in the pathogenesis of gestosis and as a result of it, there is a paradoxical combination, that is hypovolemia against the background of large amounts of water in the interstitium, which leads to reducing the adequacy of hemodynamics. [1,2].

Let us have a closer look at the development mechanism of the water-sectoral violation, happening to the pregnant women with the gestosis.

The development basis of hyperhydration is the damage of the vascular endothelial cells, which perform a wide range of the most important functions, including keeping on the certain level the filling the organism water systems. It is the damage of vascular endothelial cells that is the reason for the capillary leak in the severe forms of gestosis.

The swelling of the interstitial space occurs when the fluid is filtered through the microcirculatory channel faster than removed by the lymphatic system. In this case the fluid transportation through the vascular endothelium into the interstitial space is determined by the values of hydrostatic and oncotic pressure on both sides of the capillary wall, and is described by Starling equation. [3,4,5].

The introduction of the noninvasive assessment methods to assess the central hemodynamics and water - sectoral balance into the clinical medicine raises the quality of understanding the woman in labour condition to a higher level and it allows the anesthesiologist to manage and monitor the violations of hemodynamic parameters and water balance.

The aim of the research is to assess the extent of the hemodynamic parameters and water balance violations during the surgical delivery under the intraspinal anesthesia of the obstetric patients with the accompanying gestosis.

THE MATERIAL AND METHODS OF THE RESEARCH

This research work is carried out in the Department of Anesthesiology, Intensive Care and Critical Care, Obstetrics and Gynecology in the Perinatal Centre of the National Centre of Medicine, Yakutsk, the Russian Federation. A prospective study in one hundred and forty women from 2010 to 2012 has been made.

All study patients are divided into two groups: Group I - control group, comprising 79 healthy patients; II group – the main group, including 61 patients with gestosis.

The main indications for the operative delivery in the first group were: uterine scar – 51 (64,5%), the untrained birth canals – 19 (24%), the premature rupture of membranes– 9 (11,3%).

The main indications for the operative delivery in the second group in most cases were the progression of gestosis with the ineffectiveness of conservative treatment – 52 (85,2%), the threatening [fetal asphyxia](#) - 5 (8,1%), preeclampsia – 4 (6,5%).

The methodology of the research was to give the dynamic assessment of the main vital systems functional state in which the maternal bodies were before surgery, at the key stages of the surgical delivery and in the postoperative period.

The research of the central hemodynamic parameters and water balance was performed non-invasively using the cardio-respiratory device KM-AP-01 “DIAMANT” (City of St. - Petersburg) in the integral reography and impedansometry mode.

The following hemodynamic parameters were measured: HR - heart rate (beats / min); MAP - mean arterial pressure (mm Hg); CI-cardiac index ($l * min^{-1} * m^{-2}$); SV-stroke volume (ml); SI-stroke index ($ml * m^{-2}$); CO- cardiac output ($l * min^{-1}$); TPVR- total peripheral vascular resistance ($dyne * s * cm^{-5}$); IGTV-integral gain tonicities vessels (standard units); RR reserve ratio (%). As indicators of water balance: TVF-the total volume of fluid - litres, EXTRA- extracellular fluid in litres, INTRA-intracellular fluid in litres, PV-plasma volume in litres, BV - blood volume in litres.

All patients had the following premedication: atropine 0.5 -0.7 mg, 2 mg of diphenhydramine, dormikum 2 to 3 mg intravenously. In group I infusion therapy was in the amount of 5 to 7 ml / kg, in Group II it was 3 - 5 ml / kg Stabizol solution.

The intraspinal anesthesia was performed in the left lateral position under the local anesthesia at the level of L4-L5 using needles with a diameter G 20 -27. For the anesthesia the isobaric bupivacaine 0.5% was used in a dose of 10 - 15 mg.

THE RESULTS

The research produced the following results.

As the above presented table shows, Group I is characterized by normal hemodynamic



performance of the central and peripheral hemodynamics in the preoperative period but after the intraspinal anesthesiathere is a slight increase in the heart rate an average of $93,9 \pm 15,67$ beats / min, against the background of the decline in the total peripheral resistance an average of $1114,67 \pm 409,66$ $\text{din} \cdot \text{s} \cdot \text{cm}^{-5}$. At the time of the fetus extraction, there is some increase in indicators such as TPVR, CO, SV, but at the end of the surgery they are normalized. In group II, comprising the obstetric patients with gestosis, attention is to be drawn to the increased level of the total peripheral vascular resistance at all stages of the research, which peaks at the time of the fetus extraction, as TPVR averagely increases $2725,07 \pm 1591,47$ $\text{din} \cdot \text{s} \cdot \text{cm}^{-5}$, CO $7,03 \pm 3,26$ $\text{l} \cdot \text{min}^{-1}$. This is due to the sharp changes in pre-and afterload on the left heart and circulatory centralization.

In the postoperative period, the obstetric women with the severe gestosis have the vasospasm that remains up to 2 - 3 days.

The baseline characteristics of the water balance in Group I - TVF, EXTRA, INTRA, PV, BV are all reduced, including the actual performance.

In group II there is an increase of all parameters of the water balance at the expense of the total volume of fluid and extracellular fluid, on the background of the lowered parameters of the intracellular fluid.

At the stage of the cesarean in group I the actual figures at all stages of the surgical intervention remain at the same level.

According to the indicators of deviations from the norm and % to a proper indicator the TVF, EXTRA, BV, PV figures have increased and the INTRA figures remain in short supply.

In group II, comprising the patients with gestosis, the TVF, INTRA figures have decreased on the background of the increased volume of blood and plasma.

In the postoperative period in group I the increased figures of EXTRA, BV, PV, INTRA TVF during the cesarean decrease. In group II there is also an increase of EXTRA, BV, PV, but on the background of the decreased figures of INTRA and TVF.

In general, in group I originally, at the end of the third trimester of pregnancy there is a relative hypovolemia.

At the time of the operative delivery on the background of the infusion therapy, the blood output from the depot and the increase of the blood flow redistribution there is an increase of EXTRA, BV, PV, TVF indicators. However, in the postoperative period, these figures are slightly lower.

In group II, comprising the patients with gestosis, there is hypervolemia due to the extracellular and total body fluid on the background of the intracellular fluid deficiency.

During the caesarean section there is a slight hypovolemia caused by the blood loss and the fluid redistribution by sectors.

In the postoperative period, the volume of extracellular fluid, the volume of blood and the volume of plasma increase due to the compensatory mechanisms of the body and the continuing gestosis.

THE RELATIONSHIP OF HEMODYNAMICS AND FLUID BALANCE

In Group I, on the background of the original hypovolemia the spinal anesthetic management leads to the development of hypotension, which requires correction by the volemic load.

At the stage of the cesarean, due to the infusion therapy and compensatory mechanisms of the body there is an increase in fluid more due to the volume of blood, the volume of plasma, the volume of total fluid and the extracellular fluid. At this stage, the hemodynamics is stable.

In the postoperative period, due to the return of algesia, the hemodynamics is characterized by an increase in the heart rate, cardiac output, cardiac index on the background of the fluid balance normalization. In Group II there is originally hypervolemia on the background of the increased figures in the peripheral vascular resistance, cardiac output, cardiac index. In this connection, the load on the heart is significant. The infusion therapy requires a precise control of the quality and quantity. After the spinal anesthetic management unlike group I there is no significant

reduction of the pressure and the peripheral vascular resistance. This is certainly connected to the total vasospasm due to gestosis. At the stage of the fetus extraction there is the highest load on the heart caused by the mechanical pressure and a sharp increase in the blood flow. There is also a significant increase in pre-and after load on the heart. It is at this stage when the stagnation of blood occurs in the lungs and it can cause the pulmonary edema. However, on the background of the spinal anesthesia, unlike the other types of anesthesia, such as the general and epidural anesthesia, the risk of the acute left ventricular failure is minimal because it is the subarachnoid block that causes the greatest decrease in total peripheral vascular resistance and reduces the preload on the heart. Thus it eliminates the blood stagnation development in the pulmonary circulation, even in patients with severe gestosis. As for the water balance due to the redistribution of blood and fluid as well as the blood loss there are reductions in the total volume of fluid and extracellular fluid, on the background of the blood volume and plasma volume increased figures. This can be explained by the inclusion of compensatory mechanisms of the body - the ejection of blood from the depot. . In the postoperative period the women in labour with gestosis still have the hyperkinetic circulatory disorder which in severe cases may last up to 3 - 5 days. The water - sectoral balance in the early postoperative period is characterized by the hypervolemia, which is reduced in parallel with the stabilization of the hemodynamics.

CONCLUSIONS:

1. In pregnant women without concomitant gestosis during cesarean section under ISA, the initial decrease in systemic vascular resistance is replaced by a 1.3-fold increase in the initial data at the higher SV and the CO and the CI (1.3 times) and CR (1.4 times). Water balance in this group of women is characterized by an increase in all liquid sectors (TVF, EXTRA, INRTA, PV, and BV. Shifts of hemodynamics and water balance are normalized during the first hours after the operation.
2. For pregnant women with gestosis increase in the initial TPVR and the CO is marked, which at the time of extraction of the fetus increases in 1.6 and 1.3 times, respectively. Water balance in this group of women is characterized by the initial increase in all liquid sectors, primarily due to its extracellular portion, the amount of which increases in 1.3 times. During cesarean section the liquid decrease in all water sectors is observed. These disorders remained the same for 3-4 days after surgery.
3. Perioperative assessment of central and peripheral hemodynamics and water- sectoral balance of the women in labor provides control and justification of infusion therapy. In severe forms of gestosis infusion therapy must be based on hemodynamic monitoring data.

THE PRACTICAL RECOMMENDATIONS

The evaluation of the initial central and peripheral hemodynamics of the water - sectoral balance is necessary for the proper selection and the volume of the infusion therapy and possible inotropic support.

The preoperative preparation of the pregnant women during the intraspinal anesthesia with the isobaric solution of the marcaine spinala is required. It must include the infusion therapy in 5 - 7 mL / kg starch solution, an average of 60 drops per minute.

The preoperative preparation of the pregnant women with gestosis also requires the infusion therapy but in the minimal dosages, 3 - 5 ml / kg starch solutions. The intraspinal anesthesia requires the precise control of the spinal block level.

The intraoperative assessment of the central sector of the hemodynamics and water sectoral balance is required because it gives an opportunity to identify the most dangerous and critical periods of surgery. Therefore, it helps to begin the necessary measures. Thus, the most dangerous period in Group I is conducting the intraspinal anesthesia because of a reduction in the vascular tone on the background of the relative hypovolemia. In both groups, the critical period is the time of the



fetus extraction. This is due to the mechanical pressure made by the obstetricians and the pathological total vasospasm which women in labour with gestosis have. This period requires the correction of the hemodynamics parameters, as there is a high risk of the pulmonary edema. This correction can be done with the use of such medications as the calcium channel blockers (veropamil) and others, sedation (dormikum, relanium) as well as the oxygen supplementation via a nasal catheter. In the postoperative period, the women in labour with gestosis still have the high indices of the central and peripheral hemodynamics and the state of the hypervolemia, and therefore the treatment of gestosis continues till the above figures are stabilized.

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Table 1
Characteristics of the study groups

Indicators	I group	II group
Age	29,47±4,45	32,3±5,63
Weight	70,11±8	79,3±9,85
Growth	163,71±5,61	165±7,02
The period of gestation	39,23±0,95	36,85±1,2
ASA	I, II	II, III

Table 2
Dynamics of hemodynamic parameters during research

The group	Before the operation	After SA	Removing the fetus operations	After the End of Operations	End of Operations
Heart rate (beats/min)					
I group	81,1±11,3	93,9±15,7	86,6±23,9	92,0±26,2	71,5±12,6
II group	81,1±11,3	86,8±17,1	87,3±20,4	91,1±22,2	71,1±12,6
Blood pressure mm Hg					
I group	76,3±8,6	61,3±14,0	87,5±6,8	84,5±5,9	83,1±7,8
II group	89,5±26,0	110,8±13,2	101,6±18,6	100,2±19,5	103,2±11,8
cardiac index ($l \cdot m^{-1} \cdot m^{-2}$)					
I group	3,9±1,1	4,7±1,3*	4,6±1,8*	5,1±1,5*	4,0±1,3
II group	3,8±1,3	4,1±2,6	4,2±1,9	4,2±1,9	3,4±1,1
stroke volume of blood (ml)					



I group	62,3±16,0	68,3±17,5	84,8±19,0	80,2±19,8	74,9±17,3
II group	69,3±14,5	69,6±22,8	76,3±29,1	72,5±26,3	73,1±20,1
Stroke index(ml*m⁻²)					
I group	48,9±14,8	44,8±10,0	56,4±19,2	56,0±15,7	54,8±12,8
II group	47,5±13,3	45,8±20,2	49,8±25,9	43,4±12,2	48,8±13,1
the minute volume of circulatory (l*min⁻¹)					
I group	5,1±1,2	5,6±1,7	6,9±2,1	7,5±2,4	5,3±1,3
II group	5,5±1,2	6,0±2,1	7,0±3,3	6,3±2,7	5,8±1,7
total peripheral resistance of blood (din*s*cm⁻⁵)					
I group	1247,9±436,4	1114,7±409,7	1413,5±682,9	1100,1±483,1	1225,0±348,8
II group	1687,6±839,8	2568,5±1054,7	2725,0±1591,4	1888,7±982,9	3307,0±1170,0
the coefficient of the integral tonical vessels (conventional units)					
I group	71,5±5,2	68,1±12,2	71,5±8,2	69,8±5,9	75,2±10,3
II group	76,6±5,56	75,0±5,6	71,9±7,8	69,9±5,5	71,6±3,5
The ratio of allowance (%)					
I group	104,4±40,1	124,3±43,2	152,0±49,0	147,3±51,0	122,5±28,4
II group	124,9±22,6	131,6±33,9	136,8±47,3	139,2±48,0	130,7±35,8

Note: * - indicator significantly differ from the original (p< 0,05).

** - indicator is significantly different from the values I group (p <0,05).

Table 3

The dynamics of the water balance on the stages of the research

The group	Before the operation	After SA	Removing the fetus operations	After the End of Operations	End of Operations
Total body fluids (L)					
I group	27,48±3,01	30,92±3,05	30,91±3,26	30,61±3,05	28,44±3,69
II group	30,68±4,53	29,26±5,43	29,17±5,50	29,17±5,48	30,93±4,27
Extra cellular fluid (L)					
I group	9,41±0,82	10,60±1,32	10,65±1,61	10,24±1,74	9,25±2,60
II group	10,36±1,72	9,78±2,21	9,43±1,8	7,85±2,08	10,41±1,6



Intra cellular fluid (L)					
I group	18,98±2,15	20,13±1,96	20,53±2,63	20,27±2,21	18,72±2,40
II group	20,09±2,86	19,65±4,09	19,87±4,02	19,8±3,91	20,54±3,0
the volume of plasma (L)					
I group	2,12±0,18	2,36±0,29	2,34±0,37	2,36±0,38	2,23±0,42
II group	2,39±0,43	2,26±0,51	2,18±0,42	2,14±0,42	1,82±0,87
the volume of blood (L)					
I group	3,39±0,53	4,02±0,53	3,98±0,63	4,0±0,68	3,96±0,61
II group	3,97±0,63	3,72±0,86	3,59±0,68	3,57±0,7	3,89±0,67

Note: * - indicator significantly differ from the original ($p < 0,05$).

** - indicator is significantly different from the values 1 group ($p < 0,05$).

THE PREVALENCE OF THE METABOLIC SYNDROME IN THE ELDERLY POPULATION IN YAKUTIA

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Aim: to study the prevalence of the metabolic syndrome among the elderly and senile population of Yakutsk (including long-lived people), using different definitions of the metabolic syndrome.

Material and methods. Metabolic syndrome prevalence was studied based on the representative sample of 485 individuals (210 males and 275 females), residing in Yakutsk.

Results. The prevalence of MS among the population of Yakutsk aged 60 and over was 21.4% by NCEP ATP III definition (14.3% in aboriginals, 28.2% in non-aboriginals), 22.1% by AACE definition (13.9% and 29.8%, respectfully), 31.5% by AHA definition (22.8% and 39.9%, respectfully), 35.3% by IDF definition (25.7% and 44.4%, respectfully), 36.5% by JIS definition (28.3% and 44.4%, respectfully), and 51.5% by RSC definition (43% and 59.7%, respectfully). By all definitions, MS prevalence was 1.5 times to twice lower in aboriginal than in non-aboriginal population. Analysis of the MS prevalence (as defined by NCEP-ATP III definition) in the population of Yakutia aged 60 and over showed that alternate manifestations of MS were diagnosed more often in the presence of fasting hyperglycemia or type 2 DM. These manifestations occurred 1.5 to 2 times more often in aboriginal than in non-aboriginal population.

Conclusion. The prevalence of MS among the population of Yakutsk aged 60 and over was 21.4% by NCEP ATP III definition (14.3% in aboriginals, 28.2% in non-aboriginals), 22.1% by AACE definition (13.9% and 29.8%, respectfully), 31.5% by AHA definition (22.8% and 39.9%, respectfully), 35.3% by IDF definition (25.7% and 44.4%, respectfully), 36.5% by JIS definition (28.3% and 44.4%, respectfully), and 51.5% by RSC definition (43% and 59.7%, respectfully).

By all definitions, MS prevalence was 1.5 times to twice lower in aboriginal than in non-aboriginal population. Analysis of the MS prevalence (as defined by NCEP-ATP III definition) in the population of Yakutia aged 60 and over showed that alternate manifestations of MS were diagnosed more often in the presence of fasting hyperglycemia or type 2 DM. These manifestations occurred 1.5 to 2 times more often in aboriginal than in non-aboriginal population.

Keywords: epidemiology, metabolic syndrome, abdominal obesity.



INTRODUCTION:

Metabolic syndrome (MS) is a considerably prevalent disease in many countries and populations, and the prevalence is tending to grow. Identification of the metabolic syndrome as a discrete entity is of large clinical importance, as far as it is a reversible disease on the one hand, and predecessor to such diseases, as type 2 diabetes mellitus (DM) and atherosclerosis, on the other hand. The prevalence of MS in different populations varies. During the late years, ethnic and regional patterns in the development of MS have been rigorously studied. Hence the study of epidemiological patterns of MS in the elderly, senile, and long-lived population of the city of Yakutsk, and the relationships between those patterns and the ethnic factor, is an important basic & applied research task.

AIM: to study the prevalence of the metabolic syndrome based on different definitions of MS, among the elderly and senile population of Yakutsk, including long-lived people.

MATERIAL AND METHODS:

This paper presents data from the project “Epidemiology and risk-factors for some of the chronic non-infectious diseases in the elderly and senile (including long-lived people) in Yakutsk” conducted by the Yakutsk Scientific Center SB RAMS (Director: M.I. Tomskii, Dr.Med.Sc. (MD); Principal investigator: O.V. Tatarinova). The study was conducted under methodological guidance of the Institute of Internal Medicine SB RAMS, Novosibirsk (Supervisor: Yu.P. Nikitin, member of the Russian Academy of Medical Sciences) (government contract no. 274). The design of this work is a cross-sectional population study.

We studied the population of Yakutsk aged 60 and over. As of January 1, 2005, the number of people aged 60 and over was 18 320 in Yakutsk. For the purposes of population study, we made representative sample, based on Yakutsk electoral lists, using computer random number generation. The study sample made 7.6% of the total population of Yakutsk. The size of the sample for the study of MS was calculated using M/Blend formula (2000) and included 491 persons (95% CI \pm 4% around 30% estimated prevalence). 485 respondents were examined. The study was approved by the Ethical Committee of the Yakutsk Scientific Center SB RAMS. All patients gave informed consents for examinations. All the subjects were grouped by sex (males, females), age (60-69; 70-79; 80-89; 90 and over), ethnicity (aboriginal: Yakuts; non-aboriginal: Russians, Ukrainians, Byelorussians, Poles, and Germans).

We assessed social and demographic data, measured blood pressure, performed anthropometry (body height, body weight, waist circumference (WC)), fasting biochemical tests, more specifically, triglycerides (TG) levels, high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), and blood glucose levels.

Fasting blood was collected by venepuncture using vacutainers. Blood analyses were performed in the Biochemistry Laboratory of the Institute of Internal Medicine SB RAMS (Head of the laboratory: Professor Yu.I. Ragino). Total cholesterol (TC), TG, HDL-C, and blood glucose levels were determined using conventional commercial 'Biocon' enzyme assays (Germany) and 'Lab system' analyzers (Finland). LDL-C concentration was calculated using the formula of W.T. Friedewald (provided that TG level was below 4.5 mmol/L). Serum glucose levels were recalculated to plasma glucose values using the formula proposed by the European Society of Cardiology (2007): $\text{plasma glucose (mmol/L)} = -0.137 + 1.047 \times \text{serum glucose (mmol/L)}$.

Using the definitions of RSC (2009), NCEP ATP III (2001), and AACE (2003), type 1 fasting hyperglycemia was established if plasma glucose level was ≥ 6.1 mmol/L. Using the definitions of IDF (2005), AHA/ NHLBI (2005), and JIS (2009), type 2 fasting hyperglycemia was determined if plasma glucose level was ≥ 5.6 mmol/L. DM was established if plasma glucose value was ≥ 7.0 mmol/L (WHO, 1999).

WC values corresponded to type 1 abdominal obesity (AO_1 : WC ≥ 102 cm. in males and ≥ 88 cm. in females), type 2 AO (AO_2 : WC ≥ 94 cm. and ≥ 80 cm., respectfully), or type 3 AO (AO_3 : WC ≥ 94 cm. in Caucasian males, ≥ 90 cm. in Asian males, and ≥ 80 cm. in females).

The prevalence of MS was studied using the recommendations of NCEP ATP III (2001) [9], RSC (2009), IDF (2005) [11], AHA/NHLBI (2005) [6], AACE (2003) [11], JIS (2009) [11].

Statistical analysis was done using two-sample methods (Mann-Whitney U-test, paired Student t-test), analysis of contingency tables (Fisher's exact test), correlation analysis (Spearman correlation coefficient), and multinomial linear regression. Sample normality was tested using Kolmogorov-Smirnov test. The results were considered significant if $p < 0.05$. In case of incomparability of the data the values were standardized for one or two characteristics. SPSS (ver. 11.5) software was used.

RESULTS AND DISCUSSION:

The prevalence of MS in the residents of Yakutsk aged ≥ 60 was high, by all definitions used, and varied from 21.4% to 51.5%. Using NCEP ATP III definition, MS prevalence was 21.4%, 14.3% in aboriginal patients and twice higher (28.2%) in non-aboriginal patients (Table 1). In aboriginals, the prevalence of MS 9.8% in males and 19.1% in females ($p_{M-F}=0.04$), in non-aboriginals, 21.6% and 31.9%, respectfully ($p_{M-F}=0.09$). MS prevalence in aboriginal males and females was reliably lower than in non-aboriginals ($p_{A-NA}=0.02$ in males, $p_{A-NA}=0.02$ in females).

Based on AACE definition of MS, which unlike the above mentioned definitions assigns the priority role to AO, the prevalence of MS in the population has increased to 22.1% (Table 1). In aboriginals it was lower than in non-aboriginals (13.9% and 29.8%, respectfully; $p_{A-NA}=0.001$). In aboriginal males and females the



rates were 5.7% and 22.6%, respectfully ($p_{M-F}=0.002$), while in non-aboriginals 17% and 36.9%, respectfully ($p_{M-F}=0.001$). Ethnic differences between males and females were the same as with NCEP ATP III definitions.

When AHA/NHLBI criteria for MS were used (these criteria differ from the definitions of NCEP ATP III and AACE by blood glucose level (≥ 5.6 mmol/L)), the prevalence of MS was 31.5% (Table 1), 22.8% in aboriginals and 39.9% in non-aboriginals ($p_{A-NA}=0.001$). In aboriginal population, gender difference in the MS prevalence was statistically insignificant: 18% and 27.8% ($p_{M-F}=0.07$). Gender difference in non-aboriginal population was large: 30.7% in males and 45.0% in females ($p_{M-F}=0.03$). Both in males in females, the ethnic differences in the MS prevalence have remained.

Based on IDF definition, which is more strict in all aspects, the prevalence of MS was 35.3% (Table 1), 25.7% in aboriginals and 44.4% in non-aboriginals ($p_{A-NA}=0.0001$). MS prevalence rates in aboriginal males and females were 17.2% and 34.8%, respectfully ($p_{M-F}=0.002$), the same rates for non-aboriginals were 35.2% and 49.4%, respectfully ($p_{M-F}=0.03$). Prevalence of MS, compared between males and females, was lower among aboriginals than in non-aboriginals.

The prevalence of MS by JIS definition, which takes into account ethnic factor (WC ≥ 90 sm. for Asian males), was 36.5%, 28.3% in aboriginals and 44.4% in non-aboriginals (Table 1). Although MS had slightly higher prevalence in aboriginal males, the rest of statistical differences were the same as with the IDF definition.

RSC definition takes into consideration glucose level (>6.1 mmol/L), WC (94/80 sm.) and, unlike all the above mentioned definitions, LDL-C values. Based on RSC definition, the total prevalence of MS was 51.5% (Table 1), respectfully 43.0% and 59.7% in aboriginals and in non-aboriginals ($p=0.0002$). The prevalence rates were 28.7% and 58.3% in aboriginal males and females, respectfully ($p=0.052$), and 48.9% and 65.6% for non-aboriginal males and females ($p=0.01$). Ethnic differences remained only among males, while in females ethnicity-specific differences were statistically insignificant ($p_{A-NA}=0.21$).

All in all, the lowest MS prevalence was determined based on NCEP ATP III definition (21.4%) and the highest prevalence (51.5%) – based on RSC definition. By all definitions, MS was less prevalent in aboriginal than in non-aboriginal population. The higher prevalence of MS by the RSC definition can be explained by that it incorporates LDL-C values. This could explain also the absence of difference in the MS prevalence between aboriginal and non-aboriginal females.

The prevalence of MS by NCEP ATP III (2001) definition in patients with fasting hyperglycemia (defined as ≥ 5.6 mmol/L) was 43.3% (31.7% in aboriginals; 51.1% in non-aboriginals, $p_{A-NA}=0.019$), and 67.6% if fasting hyperglycemia was defined as ≥ 7.0 mmol/L (40% in aboriginals and 79.2% in non-aboriginals, $p_{A-NA}=0.033$).

By literature data, 8814 individuals aged >20 were examined during the NHANES project (2002), to study the prevalence of MS in the USA, using NCEP-ATP III (2001) definition [9]. The prevalence of MS was 24% in females and 22% in males. In another project (ENSANUT, 2006), 45 446 adults of Mexican origin aged >20 were examined, to study the prevalence of MS and its components, using NCEP ATP III (2001), AHA/NHLBI (2003), and IDF(2005) definitions [12].



The prevalence of MS (including 3 to 5 components) by NCEP ATP III (2001) and AHA/NHLBI (2003) definitions exceeded 40%. By NCEP ATP III (2001) definition, MS was found in 36.8% (95% DI 34.6-39.0) of adult population (42.2% in females and 30.3% in males) [12]. In 2006, the DECODE study presented data on comparative prevalence of MS in 20 European countries, using various MS definitions [14]. The prevalence of MS among 5554 females and 4715 males aged 30 to 80 was 23% in females and 26% in males.

The prevalence of MS in Russia judged by the data from strong epidemiological studies is poorly studied. Studies in the city of Cheboksary in 2007-2008 [1] were conducted by practitioners, but were based on cluster samples that included younger age-groups; this hinders the comparison with our results.

In Yakutia, the prevalence of MS among the aboriginal population was studied based on the results of cross-sectional epidemiologic sampling study among aboriginal non-working urban and rural populations of the Sakha Republic (Yakutia). Total of 1055 representatives of the aboriginal population (Yakuts, Evens, Evenki) aged 20-69 were studied. In the age group of 60-69, the prevalence of MS defined by IDF (2005) definition was 13.7%. [2]. Unfortunately, we could not compare our results with the other authors' data on Yakutia, as the available publications [2,4] had data on MS prevalence (as defined by IDF (2005) definition) only for the ages of 20 to 69 (Osakovskii V.L.) or had data from hospital study, rather than population study (Romanova A.N.).

We attempted to compare the results from Yakutia with the same data from Novosibirsk [3], but were able to do the comparison only for the age range of 60 to 69 and using only 4 definitions of MS (NCEP ATP III (2001), AHA/NHLBI (2003), JIS (2009), RSC). In the table 2, the data for Yakutia are presented for urban population regardless of ethnicity. MS prevalence in Novosibirsk population was higher, based on 3 above mentioned definitions, except RSC definition. This difference was true for both genders and for females. In males, the prevalence of MS in both cities was comparable (Table 2).

CONCLUSIONS:

1. The prevalence of MS among the population of Yakutsk aged 60 and over was 21.4% by NCEP ATP III definition (14.3% in aboriginals, 28.2% in non-aboriginals), 22.1% by AACE definition (13.9% and 29.8%, respectfully), 31.5% by AHA definition (22.8% and 39.9%, respectfully), 35.3% by IDF definition (25.7% and 44.4%, respectfully), 36.5% by JIS definition (28.3% and 44.4%, respectfully), and 51.5% by RSC definition (43% and 59.7%, respectfully).
2. By all definitions, MS prevalence was 1.5 times to twice lower in aboriginal than in non-aboriginal population.
3. Analysis of the MS prevalence (as defined by NCEP-ATP III definition) in the population of Yakutia aged 60 and over showed that alternate manifestations of MS were diagnosed more often in the presence of fasting hyperglycemia or type 2 DM. These manifestations occurred 1.5 to 2 times more often in aboriginal than in non-aboriginal population.

Table 1.

Prevalence of MS in the age of 60 and over in the population of Yakutsk

	Population (485)		Aboriginal (237)		Non-aboriginal (248)		p _{A-NA}
	%	95%CI	%	95%CI	%	95%CI	
NCEP ATP III (2001)	21.4	17.9- 25.4	14.3	10.3- 19.6	28.2	22.8- 34.3	0.0002
AACE (2003)	22.1	18.5- 26.0	13.9	9.9-19.1	29.8	24.3- 36.0	0.0001
AHA (2003)	31.5	27.5- 35.9	22.8	17.7- 28.7	39.9	33.9- 46.3	0.0001
IDF (2005)	35.3	31.1- 39.7	25.7	20.4- 31.8	44.4	38.2- 50.7	0.0001
JIS (2009)	36.5	32.3- 40.9	28.3	22.8- 34.5	44.4	38.2- 50.7	0.0002
RSC (2009)	51.5	47.1- 56.0	43.0	36.8- 49.5	59.7	53.3- 65.7	0.0002

Table 2.
Prevalence of MS among the population of Yakutsk and Novosibirsk aged 60 to 69

	MS definitions	Yakutia				Novosibirsk				p _{Y-N}
		N	n	%	95%CI	N	n	%	95%CI	
Males and females	NCEP ATP III (2001)	150	39	26.0	19.3-33.9	3822	1308	34.2	32.7-35.7	0.037
	AHA (2003)	150	54	36.0	28.5-44.2	3827	1824	47.7	46.1-49.2	0.005
	JIS (2009)	150	62	41.3	33.5-49.6	3826	1998	52.2	50.6-53.8	0.009
	RSC (2009)	150	91	60.7	52.4-68.4	3838	2326	60.6	59.0-62.1	0.988
Males	NCEP ATP III (2001)	64	14	21.9	12.4-34.5	1767	414	23.4	21.5-25.5	0.772
	AHA (2003)	64	20	31.3	20.2-44.4	1769	599	33.9	31.7-36.1	0.664
	JIS (2009)	64	25	39.1	27.1-52.3	1764	685	38.8	36.6-41.1	0.970
	RSC (2009)	64	32	50.0	37.2-62.8	1775	774	43.6	41.3-45.9	0.311
Females	NCEP ATP III	86	25	29.1	19.9-40.1	2055	894	43.5	41.4-45.7	0.008

	(2001)									
	AHA (2003)	86	34	39.5	29.4- 50.7	2058	1225	59.5	39.6- 43.2	0.0002
	JIS (2009)	86	37	43.0	32.5- 54.2	2062	1313	63.7	61.6- 65.7	0.0001
	RSC (2009)	86	59	68.6	57.5- 78.1	2063	1552	75.2	73.3- 77.1	0.165

Note: N – number of subjects; n – number of individuals with MS

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PREVALENCE OF BRONCHIAL OBSTRUCTION SYNDROME IN THE OPEN POPULATION OF NOVOSIBIRSK

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ABSTRACT

Bronchial obstruction syndrome (BOS) is the most common manifestation of chronic obstructive pulmonary disease and asthma. Spirometry is a necessary and most objective method of assessing chronic bronchial obstruction.

Purpose of study: To study the prevalence of BOS in the open population of Novosibirsk.

Materials and method: We used population-based cross-sectional study materials obtained in the framework of the project <HAPIEE> in 2002-2005. ("The determinants of cardiovascular disease in Eastern Europe: a cohort study"). At 73.2% (6875) from a sample of persons aged 45-69 studied lung function: a three-fold measurement of FEV_1 , FVC. Respondents were divided into three age groups: 45-54 years, 55-64 years, 65-69 years. Conducted individual calculation of indices FEV_1 , FEV_1 / FVC , without defining test for reversibility of airflow limitation to identify those with $FEV_1 / FVC < 70\%$ and $FEV_1 < 80\%$.

Results: Reduced $FEV_1 / FVC < 70\%$ in 8.26% found (568). At 2.5 times more likely to decline in $FEV_1 / FVC < 70\%$ found among men - 12.06% (389) than among women - 4.91% (179) ($p = 0.0001$). $FEV_1 / FVC (\geq 70\%)$ of normal $FEV_1 (\geq 80\%)$ reported in 87.03% (2469) of men and 88.39% (3067) of women; moderate disturbances in FEV_1 (50-79%) - at 12.41% (352) of men and 11.15% (387) of the women, severe disturbances in FEV_1 (30-49%) - at 0.53% (15) males and 0.43% (15) women, with very severe BOS ($FEV_1 < 30\%$) - at 0.04% (1) in men and 0.03% (1) of the women. There were no significant gender differences in the degree of disturbance of FEV_1 in $FEV_1 / FVC \geq 70\%$ were found ($p > 0.05$). BOS detected in the following rates: 1 - $FEV_1 / FVC < 70\%$; 2 - $FEV_1 < 80\%$, $FEV_1 / FVC \geq 70\%$. In the total sample of BOS was detected in 19.48% of the 6875 patients (in the group of 45-54 years - at 14.80%, 55-64 years - at 20.8%, 65-69 years - at 25.49%). BOS was detected in 23.47% of all surveyed 3,226 men and 15.95% of the 3649 women ($p < 0.001$). Among men aged 45-54 years the prevalence of BOS was 17.33%, 55-64 years - 24.79%, 65-69 years - 32.05%. The women in the age group of 45-54 years BOS was found in 12.63% of cases, 55-64 years - 17.26%, 65-69 years - 19.69%.

Conclusions: The results showed a fairly high prevalence of BOS in a large industrial center of Western Siberia. In the total sample of BOS was diagnosed in 19.48% of the 6875 patients irrespective of gender (45-54 years - 14.80%, 55-64 years - 20.85%, 65-69 years - 25.49%). Among men, the airflow obstruction was detected in 23.47% of cases (of 3226 patients), among women (3649 patients) - in 15.95%.

Keywords: bronchial obstruction, forced expiratory volume in 1 second, forced vital capacity.

INTRODUCTION

Bronchial obstruction syndrome (BOS) - a condition felt by the patient as shortness of breath. In addition to subjective symptoms, bronchial obstruction is assessed by spirometry study. With a decrease in forced expiratory volume in 1 second (FEV_1) of less than 80% of the predicted value and the ratio FEV_1 / FVC (forced vital capacity) of less than 70% stated bronchial obstruction. Reduced $FEV_1 / FVC < 70\%$ - this is the earliest manifestation of BOS, even with high FEV_1 [8]. Bronchial obstruction syndrome may be a manifestation of many diseases. The most common cause of BOS is chronic obstructive pulmonary disease and asthma [1].

Spirometry is essential and the most objective method of assessing chronic obstruction due to possible lack of symptoms, particularly at early stages [2, 3, 4, 7].

In the literature, there are few publications on the prevalence of BOS, different design.

In Western Siberia, researches on the prevalence of BOS were not conducted. In the early 90's. Screening was carried out 3734 working in industry one of the districts of Novosibirsk, aged 25-64

years. According to this study, the prevalence of chronic nonspecific pulmonary diseases was 17.9% (males - 20.6% and among women - 16.5%). In the youngest age group (25-34 years), chronic nonspecific pulmonary diseases occurred with equal frequency in men and women - 12.9% and 13.4%, respectively. With age, the prevalence of chronic nonspecific pulmonary diseases was significantly increased: for men in the oldest age group, reaching 31.9%, the highest percentage of women was in the age group 45-54 years - 19.1% [6].

Therefore, the problem of studying the BOS in the open population of Novosibirsk is relevant.

Purpose: To study the prevalence of BOS in the open population of Novosibirsk.

MATERIALS AND METHOD

We used population-based cross-sectional study materials obtained in the framework of the project <HAPIEE> in 2002-2005. ("The determinants of cardiovascular disease in Eastern Europe: a cohort study"). The samples were formed on the basis of the electoral lists using a table of random numbers. Sample size was determined by the protocol program. At 73.2% (6875) from a sample of persons aged 45-69 studied lung function: a three-fold measurement of FEV₁, FVC. Respondents were divided into three age groups: 45-54 years, 55-64 years, and 65-69 years.

Spirometry was performed on the device Micro Plus (MicroMedical, UK). Spirometry results were recorded and processed by a computer diagnostic program Spida 4. Individual calculation of indices FEV₁, FEV₁ / FVC, without defining test for reversibility of airflow limitation to identify those with FEV₁ / FVC < 70% and FEV₁ < 80% was conducted. Calculation of indices (FEV₁ / predicted FEV₁, FEV₁ / FVC) was carried out using comparative equations predicted values obtained in the course of the third national survey of the United States (Third National Health and Nutrition Examination Survey - NHANES III) [5].

Factual material was processed on a personal computer program SPSS 17 c using the methods of descriptive statistics (frequencies, percentages and percentage distribution). The critical level of statistical significance when testing hypotheses assumed to be 0.05.

RESULTS AND DISCUSSION A total of 6875 respondents aged 45-69 years. Of these, 3226 were men (46.9%, mean age $57.8 \pm 6,82$); 3649 women (53.1%, mean age $57.6 \pm 6,96$).

(Figure 1)

Figure 1 shows that the response in the age group 45-54 years was 38.7% (males - 38.1% and among women - 39.3%) in the age group 55-64 years - 40.4% (among men - 41.0%, among women - 39.8 %) in the age group 65-69 years - 20.9% (male - 20.9%, among women - 20.9%).

In the studied sample is analyzed, the earliest manifestation of BOS: FEV₁ / FVC < 70%. Reduced FEV₁ / FVC < 70% in 8.26% found (568). At 2.5 times more likely to decline in FEV₁ / FVC < 70% found among men - 12.06% (389) than among women - 4.91% (179) ($p = 0.0001$).

(Table 1)

According to the recommendations «GOLD» and universally accepted classification of all surveyed were divided into four groups depending on the severity of disturbances of FEV₁ [4].

(Figure 2)

Figure 2 shows that 82.28% (5657) patients had no disturbances of BOS (FEV₁ \geq 80%), with 15.36% (1056) found moderate disturbances in FEV₁ (50-79%) at 2.12% (146) reported severe disturbances in FEV₁ (30-49%), with very severe BOS revealed only 0.23% (16) (FEV₁ < 30%).

Studied the distribution respondents by the degree of disturbance of FEV₁ in FEV₁ / FVC \geq 70% and FEV₁ / FVC < 70%.

(Table 2).

From Table 2 it follows that for FEV₁ / FVC (\geq 70%) of normal FEV₁ (\geq 80%) reported in 87.03% (2469) of men and 88.39% (3067) of women; moderate disturbances in FEV₁ (50-79%) - at 12.41% (352) of men and 11.15% (387) of the women, severe disturbances in FEV₁ (30-49%) - at 0.53% (15) males and 0.43% (15) women, with very severe BOS (FEV₁ < 30%) - at 0.04% (1) in men and 0.03% (1) of the women. There were no significant gender differences in the degree of disturbance of FEV₁ in FEV₁ / FVC \geq 70% were found ($p > 0,05$).

For $FEV_1 / FVC (< 70\%)$ normal $FEV_1 (\geq 80\%)$ were reported in 23.91% (93) of the male and 15.64% (28) women ($p < 0,05$); moderate disturbances $FEV_1 (50 - 79\%)$ - at 55.01% (214) of men and 57.54% (103) of the women, severe disturbances in $FEV_1 (30 - 49\%)$ - at 19.02% (74) males and 23.46% (42) women ($p < 0,001$); very severe BOS ($FEV_1 < 30\%$) - at 2.06% (8) males and 3.35% (6) of the women. If $FEV_1 / FVC (< 70\%)$, the most frequently reported moderate disturbances in $FEV_1 (50 - 79\%)$.

Table 2 shows that 21.30% of respondents (121 of 568) had hidden disorders BOS ($FEV_1 / FVC < 70\%$, $FEV_1 \geq 80\%$), including at 23.91% (93 of 389) of men and 15.64% (28 of 179) women.

BOS detected in the following rates: 1 - $FEV_1 / FVC < 70\%$; 2 - $FEV_1 < 80\%$, $FEV_1 / FVC \geq 70\%$.

(Table 3)

Table 3 shows that in the total sample of BOS was detected in 19.48% of the 6875 patients (in the group of 45-54 years - at 14.80%, 55-64 years - at 20.8%, 65-69 years - at 25.49%). BOS was detected in 23.47% of all surveyed 3,226 men and 15.95% of the 3649 women ($p < 0.001$). Among men aged 45-54 years the prevalence of BOS was 17.33%, 55-64 years - 24.79%, 65-69 years - 32.05%. The women in the age group of 45-54 years BOS was found in 12.63% of cases, 55-64 years - 17.26%, 65-69 years - 19.69%.

CONCLUSIONS

Thus, for the first time we studied the prevalence of BOS in a large industrial center of Western Siberia - Novosibirsk. The results showed a high prevalence of BOS in the population of Novosibirsk. In the total sample of BOS was detected in 19.48% of the 6875 surveyed, regardless of sex (45-54 years old - at 14.80%, 55-64 years - at 20.85%, 65-69 years - at 25.49%). Among men, the BOS was detected in 1.5 times more often than in women.

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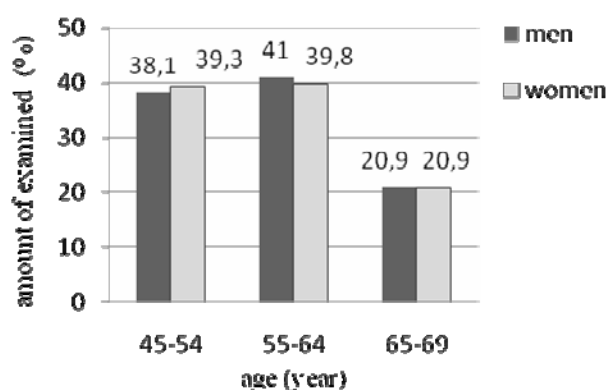


Figure 1. Spreading surveyed by sex and age

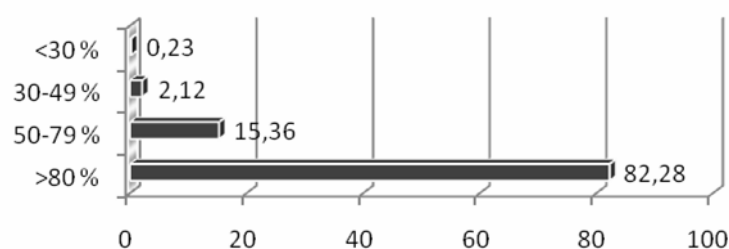


Figure 2. Spreading of surveyed on degree of disturbance FEV₁

Table 1

Frequency of detection of FEV₁ / FVC < 70%

Sex	All surveyed		FEV ₁ / FVC < 70 %	
	Abs.	%	Abs.	%
Men	3226	46,9	389	12,06
Women	3649	53,1	179	4,91
Total	6875	100	568	8,26

Table 2

Distribution of respondents according to the degree of disturbances of FEV₁ and FEV₁ / FVC

OΦB ₁ , %	FEV ₁ / FVC ≥ 70%			FEV ₁ / FVC < 70%		
	Total, n (%)	Men, n (%)	Women, n (%)	Total, n (%)	Men, n (%)	Women, n (%)
≥80	5536 (87,78)	2469 (87,03)	3067 (88,39)	121 (21,30)	93 (23,91)	28 (15,64*)
50-79	739 (11,72)	352 (12,41)	387 (11,15)	317 (55,81)	214 (55,01)	103 (57,54)
30-49	30 (0,48)	15 (0,53)	15 (0,43)	116 (20,42)	74 (19,02)	42 (23,46***)
<30	2 (0,03)	1 (0,04)	1 (0,03)	14 (2,46)	8 (2,06)	6 (3,35)
Total	6307 (100,0)	2837 (100,0)	3470 (100,0)	568 (100,0)	389 (100,0)	179 (100,0)

Note: * - $p < 0,05$, *** - $p < 0,001$ compared with men at corresponding degrees of disturbances of FEV₁.

Table 3

Prevalence of detection AO

Age, year	Total sample		Men		Women	
	Total, n	AO n (%)	Total, n	AO n (%)	Total, n	AO n (%)
45-54	2662	394 (14,80)	1229	213 (17,33)	1433	181 (12,63***)

55-64	2777	579 (20,85)	1323	328 (24,79)	1454	251 (17,26***)
65-69	1436	366 (25,49)	674	216 (32,05)	762	150 (19,69***)
Total	6875	1339 (19,48)	3226	757 (23,47)	3649	582 (15,95***)

Note: *** - $p < 0,001$ when compared to men of the respective age groups.



THE LIFE QUALITY OF THE NORTH-EASTERN FEDERAL UNIVERSITY STUDENTS

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ABSTRACT

The aim of the study was to investigate the life quality of North-Eastern Federal University (NEFU) students during the 1st year.

Generic questionnaire SF-36 was used as a special questionnaire to assess the life quality in patients with chronic obstructive pulmonary disease.

649 1st year students at the age from 15 to 30 of the NEFU from a representative group were involved in study.

Indicator scales of the student questionnaire ranged widely both boys and girls. Subjective evaluation of their daily PF was significantly higher in boys than in girls ($p < 0,000$). RP and BP were evaluated by young people was significantly worse than girls ($p < 0,000$). VT and MH subjectively assessed by men were better than in female students ($p < 0,000$). RE were worse in young people than in young women ($p < 0,000$).

Statistical difference was not found on the scale of GH and SF of SF-36 questionnaire. The population of the Republic of Sakha (Yakutia) showed better results in a "Role Physical" scale than the 1st year students of the NEFU ($p < 0,000$). Indicators of a "General Health" scale were better in the NEFU students ($p < 0,01$). Statistical differences were found in other scales of the questionnaire.

Boys of NEFU rated their physical activity and mental health higher ($p < 0,01$) than men, but the role of physical ($p < 0,000$) and emotional limitations ($p < 0,02$) in the life of young people played a larger role than in men. Statistical differences were found in the other SF-36 scales. The influence of the physical constraint in women's life were less appreciated than in freshman girls ($p < 0,000$). Statistical differences were found in the other scales of the SF-36 questionnaire.

Thus, the subjective opinion of a man effects on the QOL of students, his perception of the world, which vary in terms of hypokinesia, information overload, lack of time, mental stress.

Keywords: quality of life, students, SF-36.

Introduction

The concept of "quality of life" (QOL) has entered into medicine only 40 years ago. Initially, the concept of QOL applied to sociology. Despite of a sufficient number of works of QOL in the literature, there isn't any uniform definition. For example, some researchers define QOL as satisfaction of living conditions, the external state, work, school, home furnishings and many other social components [11], the second – a person's ability to function in society according to their situation and get the satisfaction of life [3, 10], others – the difference between the expected and the existing way of life [8], the fourth – the comfort of a person within yourself and within their society [6]. WHO recommends to define QOL as an individual ratio of their position in society in the context of the culture and value systems of this society with the goals of the individual, his plans, capabilities, and the degree of general disorder [12].

QOL combines several different areas: physical, functional, emotional, social, determined through the prism of their needs and standard of living. The subject of the study of QOL is an individual, his physical, psycho-emotional and social status [2, 5]. The age, sex, socio-economic status, the nature of work, level of culture and the environment influence on the assessment of QOL [13]. These indicators can characterize the homogeneous group, and the student youth refers to the same.

The aim of the study was to investigate the quality of life of 1-st year students of NEFU.

Materials and methods

The work was carried out in the Research Institute of Health of the M.K. AMMOSOV NORTH-EASTERN FEDERAL UNIVERSITY (NEFU). All clinical and functional studies were

carried out in the Department of propaedeutic and faculty therapy with endocrinology and physical therapy department of MI and preventive health center number 5 of the Research Institute of Health of NEFU. The study was approved by the Ethics Committee of the Federal State budget Institution "Yakutsk Scientific Centre of Complex Medical Problem" of Siberian Group of Russian Academy of Medical Sciences.

The informed consent was received before entering of participants in the study.

Inclusion criteria: a representative sampling of the 1st year students of NEFU.

Representative sampling was made up of the total number of the 1st year students (3400 people) using random number method in Excel program, it consisted of 800 people. 649 1st year students aged 15 to 30 of the NEFU from a representative group took part in investigation. 151 people aged 16 to 20 dropped out of the study for various reasons. There were 292 young people (45%) aged 15-26, Female – 357 (55%) aged 16 to 30 years of the 649 participants of the study. The ratio of girls and young people spread out evenly, which corresponds to a general population.

Overall, the general questionnaires are tools to assess the most QOL relationship with social status, mental health and general well-being of the individual [9]. The 36-item MOS Short-Form Health Survey (SF-36) questionnaire was used as a general questionnaire of QOL assessment. QOL was assessed in scores (from 0 to 100) of the "Physical Functioning" (PF), "Role Physical" (RP), "Bodily Pain" (BP) "General Health" (GH), "Vitality" (VT), "Social Functioning" (SF), "Role Emotional" (RE), and "Mental health" (MH) scales.

"PF", "GH", "VT", "SF" and "MH" scales of assessment criteria are direct, i.e. the higher the score, the better QOL, and "RF", "BP", "RE" scales are reverse [4, 9]. 5 scales (PF, RF, BP, GH, VT) characterize the physical status of the respondent, the psychosocial status is measured by 5 scales too (RE, SF, MH, GH, VT). The last two indicators are defined as physical as mental status of the person [4].

Statistical analysis was performed using «Excel Microsoft», «Statistic 6.0» software packages. Check of the normality of the distribution of quantitative indicators was performed using the Kolmogorov-Smirnov test. Following characteristics were calculated for each sample: M – the sample mean, σ – standard deviation. To determine the significance of differences between independent groups the parametric Student's t-test was used. The difference between the studied parameters was recognized as significant at $p < 0,05$.

Results and Discussion

General characteristics of students is presented in Table 1.

Table 1

General characteristics of 1st year students of NEFU ($M \pm \sigma$)

Характеристика	Students	Boys	Girls	p
Age, years	18,8 \pm 1,5	18,9 \pm 1,5	18,8 \pm 1,5	>0,05
Height, sm	165,3 \pm 9,0	172,2 \pm 7,0	159,5 \pm 6,0	<0,00
Weight, kg	58,9 \pm 10,5	64,1 \pm 10,5	54,4 \pm 8,2	<0,000
BMI	21,5 \pm 3,0	21,6 \pm 3,1	21,4 \pm 3,0	>0,05

Growth ranged from 153,9 to 195 sm: young people – 162-195 sm, the girls – 153,9-186 sm. Body weight varied over a wide range too (from 25,1 to 110,2 kg): the young men – 44-110,2 kg, girls – 25,1-88,3 kg. Body mass index (BMI) was 14,6-36,8: young people – from 14,7 to 36,8, and the girls – 15,3-32,5. BMI is considered to be insufficient for values below 18,5, normal – 18,5-25, redundant – 25-30, obese – 30-40, obese – higher than 40. BMI was insufficient in 58 people, normal – in 539 participants, overweight – 44, obesity – in 8 students, severe obesity – 0. There were statistical differences during comparing height and weight between boys and girls ($p < 0,000$). The statistical differences were between the students having insufficient, normal, overweight and obesity by body weight and BMI too ($p < 0,00$).

The opinion of the person is most important in assessing of QOL, which reflects and relates

to the objective and subjective factors [1]. Subjective assessment of the QOL parameters characterizing the emotional state of a person's character is predetermined by the influence of the type of neural activity and social circumstances [3].

Average data scales of the questionnaire SF-36 are shown in Table 2.

Table 2

Indicators Questionnaire SF-36 ($M \pm \sigma$)

Scales	Students n=649	Boys n=292	Girls n=357	p
PF	50,0±9,9	52,6±8,1	47,8±10,9	<0,000
RF	50,0±9,9	51,6±8,8	48,6±10,7	<0,000
BP	50,01±9,9	51,4±9,8	48,8±9,9	<0,000
GH	50,03±9,9	50,3±10,1	49,8±9,8	>0,05
VT	49,9±9,9	52,0±9,7	48,3±9,9	<0,000
SF	50,5±8,2	50,7±8,1	49,4±8,3	>0,05
RE	50,0±9,9	51,5±8,9	48,7±10,6	<0,000
MH	50,03±9,9	51,8±9,4	48,5±10,2	<0,000

The physical functioning of 1st year students of NEFU (PF) varied from -3,9 to 57,4, and the role of physical problems in the Disability (RF) – 23,7-57,5; pain (BP) – from 23,0 to 60,4; the general health (GH) – 18,3-75,1; vitality (VT) – from 18,8 to 70,4; social functioning (SF) – 17,8-58,9; role emotional problems in limiting life (RE) – from 31,2 to 58,2; mental health (MH) – 15,3-68,8. Scores of questionnaire scales varied within the following limits: young men PF – from 3,9 to 57,4; RF – 23,7-57,5; BP – 23,0-60,4; GH – 24,2-69,2; VT – 18,8-70,4; SF – 17,8-58,9; RE – 31,2-58,2; MH – from 15,3 to 68,8, girls – from -3,9 to 57,4, 23,7-57,5, 23,9-60,4, 18,3-75,1, 21,6-70,4, 22,9-58,9, 31,2-58,2, 17,6-68,8 respectively.

The analysis of scales of the SF-36 questionnaire showed the following. Subjective evaluation by the respondent of their daily PF was significantly higher in boys than in girls ($p < 0,000$). This fact can be explained by a higher fitness and familiarity to hard physical labor of young people as more than half of young people have come from rural areas. RF and BP evaluated by young people were significantly worse than in girls ($p < 0,000$), which may depend on a more careful attention to their well-being. Statistical difference was not found on the scale of GH and SF of SF-36. VT and MH subjectively assessed boys were better than in female students ($p < 0,000$). This fact indicates the sensitivity of respondents to personal characteristics, such as anxiety, pessimism, increased attention to their health, to external influences. RE was worse in young people than in young women ($p < 0,000$) indicating the effect of individual personality characteristics of people on a subjective assessment of this parameter. Women are more harmonious, prone to self-control, there is a balance required to better adaptation to the new conditions of life. Our results do not agree with the literature [1] that indicates the effect of certain national, ethnic culture, the traditions and customs [7].

Comparison of QOL of students and population of the Sakha (Yakutia) Republic revealed the following. The population of the RS (Y) showed better results than the 1st year students of NEFU on a scale of "Role Physical" ($p < 0,000$). There were better indicators of students NEFU ($p < 0,01$, Fig. 1) on a scale of "General Health". Statistical differences were found on the other scales of the questionnaire. Boys of NEFU rated their physical activity and mental health higher ($p < 0,01$, Fig. 2) than men of Sakha (Yakutia), but the role of physical ($p < 0,000$) and emotional limitations ($p < 0,02$, Fig. 2) in the life of young people played a larger role than in men of the country. Statistical differences were found on the other scales of SF-36. The influence of the physical limitations of women in his life of Sakha (Yakutia) estimated less than the freshman girls ($p < 0,000$, Fig. 3). Statistical differences were found on the other scales of the questionnaire SF-36. These results show the impact of individual personality characteristics of an individual on a

subjective assessment of their QOL.

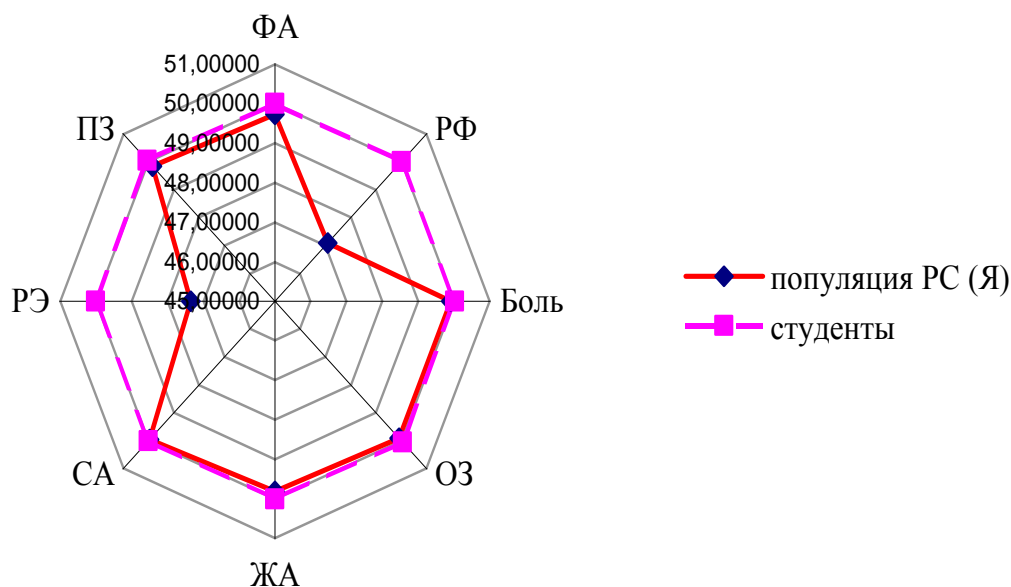


Figure 1. Comparison of quality of life of students NEFU and populations Sakha (Yakutia) Republic

In addition, situational and personal anxiety, nervous and emotional stress due to changes in the environment takes place in 1st year students.

Thus, the subjective opinion of a man, his perception of the world affects on the QOL of students, which vary in terms of hypokinesia, information overload, lack of time, mental stress.

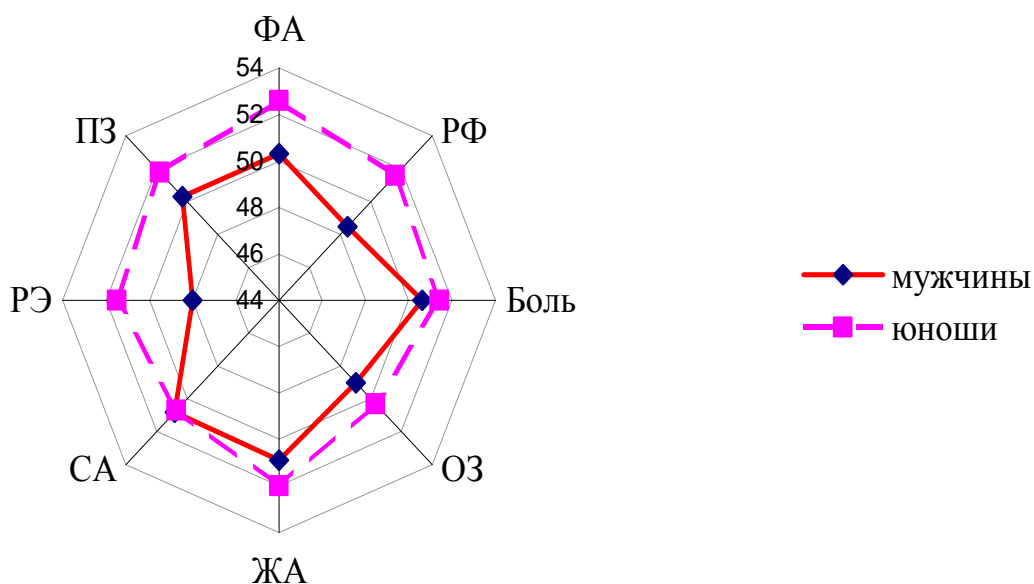


Figure 2. Comparison of quality of life of boys NEFU and men Sakha (Yakutia) Republic

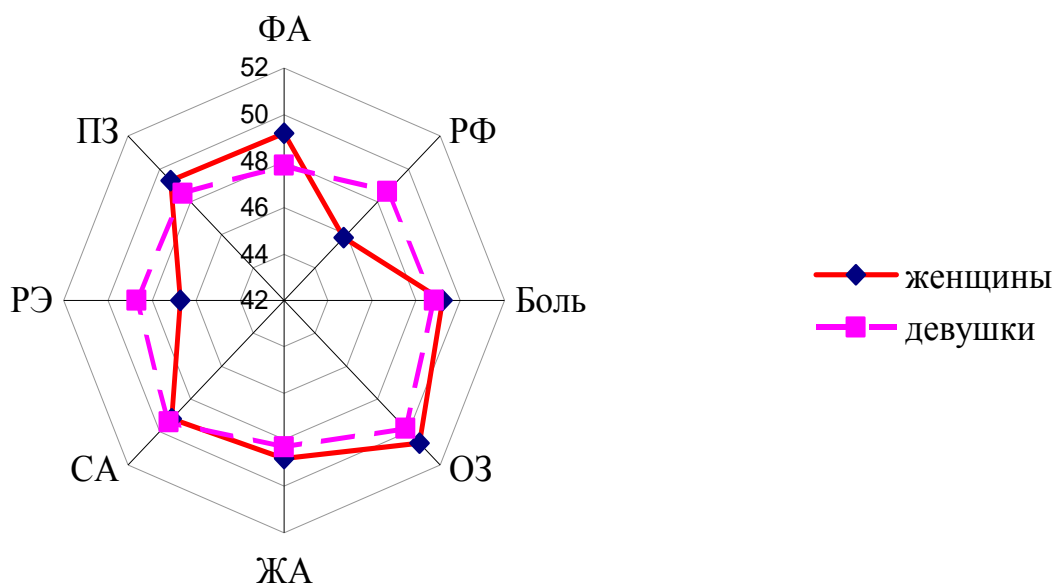


Figure 3. Comparison of quality of life of girls NEFU and women Sakha (Yakutia) Republic

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Extremely carrier frequency of the splice site IVS1+1G>A mutation in *GJB2* gene in the Yakut population is comparable to the carrier frequency of the sickle cell anemia in Africa

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ABSTRACT

This study presents data on the carrier frequency of IVS1+1 G>A mutation in *GJB2* gene, leading to autosomal recessive form of deafness among various ethno-geographical groups of Yakut population and in a random sample of the Yakuts. 350 DNA samples of hearing individuals from various ethno-geographical groups of Yakut population: Central (n=60), Vilyui (n=60), Northern (n=60) and random samples of Yakuts (n=170) were obtained from the DNA Bank of the Department of Molecular Genetics of Yakut Research Center of Complex Medical Problems of RAMS (Yakutsk, Russian Federation). The average carrier frequency of IVS1+1G>A mutation in Yakut population (n=350) detected was - 10.3%. Extremely carrier frequency of the splice site IVS1+1G>A mutation in *GJB2* gene in the Yakut population is comparable to the carrier frequency of the sickle-cell anemia in Africa, which may indicate a possible selective advantage of carriers of this IVS1+1G>A mutation in a subarctic climate.

Keywords: autosomal recessive deafness 1A, Eastern Siberia, sickle-cell anemia, Africa.

INTRODUCTION

Recently, it was found that Eastern Siberia, subarctic part of Russia, is the region with the most extensive accumulation of the IVS1+1G>A mutation in the world, as a result of founder effect in the unique Yakut population isolate (Asian background population) [5].

The extremely high carrier frequency of IVS1+1G>A mutation (11.7%) from six investigated populations (Yakuts, Dolgans, Evenks, Evens and Yukaghirs), has been found in Yakut population. The age of mutation was estimated to be approximately 800 years. These findings characterize Eastern Siberia as the region with the most extensive accumulation of IVS1+1G>A mutation in the world as a result of founder effect [5].

However, this extreme rate of carrier frequency could be due to the effect of the sample, as to calculate the carrier frequency two ethno-geographical (Central and Vilyui) groups of the Yakuts were used.

The aim of this study is to analyze the carrier frequency of the IVS1+1G>A splice site



mutation in the extended community sample of the Yakuts, involving northern ethno-geographical groups and random sample of the Yakuts.

MATERIAL AND METHODS

Sample

350 DNA samples of hearing individuals from various ethno-geographical groups of Yakut population: Central (n=60), Vilyui (n=60), Northern (n=60) and random samples of the Yakuts (n=170) were obtained from the DNA Bank of the Department of Molecular Genetics of Yakut Research Center of Complex Medical Problems of RAMS (Yakutsk, Russian Federation).

The genomic DNA was extracted from lymphocytes of peripheral blood. Amplification of the coding exon 2 and flanking intronic regions was performed using the following primers: Cx26A-U/Cx26U-L (F 5'-TCT-TTT-CCA-GAG-CAA-ACC-GC-3', R 5'-GAC-ACG-AAG-ATC-AGC-TGC-AG-3') (285 bp), [7] Cx342U/Cx739-L (F 5'-AGG-CCG-ACT-TTG-TCT-GCA-ACA-3', R 5'-GTG-GGC-CGG-GAC-ACA-AAG-3') (415 bp), [11] 5'-TAT-GTC-ATG-TAC-GAC-GGC-T-3', 5'-TCT-AAC-AAC-TGG-GCA-ATG-C-3' (239 bp). [6] Amplification of the noncoding exon 1 and flanking intronic regions was performed using primers Ex1-F/Ex1-R (F 5'-CCG-GGA-AGC-TCT-GAG-GAC-3', R GCA-ACC-GCT-CTG-GGT-CTC-3') with the addition of 10% Betaine (Sigma, USA) [12]. The products of PCR were subject to direct sequencing using the same primers on ABI PRISM 3130XL (Applied Biosystems, USA).

Ethics approval

All testing procedures were conducted with a written informed consent signed by parents. This work was approved by the local Bioethics Committee at the Yakut Research Center of Complex Medical Problems of Siberian Branch of the Russian Academy of Medical Sciences (Yakutsk, Protocol 16, on April 16, 2009).

RESULTS AND DISCUSSION

This study presents data on the carrier frequencies of IVS1+1G>A mutation in *GJB2* gene, leading to autosomal recessive form of deafness among various ethno-geographical groups of Yakut population and in a random sample of the Yakuts. In a sample of northern ethno-geographical groups of Yakuts were found 5/60 heterozygotes for the IVS1+1G>A splice site mutation in *GJB2* gene, carrier frequency - 8,3% (Table 1). The average carrier frequency of IVS1+1G>A mutation for all population samples Yakuts – 10,3%. In a random Yakut sample was found 17/170



heterozygotes, carrier frequency – 10,0% (Table 1).

The carrier frequency of IVS1+1G>A in the northern ethno-geographical group and in a random sample of the Yakuts are consistent with previously registered (11.7%) extremely high values of carrier frequency of IVS1+1G>A mutation in Yakut population [5]. The lower rate of mutation carriers in the northern group of the Yakuts (8,3%) compared with Vilyuy (10.0%) and Central (13.3%) groups is consistent with the results of haplotype analysis in which the most highest diversity of IVS1+1G>A haplotypes was found in the Central and Vilyuy subpopulations of Yakuts (excluding of the Yakutsk city), indicating that the expansion of mutant chromosomes on the territory of the Sakha Republic had started from the Lena-Amga interflaves area (Central district) [5]. Extremely high carrier frequency of the splice site mutation IVS1+1G>A in Yakuts (8,3-13,3%) living in Eastern Siberia in conditions of extreme continental climate can be explained not only by stochastic factors in the population dynamics and founder effect, shown earlier using different systems, such as STR-[5], and SNP-markers [1]. The selective advantage of heterozygous carriers of pathological alleles inherited autosomal-recessive disease known from classic example of sickle-cell anemia [2], common in Africa, South and South-East Asia (not uncommon in the Middle East and southern Europe) [10;13], as well as in the America [4]. Geographic stratification of the sickle-cell indicating an extremely high frequency of this disease near the equator [8], and evidence of the genetic adaptation of human populations to other common diseases in these regions - malaria [3]. The findings of the extremely high prevalence of mutations in the *GJB2* gene splice site in Eastern Siberia (in some sub-populations of the Yakuts to 13.3%) is comparable with the frequency of heterozygous carriers of sickle cell anemia in Africa (HbS allele), where the carrier frequency of HbS allele was higher than 10% registered only in certain areas, sub-Saharan Africa (Figure 1) [9]. Extreme values of the frequency of heterozygous carriers of a mutation IVS1+1G>A *GJB2* in the gene in Yakut population may indicate a possible selective advantage of carriers of this mutation in a subarctic climate.

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CLASSIFICATION OF EXTRAHEPATIC BILE DUCT INJURIES

ABSTRACT

Currently there are many classifications of intraoperative bile duct injury (IBDI) and its complications. Current classifications are based on different principles of IBDI injury, creating confusion, thus complicating approach to the choice of treatment.

Keywords: bile duct injury, surgery, classification of lesions of the extrahepatic bile ducts.

INTRODUCTION

Classification of bile duct injuries has many modifications [1]. Each of them has its positive and negative sides. Some are built on the topographic principle, with the emphasis on the level of damage of the bile ducts, some reflect the nature of the damage, while others contain section, describing damage to vascular structures, others are very detailed, but at the same time complex and hard to understand.

Diversity of classification leads to confusion, prevents the development of a unified approach in the choice of treatment, as well as complicates the correct assessment and analysis of treatment results in practical surgery. All-purpose classification must clearly delineate the types of damage, its complications, has a division based on regional anatomy principles, reflects the amount and nature of the surgery, understandable to everyone, thus on the basis of which it will be possible to clearly define the treatment policy and prognosis [2]. Unfortunately, to this day, there is no such classification. Most used classification is made by H.Bismuth and P.Majno, modified by S.Strasberg [4]. This classification applies to both "fresh" damage to bile duct, as well as strictures of it due to damage, but does not fully cover all aspects of IBDI damage and its complications [3].

On the basis of the surgical treatment of more than 100 patients with damage of the extrahepatic bile ducts, we have developed the following classification, which takes into account type and level of damage, complications, number and type of surgery.

A – aspect of damage

A1 - intersection, excision and damage of 2/3 of the circumference of the duct (treatment of this type of damage is similar to intersection)

intersection (Fig. 1), excision (Fig. 2), damage to more than 2 /3 (Fig. 3)

A2 - wound up to 2/3 of the circumference of the duct (Fig. 4)

A3 - duct ligation and clipping (occlusion) (Fig. 5)

A4 - thermal damage to the duct wall and dissection of the duct's lumen, with intraoperative bile leakage (Fig. 6).

A5 - thermal damage to the duct wall with necrosis and perforation of the duct wall in post-operative period (Fig. 7)

A6 - thermal damage to the duct wall without dissection of the duct with subsequent formation of stricture (Fig. 8)

Combined damage types are indicated by reference number of corresponding types of damage. For example: A1+3 denotes the intersection in combination with ligation

L - Level of damage and its complications

L1 - the level of the cystic duct and common bile duct (Fig. 9)

L2 - the level of the common hepatic duct to confluence (Fig. 10)

L3 –confluence level (Fig. 11)

L4 - level (one or both) lobar ducts (Figure 12)

C – complications of damage

C1 - stricture

C2 –obstructive jaundice

C3 - cholangitis



C4 - liver abscess

C5 –incomplete external biliary fistula

C6 –complete external biliary fistula

C7 - choleperitonitis

C8 - liver failure

O - the number of surgery (O – operation)

The letter "O" is supplemented by number of surgeries in form of fraction, where a numerator is the total number of surgeries, including minimally invasive, and in the denominator is a number of reconstructive surgery.

Thus, according to our classification, it is required to put the primary diagnosis first: eg. "chronic calculous cholecystitis", then intraoperative or penetrating or closed IBDI damage, type of damage A1-6, the level of damage and its complications L1- 4, type of complications C1-8, where there may be a combination of complications, for example: C1, 3 - stricture with cholangitis; the number of surgical interventions as a fraction: eg O2/1 - total number of operations is 2 and one reconstructive surgery.

In our opinion, this classification is the most informative and useful for proper planning and choice of treatment tactics, recording and analysis of treatment results of IBDI injuries and its complications.

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ELECTROENCEPHALOGRAPHY IN THE ASSESSMENT OF SLEEP IN INFANTS AFTER CAESAREAN SECTION

Tumaeva T.S.

ABSTRACT

The development of modern perinatology is impossible without a thorough analysis of the consequences of suffering a surgical delivery on the condition of the newborn. **The purpose of the study:** to investigate the influence of caesarean section (CS) on the functional activity of the brain of "relatively healthy" full-term infants in the early neonatal period, according to electroencephalography (EEG).

A comprehensive study included 157 newborns. The main group consisted of 100 children after CS with Apgar score not less than 8-9. The control group - 57 infants from physiological labor with Apgar score 8-9. Exclusion criteria - transferred cerebral hypoxia-ischemia, congenital abnormalities, somatic diseases, infectious processes, birth trauma. The study of the functional activity of the brain was performed in a state of natural sleep (20-30 min) with the location of the electrodes on the head by the International Lead scheme (the system «10-20», Jasper H., 1958) on the neurodiagnostic system NicoletOne (USA) in the unipolar leads with combined referential ear electrodes. We evaluated the structure of sleep, the basic activity of restful sleep phase in accordance with the age criteria, pathological patterns, and hemispheric asymmetry.

We obtained significant differences between children born operatively and naturally. In children after CS EEG pattern, age-appropriate, was recorded much less frequently than in the control group; sleep pattern, characterized by impaired maturation and pathological changes (too intermittent pattern, a period of indeterminate sleep) dominated. Quantitative evaluation revealed in the most of children after CS amplitude decrease of the fundamental activity, violation of zoning for brain convexity with maximum displacement amplitude in the anterior.

Cerebral dysfunction in term infants after CS is a result of the influence of pathological factors ante- and intrapartum periods, the adverse effects of surgery and anesthesia, which creates a high risk of CNS pathology. There is a need in a dynamic monitoring of brain function in children after CS using electroencephalography, since the early period of adaptation.

Keywords: newborn, caesarean section, electroencephalography.



INTRODUCTION

The development of modern medical science, the introduction of a wide practice of new types of surgery and anesthesia, the development of modern principles of antibiotic therapy, the rapid development of neonatology created the conditions for a safe surgical delivery. In recent years, greatly expanded the indications for cesarean section as a mother and as the fetus [1]. However, complicated obstetric and gynecological status and severity of extragenital mothers of biomechanism natural childbirth, the effect of surgery and anesthesia, as well as the complications that often arise during the operations, the extraction of the fetus itself, contribute to a special condition of newborns after cesarean section. Disrupted the process of postnatal adaptation and functional restructuring of the vital systems of the body - the cardiovascular, central nervous system, altered hormonal status of infants, disrupted microbial colonization of the skin, intestine, respiratory, etc. [2]. It was noted that children whose condition has been weakened by chronic oxygen deficiency, even elective caesarean section does not always eliminate the formation of CNS pathology [5].

The development of modern perinatology is impossible without a thorough analysis of the consequences of suffering a surgical delivery on the condition of the newborn. The **aim** of our study was to investigate the effect of cesarean section on the functional activity of the brain of "relatively healthy" full-term infants in the early neonatal period, according to the EEG, held in a state of natural sleep.

THE OBJECTIVE AND METHODS OF THE STUDY

On the basis of the children's department GBUZ RM "Mordovia Republican Clinical Perinatal Center" (Saransk) conducted a comprehensive clinical and instrumental study of 157 full-term newborns. A study group included 100 children learned by caesarean section (CS) with a Apgar score not lower than 8-9. The control group consisted of 57 full-term infants from birth with physiological Apgar score 8-9. The exclusion criteria were transferred cerebral hypoxia-ischemia, congenital abnormalities, somatic diseases, infectious processes, birth trauma.

The scheme of examination included a review of the perinatal history, physical examination, neurologic consultation. Ultrasound examination of the brain - neurosonography performed an ultrasound diagnostic system «Toshiba APLIO MX" (Japan) multi-frequency probe 3.5-9MGts by conventional methods. The range of the survey were included the study of the functional activity of the brain in the early neonatal period, according to the results of electroencephalography (EEG) to be held in a state of natural sleep with the location of the electrodes on the head in accordance with the International leads the scheme (the system «10-20», Jasper H., 1958). The recording time was 20-30 minutes. Join the total electrical activity of the brain was performed on neurodiagnostic

system Nicolet One (USA) in the unipolar leads with combined referential ear electrodes. To assess the overall EEG pattern of sleep at the age of 38-40 weeks employed a modified, taking into account the developmental maturation markers of bioelectrical activity of the brain, the typological classification of EEG, which provides 5 types of common EEG pattern of sleep in children with perinatal lesions of the central nervous system, reflecting the successive gradations of severity of functional state of the child's brain with the increase of the degree of severity from I to V type [4]. The estimation of sleep structure, characteristic of the bioelectric activity (BEA) phase of restful sleep, pathological patterns, the amplitude-frequency hemispheric symmetry, matching the characteristics of BEA age of the child.

Statistical data processing was carried out using the software package «Statistica». Quantitative indicators were analyzed according to the standard t-test with the calculation of the arithmetic mean (M), standard error of the mean ($\pm m$) and the corresponding level of confidence, to compare categorical variables used the criterion of χ^2 . Correlation analysis was performed using Pearson's linear correlation test if both samples had a normal distribution and a linear relationship. Otherwise, we used Spearman's rank correlation coefficient.

RESULTS AND DISCUSSION

In the study of maternal medical history revealed that women who gave birth by surgery, significantly prevailed polypathia, especially chronic ($p = 0.000$), more often formed preeclampsia ($p = 0.004$) (Table 1). Attention is drawn to the fact indicate a history of repeated cesarean section more than a third of women from the main group ($p = 0.000$). It should be noted that women who had delivered by the CS, the more often formed chronic fetoplacental insufficiency ($p = 0.480$), the threat of termination of pregnancy ($P = 0.476$), anemia ($p = 0.734$) were more prevalent carriers of viral infections, sexually transmitted diseases ($p = 0.058$), while not reaching statistical significance between treatment groups.

Clinical characteristics of the children included in the study are presented in Table 2. The groups were comparable in terms of the parameters of physical development and health of newborns. All children are breastfed in the delivery room. In assessing neurological status in children after CS revealed more frequent development of hyper excitability syndrome, but the statistical significance between treatment groups received the differences were not ($p = 0.053$).

According to neurosonography (Fig. 1) in children born by CS, significantly more prevalent isolated ischemic lesions in the periventricular areas of the frontal lobes and predominantly mild degree, structural immaturity of the characteristic features in the form of an extension hemispheric crevice, the presence of cavities Verga ($p = 0.000$). It should be noted that only the main group 3 children registered hemorrhagic complications of subarachnoid, subependymal hemorrhage ($p =$

0.418) and 4 - subependymal cyst ($p = 0.310$).

Functional brain activity was evaluated based on the results of electroencephalography, which was held for all children aged 7 days of life in a state of natural sleep. Dream of a full-term newborn has two states: active and quiet sleep. Sleep phase alternates, subject to a certain rhythm that defines the cyclic organization of sleep. EEG pattern restful sleep is an alternating activity in the form of flashes of slow waves (1-4Hz) amplitude of 50-200mkV occurring every 4-5s and continuing for 2-4s. In the intervals between outbreaks recorded continuous low-amplitude activity 20- 40mkV. The frequency of this pattern in newborns is caused by spontaneous pacemaker activity of maturing stem structures. The criterion of the maturity of the brain is the correct amplitude and frequency zoning Convex main activity of the brain with a maximum amplitude in the caudal parts of the projections [3,4,7,8].

According to data obtained in the course of the study, there were significant differences between children born operative and natural way (Fig. 2). EEG pattern I-type corresponding to the age criteria, in children born by surgery, recorded less frequently than children from physiological birth ($p = 0.000$). Formation II-type EEG period of restful sleep, characterized by mild signs of immaturity, without significant differences from the age norm, registered in the studied groups with no significant differences ($p = 0.439$). In newborns after CS 70% of type III was the dominant pattern of sleep ($p = 0.000$), characterized by impaired maturation, and in 2 children reported more severe violations (IV type EEG), reflecting the presence of pathological changes in the BEA ($p = 0.561$). Note that in the control group formation III - IV type EEG recorded.

Quantitative evaluation of EEG pattern has identified the majority of children (72%, $p = 0.000$), born by surgery, a statistically significant violation of zoning Convex main activity of the brain with a shift of the maximum amplitude in the anterior (III - IV types EEG) (Table 3). According to modern concepts of delta activity with perverted topographical distribution arises from the replacement of the physiological activity of abnormal slow-wave activity, which has a different cortical topography. The reason for this is to reduce the functional activity of cortical neurons as a result of not only ischemic subcortical white matter, but also due to metabolic disorders of cortical neurons of various origins [4,9].

In assessing the duration of the intervals between outbreaks and characterization of bioelectrical activity generated at intervals in children after the formation of the CS III-type EEG was recorded over an intermittent pattern in the form of an irregular pacemaker activity of stem structures that generate the rhythm of varying degrees of severity with the extension of the duration of periods of partial suppression of the activity between the bursts 6 seconds. This type of EEG pattern indicates the functional immaturity of the neonatal CNS [4,6]. In this case, a similar



pathology is not formed in the newborn control group, and the most prolonged intervals between flashes they were only 7-8s (II type EEG). An important characteristic of the functional activity are the amplitude parameters of the generated waves. The amplitude of the studied activity was significantly reduced in children born of the CS, the formation of abnormal sleep patterns and in 4 infants had the lowest values - 7.1-8.4 mkV. It is noted that in the group of children born naturally amplitude activity in the intervals between the flashes did not fall below 19- 20mkv that met criteria for maturity for this age group. In the analysis of the main activity of IV-type EEG recorded only in children born by surgery, to differentiate the phases of sleep was difficult. Dominant pattern of "indeterminate sleep": during the recording period recorded polymorphic continuous, low amplitude slow-wave activity, formed a persistent displacement amplitude-frequency peak in the anterior (Table 3), there was no spontaneous slow-wave outbreak.

The results show the functional instability of the brain in full-term infants born by CS, even in the absence of perinatal CNS. Formation of the functional activity of the central nervous system in babies born by Caesarean section, against the background of the influence of multiple pathological factors burdened obstetric, gynecological and physical status of the mothers. Surgical intervention of anesthesia and have an additional adverse effect, contributing to the oppression of the activity is functionally immature neonatal brain and, of course, complicate the process of early adaptation.

CONCLUSIONS

Electroencephalography is an integral measure of the functional activity of the central nervous system, conducted during the early neonatal adaptation to evaluate the level of maturity of the neonatal brain, identify dysfunctional disorder. Babies born by Caesarean section are at high risk for the development of CNS pathology. Revealed cerebral dysfunction in term infants after operative delivery (over intermittent EEG pattern, the violation of the zonal distribution of Convex main activity of the brain, reducing the amplitude of the fundamental activity in the formation of abnormal sleep patterns) indicates the need for a dynamic monitoring of brain function using electroencephalography, from early the adaptation period.

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Table 1.

Characteristics of the groups of mothers		
Indicators	Main group, n=100	Control group, n=57
Associated somatic diseases, n(%)	31(31%)*	6(11%)
Mean age, years $M \pm m$	27,3 \pm 1,34	26,9 \pm 0,71
Repeated CS, n(%)	32(32%)*	-
Inflammatory diseases of female genitalia, n(%)	7(7%)	5(9%)
Carriage viral infections (herpes simplex virus, cytomegalovirus infection, etc.), n(%)	19(19%)	3(6%)
Anemia, n(%)	36(36%)	17(30%)
Preeclampsia, n(%)	61(61%)*	19(33%)
Chronic fetoplacental insufficiency, n(%)	26(26%)	10(18%)
The threat of termination of pregnancy, n(%)	30(30%)	12(21%)



Note: *- statistical significance of differences between mothers who have given birth by the Caesarean section to mothers in the control group ($p \leq 0.05$)

Table 2.

Characteristics of children included in the study

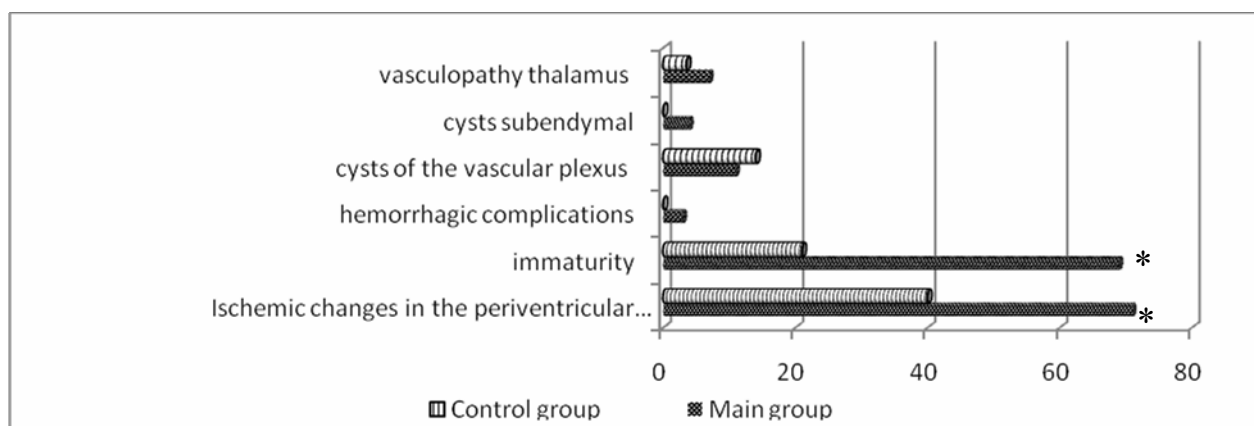
Indicators	Main group, n=100	Control group, n=57
Boys, $n(\%)$	58(58%)	27(47%)
Girls, $n(\%)$	42(42%)	30(53%)
Weight, g, range $M \pm m$	2388-4450 3398,6 \pm 144,7	2950-4110 3427,3 \pm 160,5
Apgar, 1 min, range	7-9	8-9
Apgar, 5min, range	8-9	8-9
Hyper excitability syndrome, $n(\%)$	40(40%)	12(21%)

Table 3.

Quantitative characterization of some studied parameters of the EEG pattern restful sleep

	Indicators	I type of EEG	II type of EEG	III type of EEG	IV type of EEG
Amplitude and frequency characteristics, zoning main activity					
Main group, n=100	The frontal zone:				
	Frequency, Hz $M \pm m$	1,2 \pm 0,04	1,7 \pm 0,68	1,3 \pm 0,07	1,3 \pm 0,42
	The amplitude, mV $M \pm m$	66,2 \pm 3,77	85,4 \pm 0,73	93,2 \pm 3,19*	54,1 \pm 2,42*
	The caudal zone:				
Control group, n=57	Frequency, Hz $M \pm m$	1,1 \pm 0,01	1,4 \pm 0,11	1,4 \pm 0,09	1,8 \pm 0,06*
	The amplitude, mV $M \pm m$	89,3 \pm 7,94	80,2 \pm 0,98	53,5 \pm 4,86*	22,8 \pm 8,42*
	The frontal zone:				
	Frequency, Hz $M \pm m$	1,3 \pm 0,07	1,2 \pm 0,57	—	—
Control group, n=57	The amplitude, mV $M \pm m$	69,2 \pm 2,63	71,3 \pm 2,32	—	—
	The caudal zone:				
	Frequency, Hz $M \pm m$	1,1 \pm 0,04	1,2 \pm 0,03	—	—
	The amplitude, mV $M \pm m$	94,3 \pm 4,75	69,7 \pm 1,05	—	—
Amplitude and frequency characteristics of activity in the intervals between flashes, the duration of the intervals					
Main group, n=100	Frequency, Hz $M \pm m$	1,4 \pm 0,11	1,4 \pm 0,09	1,3 \pm 0,07	
	The amplitude, mV $M \pm m$	34,2 \pm 2,59	32,7 \pm 3,66	22,9 \pm 1,61*	—
	The duration, sec $M \pm m$	4,5 \pm 0,49	7,5 \pm 0,18	12,5 \pm 1,15*	—
Control group, n=57	Frequency, Hz $M \pm m$	1,4 \pm 0,09	1,3 \pm 0,12	—	—
	The amplitude, mV $M \pm m$	35,6 \pm 2,32	29,9 \pm 3,15	—	—
	The duration, sec $M \pm m$	4,7 \pm 0,19	7,8 \pm 0,08	—	—

Note: *- statistical significance of differences between children born by Caesarean section, from newborns in the control group ($p \leq 0,05$)



Note: *statistical significance of differences between children born by Caesarean section from the control group ($p \leq 0,05$)

Illustration1. The detection rate of structural changes in the brain in infants studied groups according neurosonography.

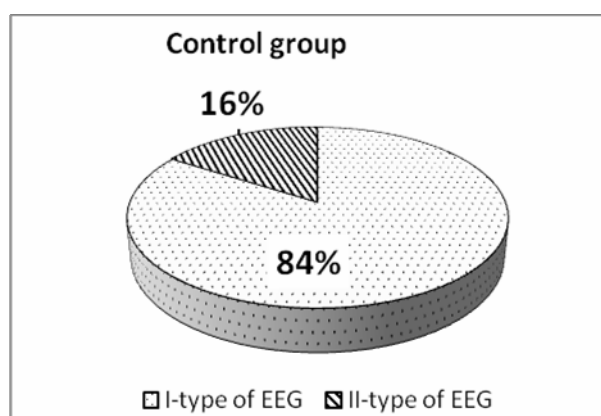
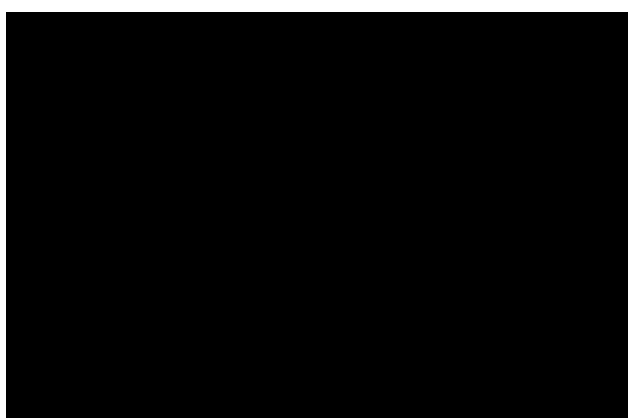


Illustration 2. The detection of different types of restful sleep patterns in children studied groups.

PREDICTION OF ACUTE RESPIRATORY FAILURE AND PULMONARY EDEMA IN PATIENTS WITH ACUTE PNEUMONIA

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Summary

Objective: Development of diagnostic algorithms for predicting the development of acute respiratory failure and pulmonary edema in patients with pneumonia at the onset of the disease.

Research methods. Examination and treatment of patients with pneumonia was conducted in pulmonary department of the military hospital in the period from 1998 to 2008 in the study included 2000 patients with pneumonia, men, military, military service by conscription, aged 18 to 22 years ($19, 2 \pm 0,19$).

In order to evaluate the effectiveness of the algorithms predicting the development of acute respiratory failure and pulmonary edema pneumonia, a comparative analysis of the two groups of patients. In the control group ($n = 782$) to predict the development of acute respiratory failure and pulmonary edema was conducted based on the individual views and personal experiences of doctors, without the use of forecasting algorithms in the period from 1998 to 2003, and in the study group ($n = 1218$) - in the period from 2003 to 2008 - on the basis of diagnostic algorithms for predicting the development of acute respiratory failure and pulmonary edema pneumonia, developed by us.

Results. It is shown that the proposed diagnostic algorithms for predicting the development of acute respiratory failure and pulmonary edema help practitioners, including at the stage of primary health care in the early stages of development to suspect the possibility of a patient with pneumonia potentially fatal complications, which allows to adjust treatment and diagnostic tactics more specifically address the issues of transportation patient, to determine the indications for hospitalization, including in the emergency department and intensive care.

Keywords: pneumonia, acute respiratory failure, pulmonary edema, predicting complications of pneumonia, algorithms.

Introduction. Despite the continuous improvement of diagnostic methods and the availability of highly antibiotics, pneumonia, as before, is a leader in the structure of morbidity and mortality

from infectious diseases in developed countries [1, 8]. Mortality for pneumonia in adults up to 50 years without comorbidity is 2 - 3%, and among patients requiring hospitalization in intensive care units, reaches up to 22% [1, 7]. Remains a high incidence of pneumonia in the Armed Forces of the Russian Federation (RF AF) among soldiers performing military service [3, 5]. Risk factors for poor outcome of pneumonia, including in the military, is the development of complications such as acute respiratory failure (ARF), and pulmonary edema. Due to this fact remains urgent task is the development of diagnostic algorithms for forecasting, which would allow a doctor at an earlier date to reveal indirect signs indicating the possibility of the above complications of pneumonia.

The **purpose** of the work: Development of diagnostic algorithms for the prediction of acute respiratory failure and pulmonary edema in patients with pneumonia in the acute phase.

Materials and methods. Examination and treatment of patients with pneumonia was conducted in pulmonary department of the military hospital in the period from 1998 to 2008 were enrolled 2,000 patients with pneumonia, men, soldiers performing military service at the age of 18 to 22 years ($19, 2 \pm 0,19$).

In order to evaluate the efficiency of algorithms for forecasting the development of pulmonary edema and ARF with pneumonia, a comparative analysis of the two groups of patients. In the comparison group ($n = 782$) to predict the development of ARF and pulmonary edema was conducted based on individual views and personal experiences of doctors, without the use of algorithms to predict the period from 1998 to 2003, and in the study group ($n = 1218$) - in period from 2003 to 2008 - on the basis of diagnostic algorithms for forecasting the development of ARF and pulmonary edema pneumonia, developed by us

In the course of the study were used general clinical and instrumental diagnostic methods in accordance to the guidelines of the Main Military Medical Directorate of the Russian Ministry of Defense in 2003, as well as the standard for the diagnosis and treatment of patients with non-specific lung diseases, approved by the Ministry of Health of the Russian 9. 10. 1998 number 300 [2, 6].

In patients who were treated in the department of anesthesiology and intensive care unit (193 people). Additionally monitored some of the functions of the body, including blood pressure, central venous pressure, urine output. Determined by blood gas, electrolytes (potassium, sodium, serum), the use of protein composition, blood coagulation and renal excretory function

Patients received etiopathogenic and symptomatic therapy in accordance with the standards of treatment of this disease. According to the testimony appointed as mucolytics, fever and cold preparations, as well as complex physical therapy and physiotherapy.

Statistical processing of the results of the study were performed using software package

Microsoft Office Excel 2007 and Statistica 6.0 (StatSoft, Inc. 2001). For the processing of the data used assessment of the credibility of intergroup differences with the Student t-test for independent samples. Between-group differences were considered significant at $p < 0,05$.

Calculation of the diagnostic value of forecasting algorithms performed using the following formulas: diagnostic sensitivity (DSe) = $a / (a + c)$, in%, diagnostic specificity (DSp) = $d / (d + b)$, in%, diagnostic accuracy (DA) = $(a + d) / (a + d + c + b)$, in%, diagnostic efficiency (DE) = $(DSe + DSp) / 2$, and a - the number of true positive results of the study, b - number of false positive results, c - the number of false negatives, d - the number of true negative results [4].

Results and discussion. To predict the development of ARF, we have developed a diagnostic algorithm [ID for rationalization proposal number 4453 State Educational Institution "Irkutsk State Medical University" 10. 04. 2009], wherein the first stage clinical signs detected presence or absence of complications. Were then analyzed markers, indirectly indicating the possibility of the development of ARF in the course of the disease and the degree of its severity. The algorithm took into account the following symptoms: high fever, physical picture of the affected segment of the lung, hemodynamic parameters, and Chest x-rays of the chest cavity. Depending on the degree of any of the features listed above, and given the amount of damage to lung tissue according to X-ray examination of the chest cavity, determined the risk of this complication of pneumonia (Figure 1).

In the treatment of the patient in addition to evaluate the nature of pathological process on the clinical status and changes in the local area over the lesion according to the physical examination of the patient. It was noted that the likelihood of ARF depends on types of the pneumonia (positive or negative).

A further complication is pneumonia, pulmonary edema - a pathological condition caused by propotevanie the liquid part of the blood from the pulmonary capillaries into the interstitial space and vozduhosoderzhaschee lungs, clinically manifested by severe respiratory failure. Pulmonary edema pneumonia caused inflammation in the lung tissue, which is released under a number of vasoactive substances, dramatically increasing vascular permeability. Intoxication and infection lower the threshold capillary permeability and pulmonary edema develops when the normal hydrostatic pressure in the capillaries. Against this background, any excess therapy (infusion, medication, oxygen therapy and various combinations thereof) may also contribute to the development of this complication. The probability of edema is increased if the patient related heart disease, accompanied by systolic and diastolic left ventricular dysfunction, or the presence of bronchopulmonary disease with obstruction of the upper airway. Thus, this complication is a real threat to life of the patient with pneumonia. In addition, the favorable outcome, it leads to an increase in length of hospitalization and often worsens the outcome.

We offer on admission to the hospital to use the diagnostic algorithm probability of pulmonary edema [ID for rationalization proposal number 4456 Irkutsk State Medical University, 10.04.2009], which will allow your doctor to predict this complication at an early stage of the disease and timely adjust the treatment. On admission the patient is necessary to evaluate the clinical signs of the presence or absence of pulmonary edema, and then to analyze the markers that indirectly indicate the possibility of this complication and its degree. The proposed algorithm takes into account the following features: the patient's age, comorbidities, the severity and duration of fever, dyspnea character, hemodynamic parameters. An analysis of the above symptoms are determined by the risk of pulmonary edema in patients with pneumonia (Figure 2).

In the course of treatment depending on the positive or negative dynamics, the presence or absence of any of the features listed above, as well as the extent of their manifestations, we predicted the likelihood of developing pulmonary edema.

Thus, the diagnostic algorithm for predicting the development of pulmonary edema is used to determine the risk of pneumonia in a patient of this life-threatening condition and the therapy, taking into account the data obtained in order to avoid adverse effects, and thus improve the results of treatment of the disease.

The introduction to the work of the receiver, infectious and pulmonary department of the hospital developed algorithms for predicting the development of ARF and pulmonary edema in patients with pneumonia has significantly reduced the number of these complications of the disease. As a result of ARF was diagnosed in 43, 1% of patients in the comparison group and 19, 5% of the study group ($p < 0, 05$). Pulmonary edema was diagnosed only in the comparison group (0, 1%), while among the patients of the group this complication have been identified, including through effective forecasting and ARF taken preventive measures (Table 1).

The effectiveness prediction algorithm ARF was 97, 8% at a sensitivity - 96, 6%, specificity - 98, 9% and accuracy - 98, 5%. The effectiveness of the algorithm prediction of pulmonary edema was 100%.

Conclusion. The proposed diagnostic algorithms to help the practitioner, including at the stage of primary health care in the early stages suspect the possibility of a patient with pneumonia potentially fatal complications. It will help to correct the medical and diagnostic tactics, more accurately solve transportation issues the patient, to determine the indications for hospitalization, including the intensive care unit and intensive care, and thus improve the results of treatment of pneumonia.

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GESTOSIS PREDICTION AMONG PATIENTS WITH HYPERANDROGENISM RECEIVING GLUCOCORTICOIDS

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ABSTRACT

The article examines the impact of glucocorticoids in patients with hyperandrogenism on Doppler indices of blood flow in the uterine and spiral arteries in term of 13-14 weeks of pregnancy and assessment of the importance of this method for gestosis predicting.

It has been found that in a group of pregnant women receiving glucocorticoids there is significant ($p < 0.05$) increase compared to the reference group and the control group of Doppler vascular resistance index in the uterine and spiral arteries. In our study, a serious complication as preeclampsia was met in 20 (51%) of the women in the group of patients with hyperandrogenism treated with glucocorticoids, which was significantly more often ($p < 0.05$), than 3 in the comparison group (18.75%) and control group - 3 (15%).

Keywords: hyperandrogenism, glucocorticoids, gestosis.

The main factor of the pathogenesis of gestosis and placental insufficiency is a lack or incomplete penetration of the trophoblast to the spiral arteries, which leads to a reduction of their lumen and subsequent placental ischemia. Modified placenta can provoke the formation of one or more factors that deplete the vascular cells, causing dysfunction of many organ systems [1]. The key point is forecasting in the diagnosis of pathological process. Over the past two decades, in literature you can find links to more than 100 different clinical, biochemical and biophysical research to predict the development of preeclampsia [2]. At the present stage, there is no ideal predictive test that meets all the necessary criteria. First, the lack of parity and family history are represented by two major predictive factors [3]. Ultrasound examination of the method of Doppler spiral arteries at 13-16 weeks of pregnancy may be helpful in the diagnosis of disruption of the normal process of trophoblast invasion, a prognostic test for determining the risk for complications such as preeclampsia [4]

The **aim** of our study was to evaluate the effect of steroid treatment among patients with hyperandrogenism on Doppler indices of blood flow in the uterine and spiral arteries in term of 13-14 weeks of pregnancy and to estimate the value of this method for the prediction of gestosis. We conducted a prospective survey of the dynamics of 75 pregnant women from the first trimester of pregnancy with an analysis of the course and outcomes of pregnancy and childbirth. All patients were divided into 3 groups. The first group, the main group consisted of 39 women with various forms of hyperandrogenism which were receiving glucocorticoids (12 patients - metipred 1-4mg/a twenty-four hours' dose, 27 patients received dexamethasone 0, 5 \pm 1mg/twenty-four hours) during pregnancy to prevent miscarriage. Among these, 19 patients had a mild form of adrenogenital syndrome, 2 with ovarian form, and 18 with mixed hyperandrogenism. The comparison group consisted of 16 patients with clinical and laboratory signs of hyperandrogenism (10 of them - with CAH, 6 - with mixed hyperandrogenism) who were not receiving glucocorticoids during pregnancy. The third group, the control group consisted of 20 healthy patients without somatic hyperandrogenism (dehydroepiandrosterone in the I trimester of 1,14-4,6 mg / ml, 17 oxyprogesterone 2-4,1 ng / ml, testoron 0,11-0,78 ng / ml) Diagnosis of hyperandrogenism in addition to the visible manifestations of masculinization installed in pregnancy, in the I trimester, based on the increased level of 17 oxyprogesterone, DHEA, free testosterone. Hormonal study was carried out using ELISA photometric analyzer («Multiscan», «Labisistems»). The diagnosis of adrenal (non-classical forms of congenital adrenal hyperplasia) was based on the definition of high basal level of 17 - oxyprogesterone (17 SNPs), dehydroepiandrosterone (DHEA-S) in the first trimester of pregnancy. In patients of the main group 5 and 7 patients group comparison reference values detected excess DHEA-S ($4,78 \pm 0,22$ mg / ml) at 14 and 9 respectively increased 17 SNPs ($7,07 \pm 0,19$ ng / ml). Molecular genetic testing is not performed. Clinical signs of androgenization

and hormonal survey data (basal level) were the basis for the appointment of glucocorticoids. It was found that 18 patients of the main group had the increased 17 SNPs with simultaneously increasing testosterone ($1, 46 \pm 0, 19$ ng / ml), while 7 of these patients had elevated cortisol ($689 \pm 0, 12$ ng / l). This status is assessed by doctors as prenatal hyperandrogenism of mixed origin (recommended steroid treatment under the control of hormones up to 32-34 weeks), including patients with hypercortisolemia. In the analysis of somatic history of women surveyed revealed that in the first, the study group was found 18 (46.1 %) of nosology. In the comparison group extragenital pathology was observed in 8 (50 %) cases (the 11 women in the first group and 3 in the second there was a combination of nosologies (obesity and hypertension). Moreover, all patients, both in the core and in the comparison group had ovarian and mixed form of hyperandrogenism. The greatest significance of this aspect is to identify the connection of hyperandrogenism (as a symptom of metabolic syndrome and PCOS.) In the main group with a large base in retrospect (since before or during pregnancy, the syndrome was not identified), we can refer 11 (28.2%) patients (all 11 patients increased 17ONP and testosterone) among which the combination of the following symptoms was observed:

- abdominally - visceral type of obesity (BMI >27 kg / m)
- hypertension (hypertension , 2 cases of hypertensive type NCD 9 cases
- hyperandrogenism.

In the comparison group metabolic syndrome occurred in 3 (10%) women. In the control group there were no such patients.

Aggravated obstetric anamnesis among patients of the main group was observed among 8 women (20.5%), including fetal loss syndrome among 6, one or more spontaneous abortions - 4 cases, non-developing pregnancy, late miscarriage (fetal death), ectopic pregnancy had 1 woman; severe preeclampsia in the first birth had 1 woman. The frequency of aggravated anamnesis among patients of the second group was 25%, 4 cases, including the case of developing pregnancy -2, 1 case of late miscarriage (fetal death), 1 case of premature birth at 32 weeks, so the two groups are comparable on this indicator. In the control group, the frequency of aggravated anamnesis among patients were significantly lower ($p < 0.05$) was 2 (10%) cases.

In our study, the main method of Doppler prediction of preeclampsia was carried out using the machine of the expert class «Medison-AcuVix XQ», equipped with a block of color Doppler, power Doppler and pulsed. Doppler sonography study of blood flow velocity curves in both uterine arteries in the umbilical artery, as well as in the spiral arteries by the developed technique in term of 13-14 weeks was performed (A.N. Strizhakov et al. , 1998).

The study was performed in obstetric program of devices, a frequency filter was set at 50 Hz, the Doppler angle of no more than 60, volume control completely blocked vessels' gap. To assess the CSC following indicators of vascular resistance were calculated: resistance index (RI), systolic and diastolic ratio (S / D). The study was combined with ultrasound in screening time (13-14 weeks).

The obtained data were processed by the method of variation statistics using Microsoft Excel, with the calculation of the arithmetic mean deviation, standard deviation, with the following definition is similar to the characteristics of different groups with the calculation of Student's t test. Statistical significance was considered proven if possible errors less than 5% or $P < 0, 05$.

The received data is represented in the table.

Table 1.

Indicators of uterus-placental blood flow in the period of 13-14 weeks pregnancy

Group	Uterine arteries		Spiral arteries	
	IR	SDR	IR	SDR

Main n=39	0,73±0,04	3,08±0,14	0,63±0,03	2,22±0,23
comparison group n=16	0,58±0,08	2,32±0,32	0,50±0,01	1,77±0,17
Control n=20	0,55±0,04	2,14±0,11	0,48±0,05	1,69±0,21

Thus, we see in the group of pregnant women treated with glucocorticoids significant ($p < 0.05$) increase of vascular resistance in the uterine and spiral arteries compared to the comparison group and the control group of Doppler indices. We can assume that receiving glucocorticoids, contributing to endothelial dysfunction, leading to disturbances in the hemostatic system, suppression of fibrinolysis [5, 8], leads to disruption of trophoblast invasion and placentation, which is reflected in the indices that we have found in increasing vascular resistance. According to data of Musaeva Z.M., Pitskhelauri E.G. (2000) diagnostic criteria for pre-clinical stage of preeclampsia LMS in the uterine arteries of more than 2.4, more than 1.85 in the spiral may be considered. Patients who are at risk, prevention of preeclampsia was conducted, beginning with the period of 16 weeks (dipyridamole 25 mg 3 times a day) due to the continuing glucocorticoid therapy.

In our study, a serious complication as preeclampsia was found among 20 (51%) of the women in the group of patients with hyperandrogenism treated with glucocorticoids, and only 3 patients (18.75%) of pregnancies complicated by mild preeclampsia in the comparison group ($p < 0.005$). The Indicators of the second group were compared with a control group (healthy pregnant women); there were 3 (15%) cases of mild gestosis.

The mean dose of glucocorticoid medication among patients of the main group with preeclampsia counting on dexamethasone was $0,89 \pm 0,12$ mg / day, which was significantly higher ($p < 0.005$) than among patients without clinical preeclampsia - $0,41 \pm 0,24$ mg / day. The duration of receiving this medication during pregnancy among women with preeclampsia was on average $30,4 \pm 1,24$ a week, which was significantly longer than among patients of the main group without preeclampsia (mean $24,4 \pm 1,6$ weeks).

Thus, we see that with the increase in the number of glucocorticoid medication taken during pregnancy the frequency of pregnancy complications such as preeclampsia increases.

The increase in the severity of preeclampsia on the background of the therapy was noted in 9 cases among patients of the main group. The severity of preeclampsia was assessed by a scale recommended by the Health Ministry. Preeclampsia moderate severity at the time of delivery (9-11 on a scale of Gojko - Savelevoj) had 5 (12%) of women, severe preeclampsia, eclampsia - 4 (10%) patients of the main group. Clinical diagnosis of pre-eclampsia were: increase in diastolic blood pressure of more than 110 mm. Hg (all 4-100%), edema (from 2-50%), proteinuria in a daily sample of more than 3 g / l (average $3,11 \pm 0,6$), all pregnant women complained of a headache and the presence of "grid before eyes", nasal congestion, in one case fibrillary twitching of the facial muscles was occurred. We see that 8 of 9 patients with medium and severe preeclampsia are patients with mixed hyperandrogenism, who had an increase of 17ONP and testosterone, all 8 women had hypercortisolemia (average $711 \pm 15,2$ ng / L), which can be considered as an analogue of insulin resistance and hyperinsulinemia. All 8 patients had visceral - type abdominally obese ($BMI > 27$ kg / m), hypertension (1 case of hypertension, hypertensive type NDCs on 7 cases). These were patients with the metabolic syndrome.

This fact is not surprising because endotheliopathy plays a major role in the pathogenesis of the metabolic syndrome and preeclampsia [7]. Then what is the role of glucocorticoids which they receive?

The discovery of elevated levels of androgens among our patients in the 1st trimester (17ONP and testosterone) was the reason for the appointment of such medication as dexamethasone

or metipred to correct hyperandrogenism (the data of 8 patients who received them until 34-35 weeks). Among these patients there was a hyper-reactivity of the hypothalamic- pituitary - adrenal system. Small already existing excess of cortisol in combination with exogenously administered medication of long action glucocorticoid (dexamethasone), which is not amenable to inactivate the enzyme systems of placenta, reduces insulin sensitivity, contributes to the development of insulin resistance with compensatory hyperinsulinaemia, and of progression of endothelial dysfunction and as a consequence of this is the development of preeclampsia, with its rapid progression, despite treatment.

From our research, we conclude:

1. Glucocorticoid treatment, which increases endothelial dysfunction in the first trimester, when there are processes of implantation, trophoblast invasion, causes changes in placentation which we have discovered during Doppler.
2. Pathogenetically unreasonable, is the prescription of this medication to patients with ovarian and mixed form of hyperandrogenism, patients with metabolic syndrome and existing dysfunction of gipatolamo-pituitary-adrenal system. A prescription of glucocorticoid medication promotes the progression of existing endothelial dysfunction, contributes to the development of moderate and severe forms of preeclampsia.
3. From the study we can see that with the increase in the number of glucocorticoid medication received during pregnancy increases the frequency of pregnancy complications such as preeclampsia.

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RESULTS OF SCIENTIFIC STUDY OF SOCIAL AND BIOLOGICAL PERINATAL PATHOLOGY RISK FACTORS

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ABSTRACT

The article presents results of scientific study of social and biological risk factors for perinatal pathology. We investigated families raising children with perinatal lesions of the central nervous system and gave medico-social characteristics of them. We highlighted issues of need to develop and implement health-organizational technologies to optimize the quality of care for pregnant women at risk, infants and children of the first three years of life, in order to reduce perinatal morbidity and mortality, prevention of disability in childhood.

Keywords: social and biological factors, pregnant women are at risk, newborns, children of the first three years of life, medical and organizational technologies, prevention of perinatal pathology, morbidity, mortality and disability reducing.

INTRODUCTION

In recent decades, the continuing negative trends in the health status of the population, which requires a continuation of health care reform and in the process of making the necessary adjustments [1,4]. In a further reduction of the projected population of Russia the most important problem of population policy and a necessary condition for ensuring the national security of the country is to increase the birth rate and maintaining the health of women and children [7,8]. Current demographic and socio-economic situation calls for improvement of obstetric care, optimizing health care for pregnant women and newborns to reduce perinatal pathology, prevention of disability in childhood.

The system of continuous prevention of perinatal pathology and its consequences occupies an important place to identify risk factors and their elimination at the stages of pregravid preparation, antenatal, intrapartum, neonatal and post-neonatal period [3,5]. Perinatal pathology and its effects are influenced by social and biological factors. It is considered as proven multiplicity of reasons, which may act directly or indirectly, in isolation or in a complicated pattern. [8] The importance of factors that have the greatest influence on the formation of children's health, changes in different periods of childhood [2,6,9].

The aim of our study was to determine the medical and social characteristics of families and the identification of the role of risk factors for perinatal pathology in the cohorts studied, which will continue to develop based on their medical and organizational technologies provide high quality and efficient health care for women, newborns and children the first three years of life with perinatal pathology and disabled children.

MATERIAL AND METHODS

The study was conducted on the basis of the regional State Organization "Perinatal Center" of the Ministry of Health of the Khabarovsk Territory. We have studied the social and biological history of 40 parents of children with CNS PP moderate at birth observed in the department catamnesis Perinatal Center (II group) and 100 parents of children with mild CNS PP (I group). For this purpose, method of copying data from individual cards child development, interviewing and questioning the parents. We studied the social and biological factors of mothers (fathers) of children with perinatal CNS lesions with varying degrees of severity at birth. We analyzed family factors, such as marital status of parents, living conditions, material conditions, the nature of family relationships.

RESULTS AND DISCUSSION

The analysis revealed that mothers of group II than I at the time of birth of a child often are aged from 35 to 40 and younger than 18 years, at least - from 19 to 28 years. Among them there were fewer women in higher education. The social status of mothers of group II was characterized



by a smaller number of entrepreneurs and large - workers and students. Age at first marriage for these women was often up to 20 and over 30. They are often ill SARS more than twice a year, had abnormal gastrointestinal, endocrine and cardiovascular systems, the anomaly of genital organs. Compared with mothers of group I, these women often recorded abortions and spontaneous abortion, especially in the early stages. They basically found out about the pregnancy to term of 6 to 12, at least - up to 6 weeks, resulting in a register at the antenatal clinic predominantly after 12 weeks of pregnancy and visited a doctor regularly. The peculiarity of pregnancy in these women was the presence of complications such as hydrocephalus, the threat of termination in the II trimester twin-to-placental insufficiency.

Children in Group II, in contrast to the newborn I, mothers were applied to the chest on the third day, and later, as well as an earlier transfer to artificial feeding. Mothers of children in this group rarely promptly summoned to the doctor's house in acute exacerbation of chronic conditions and diseases, because they believed that regulate themselves, rarely performed medical purposes, tempering procedure was performed.

Among the fathers of children in Group II were more who have completed secondary education, social status - and more workers employed in construction work. Among the adverse occupational factors prevailed hard physical labor, of bad habits - smoking. The marriage age of the fathers was often up to 20 years. Fathers of children in Group II were more likely to participate in the upbringing of the child only if they "had the time", and is usually given to a child less than one hour a day.

In group II there were more common-law marriages, divorced or unmarried mothers. These families are less likely to have a separate apartment, often lived in the room "communal". Income attributable to one member of the family, often below the subsistence level. Family relationships were of a volatile, contradictory. Established position of the parents on the child's rehabilitation: active - 36%; passive - at 38%, and aloof - at 26%.

In the analysis of social (38) and biological (45) risk factors in young children with PP CNS at birth revealed that 60,5-73,7% are social, 40-62,2% - biological factors. And in young children with mild CNS PP most influenced by social factors, whereas in children with moderate CNS PP - biological.

Thus, as a result of research conducted by the biomedical risk factors for perinatal pathology revealed that the formation of PP CNS are influenced by social, biological factors and family relations.

The need to identify controllable risk factors providing child PP CNS at different stages of observation of the woman: the pregravidal training in antenatal and post-neonatal period. Eliminate or weaken the effect of biological risk factors (activities to optimize the health of women and children) is a health care system that contingent. However, are important factors such as social status of parents, living conditions, bad habits, relationships between parents, parents and children. Eliminating or leveling of these, as well as biological factors is of great importance to the child's age becomes even more significant.

The risk factors identified in the prediction of health disorders, including perinatal pathology showed that the problem of their correction and removal is an inter-ministerial in nature and requires the formation of structures aimed at a comprehensive medical, psychological, educational and social and legal assistance.

Only when the general orientation of the complex of measures for the prevention of perinatal pathology, with the elimination or weakening of the actions of all risk factors (both biological and social, and psychological), it is possible the effectiveness of the activities in connection with what is necessary to create a structure in a system designed to prevent perinatal pathology to medical and social, psychological and educational rehabilitation. Medical and organizational support should be directed at achieving the following objectives: to provide a holistic approach to providing multimodal comprehensive medical, psychological, educational, social and



legal assistance, coordination of activities of psychologists, educators, social workers and health center professionals to provide consultative and diagnostic, therapeutic and rehabilitative care, the provision of comprehensive medical, psychological, educational, social and legal assistance through the use of modern preventive and therapeutic and diagnostic technologies perinatal psychology, conducting psychological preparation of pregnant women for childbirth, preparing the family for the birth of a child, consulting and services on reproductive health prevention of abortion and to prepare for pregnancy and childbirth, medical and social, legal and psychological assistance to pregnant women in crisis and / or dangerous to the physical and mental health status, as well as being victims of domestic or other violence, and / or are not adapted to social aspect, as well as consultations on issues of social and legal protection of women and children, support for women seeking a termination of an unwanted pregnancy, socio-psychological assistance to minors, aimed at preserving and strengthening reproductive health, preparation for family life, a focus on healthy family; establishment of an early detection of abnormalities in the development of children with central nervous system and the PP to provide them a comprehensive psychological, educational, social and legal assistance, including early detection, correction, habilitation and rehabilitation of children with developmental disabilities.

An important component is the information, and social and legal support for parents and families, including: maintenance and support of parents and family members at the birth of a child with special needs, advising the family (relatives) on the formation of an adequate position to the problems of the child, creating a positive interaction between family members and active participation in child care, training of parents of psychological and pedagogical technologies of cooperation with a child with CNS PP, techniques and methods of education and training in the context of the family and provide them with psychological care, providing information about the laws that protect the rights of the child and family, social guarantees, of community and government organizations that provide the necessary assistance, organization of information events in the media to the public on psychological, educational, social and legal assistance to women and children.

Complex medical and organizational measures designed to improve the care of women, women in labor and childbirth, newborn, children with CNS PP and their families in a large multidisciplinary institution (for example, the Perinatal Center of Khabarovsk) allows timely identification of risk factors, corrected them, weaken their action by increasing the number and enhance the action of positively influencing factors, to carry out medical, psychological, educational and social rehabilitation, to form a healthy lifestyle, greatly reduce the risk of perinatal pathology, thereby reducing perinatal morbidity and mortality, prevention of disability in childhood, the optimal development of the child and adaptation in society.

CONCLUSIONS

As a result of scientific research of biomedical risk factors for perinatal pathology we revealed that in the studied families of social risk factors of perinatal pathology occurred in 73.7%, life - at 62.2%. In 67.5% breaches of family relations were identified. More than one third of children recorded a combination of social and biological risk factors, which allowed us to justify the need for the development of medical, psychological, educational and social support to these families and to create organizational and functional model of the Center for Medical, psychological, educational and social rehabilitation, aimed at preventing of risk factors and their correction.

Thus, early detection of social and biological risk factors allows reducing and eliminating the causes of perinatal pathology in the first three years of life. The introduction of new medical and organizational technologies to optimize the quality of care for pregnant women at risk, infants and children of the first three years of his life to the work of hospitals can achieve to reduce perinatal morbidity, mortality and disability. It should be noted that the proposed medical and organizational technologies are preventive orientation that can certainly be regarded as a resource-saving technologies, and can be widely used in the practice of health care.



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The results of a pilot study of life quality of the Republic Sakha (Yakutia) population

Abstract. In the pilot study 684 rural respondents were included. The results of studies allowed obtaining preliminary data on the parameters of quality of life (QOL) of the Republic Sakha (Yakutia) population in the Russian version of the eight scales of the general health questionnaire SF-36 in six age groups, male and female groups. In addition, these studies allowed taking into account a measure of variability of calculated QoL and to determine the sample size of the population of the Republic Sakha (Yakutia), to assess the psychometric properties of the SF-36 questionnaire, testing socio - demographic map.

Keywords: quality of life, population-based study, a pilot study, the sample size, the psychometric properties of the questionnaire, the socio - demographic map.

Introduction

A pilot study allows to determine the extent of feature variability in the groups by age and sex, and then calculate the required number of observations for each group. Therefore, a pilot study conducted to determine the minimum size of the sample and to ensure a representative sample. The minimum sample size implies the existence of such a large number of respondents, which, on the one hand, will be sufficient to clearly answer the questions posed in the study, and on the other hand, small enough to avoid unnecessary costs on the study. Sampling during the study population should be representative, at least in two ways, by sex and age. Depending on the method of determining the minimum sample size required a number of other benchmarks: the standard deviation in groups, the standard deviation of the difference between the two groups or the proportion examined variable for each group. Due to the fact that standardized general quality of life questionnaires used in population-based studies have been set up in the English language, cultural and linguistic adaptations, testing their psychometric properties are always confronting researchers in Russia [2]. In addition, as part of a pilot study testing assesses the socio-demographic module, which characterizes the features of the region, where we study

Materials and methods

In the pilot study included 684 rural residents of the Republic of Sakha (Yakutia). The average age of the sample was 43 years (SD 16.9). The range of ages - from 15 - to 88 years. Distribution by sex - men / women - 220/464. The share of missing answers to all profiles - 0%. The percentage of respondents who answered at least 50% of the questions each scale to 100%. When checking the distribution of the mean values of the scales of the SF-36 questionnaire by the Kolmogorov-Smirnov test were found deviations from normal. In this connection, to calculate the average values of QL to each of the 8 scales were used nonparametric tests (Mann-Whitney, the Kruskal-Wallis test, Dunn post hoc test). Were also calculated the standard deviation (SD) for each average, 25% and 75% quantile, median.

Results and Discussion

Determination of the variability in quality of life parameters, depending on the age and sex of respondents

Descriptive statistics are presented in Table. 1: Table. 1 shows that the comparison of quality of life in men and women were obtained statistically significant differences between them in all SF-36 scales. Thus, the QOL of men was much higher than women on all scales of the questionnaire SF-36 ($p < 0.001$), which is consistent with previous studies [3, 4]. Moreover, we obtain the standard deviation (SD) for each average, 25% and 75% quantile, median.

For statistical analysis in different age groups, all respondents were divided into six age groups from 10-year-old step:



•	Group	1:	15-24,	n	=	116
•	Group	2:	25-34 years,	n	=	87
•	Group	3:	35-44,	n	=	149
•	Group	4:	45-54,	n	=	149
•	Group	5:	55-64 years,	n	=	88
•	Group	6:	≥ 65 years,	n	=	95

The tables above show that in carrying out multiple comparisons of quality of life parameters in groups according to age obtained statistically significant differences on all the scales of the questionnaire SF-36 ($p < 0,0001$) with the exception of the scale of "mental health". In further paired comparisons across groups using a posteriori statistical criterion (Dunn's Multiple Comparison Test) obtained statistically significant differences between individual pairs of groups at different scales questionnaire, except for the following groups 1 and 2, 2 and 3, 3 and 4, 4 and 5. Table 2 shows the differences between the groups of respondents depending on age value indicating p according Dunn's Multiple Comparison Test. The maximum number of differences (for seven scales) is obtained between groups 1 and 4, 1 and 6, 2 and 6, and 3 and 6. In Figures 1-4 shows the evolution of the quality of life in different age groups: 1-4 of the drawings shows that with age there is a decrease in quality of life on all scales of the questionnaire SF-36, except for the scale of psychological health. The most significant declines with age physical and emotional functioning. Our results are consistent with the results obtained in other studies (1, 3, 4, 5, 6, 7).

Rationale for the calculation of sample size:

1. Calculation of the sample size conducted in the light of recommendations of the International Project population-based studies of quality of life "International Quality of Life Assessment" Project (IQOLA);
2. To calculate the sample size used in statistical data collection of the Sakha Republic (2007);
3. To justify the size of the sample used the results of a pilot study of the quality of life of residents of the two regions of the Republic of Sakha, industry and agriculture;
4. The sample was measured at a predetermined power level of 80% and statistical significance of $p < 0.05$;

The total sample size for a population-based study in the Republic of Sakha (Yakutia) should reach 1042 people. The sample is representative by gender, age, place of residence (according to the medical and economic zoning of the Republic). Qualitative representative sample population ensure that its composition of the population by sex, age and place of residence according to the Statistical Abstract of the Republic of Sakha; Quantitative representative sample set is justified by calculating the required number of observations for each of the age groups.

Evaluation of psychometric properties of the SF-36 questionnaire

Reliability analysis of the scales of the questionnaire SF-36 was carried out by assessing the internal consistency by calculating Cronbach's coefficient. High values were obtained α -

Cronbach 6 of 8 scales questionnaire from 0.7 to 0.9 (excluding scale social functioning and general health). In assessing the validity of the method of "known groups" showed a significant difference in quality of life according to sex and age ($p < 0.001$ and $p < 0.0001$, respectively). With the help of factor analysis was tested suggested structure of the questionnaire. Russian version of the SF-36 questionnaire



can be used for population studies, the quality of life of the population of the Republic of Sakha (Yakutia), allowing for the evaluation of quality of life in the Yakut population.

Confirmed satisfactory psychometric properties of the questionnaire, the peculiarities of the different components of evaluation of quality of life among the Yakuts. SF-36 questionnaire can be used to study the population quality of life of the population of the Republic of Sakha (Yakutia), allowing for the evaluation of quality of life in the Yakut population.

Testing of socio - demographic map

For the characteristics of the study population Yakuts in the social, economic and demographic terms the basic structure of the sample is distributed by gender, age, education, employment, marital status, material and housing conditions.

In the employment sector, the highest number in percentage of the working age population were full-time. The smallest number of respondents were persons employed in the industry, as well as the unemployed.

Among the respondents in the education sector, the largest share as a percentage of the population made up of an average, middle-and higher education. The least amount as a percentage of the respondents identified the respondents with incomplete secondary or incomplete higher education.

Among the respondents in the sector of marital status, most in percentage terms were family group of people, as well as persons who have never been married or unmarried. The lowest share of respondents identified with either single-parent families or unmarried respondents.

To characterize the material situation of the respondents was calculated by the ratio of personal income of the respondent to the subsistence minimum (SM) at 1 m. 2010.

Only 860 people gave answers about the amount of personal income from 1042 respondents. A low ratio of personal income to the subsistence level most often found among the rural population group (29.4%), followed by industry (26.3%) and Arctic (22.7%). More than half of respondents (52%) of the Arctic group noted that a

median income. The average income reported as more than 40% of rural respondents and more than 30% of the industrial groups. High personal income was seen in more than 40% of respondents from the industry group. The percentage of respondents with a higher income in rural and arctic groups was almost comparable and consistent with 25-27% of the population surveyed. Among the respondents in the main sample of the sector the main source of income as a percentage of the majority chose - wages, a small percentage of the respondents said another source of retirement income. Therefore, in accordance with the recommendations of the International Quality of Life Assessment Project has developed a special socio-demographic map that takes into account cultural and social characteristics of the population of the Republic of Sakha (Yakutia). Developed by socio-demographic map provides sufficient objective perspective of the standard of living of the population and can be used to develop a regional quality of life of the population.

CONCLUSION

These pilot studies allowed:

1. To have preliminary data on QOL parameters of the Republic of Sakha (Yakutia) in the eight scales of the Russian version of the general health questionnaire SF-36 in six age groups, groups of men and women;
2. Calculate the total sample population for the study. Based on the recommendations of the International Project population-based studies of quality of life "International Quality of Life Assessment" Project (IQOLA) the total sample size for a population-based study in the Republic of Sakha (Yakutia) should reach 1042 people;
3. Check the psychometric properties of the SF-36 questionnaire in the Yakut population;
4. Test the socio-demographic map of characterizing features of the socio-economic development of the country.

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SIMULATION CENTRE AS A PART OF EDUCATIONAL MEDICAL CLUSTER

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Abstract

The authors reviewed the simulation training on the computer simulators, various training apparatus, mannequins and training models. Teaching in the direction of development of basic surgical skills and high-tech medical care section is studied.

Keywords: simulation training, basic skills, computer skills, simulation center.

Introduction

Personnel policy of the health system during its modernization carried out in the Russian Federation is aimed at the formation, development, and professional development specialists. Crucial role in the formation of a new generation of professionals should play revival of the Russian educational system. In the new socio- economic conditions of real value to health care is a well-educated physician, capable of flexibly changed direction and content of their activities in connection with the needs of the industry. The main strategy of the development of medical education is the need for training and development specialists to meet the needs of the state in specific categories of health workers. In the current situation, taking into account global trends, it is necessary to go towards the creation of simulation centers for training of both students and novice physicians. The realization of this goal requires the following strategic priorities:

- Introduction of competence-based approach in the training of professionals, ensuring the relationship of academic knowledge and practical skills;
- Development of variability educational programs, including the use of new educational technologies and the best international practices;
- Implementation of an effective quality clinical training and retraining of specialists at the experience of leading Russian and foreign institutions;
- Formation of an external independent certification of professional competence, accreditation, graduates and professionals;
- Establishment of a system of continuous professional development based on the principles of open educational space in accordance with the objectives of the innovation of the industry.

Thus, the model is formed by practical training must necessarily be based on training at the clinic. This requires an urgent review of its content and the creation of new principles:

- Organization of training and work practices;
- Practical training in the departments;
- The introduction of elective courses on practical skills.

In the Institute of Medicine of the North-Eastern Federal University named after M.K. Ammosov in order to develop practical skills of students, students of the university curriculum and training paramedics on phantoms in the framework of the development of the university created Simulation center with simulated workplace practitioner. The emphasis is on simulation training on computer simulations of various simulators, mannequins and training models. The courses are taught both in the direction of development of basic surgical skills, as well as in the high-tech medical care. Education primarily aimed at the interns, residents, graduate students, and surgical training of doctors, as well as students for the first time mastering various invasive manipulations. At the center, students learn the skills of general surgical procedures.

Education of students with modern exercise equipment and systems can raise the learning process to a new level. An integral part of the training for surgical departments is to conduct online transactions with the comments and feedback. The development of each manipulation, the skill or dexterity of several stages:

1. Theoretical training for the manipulation, skill or ability.
2. The study of the functionality of the simulator model, the phantom or dummy.



3. Testing of manipulation in the simulator model, the phantom or without plaster casts of the execution time.

4. Testing of manipulation in the simulator model, or a plaster cast of a phantom with the runtime.

5. Evaluation of the implementation of manipulation, skill or ability (as worked out criteria).

The students master the following practical skills:

a) on the 2nd course - caring for critically ill patients, measurement of blood pressure and body temperature, setting enemas, gastric lavage, administration of intradermal, subcutaneous and intramuscular injection, intravenous drip conducting, staging peripheral intravenous catheter, holding techniques of cardio-pulmonary resuscitation etc.;

b) for the 3rd year - conduct primary resuscitation of the complex, the primary surgical treatment of heart and lung auscultation, electrocardiogram, and others;

c) on the 4th year - conduct auscultation of the lungs and heart, the use of a nebulizer, palpation of the breast, bimanual palpation of the uterus, managing uncomplicated births, etc.;

g) for 5-year student - blood type, digital rectal examination, the technique works with a defibrillator, the restoration of the airway by the introduction of air and the use of a laryngeal mask, etc.;

e) on the 6th year - diagnosis and differential diagnosis of diseases of the heart and lungs, carrying ECG interpretation, execution algorithms action when comatose, shocks and pulmonary edema, etc.

A new concept of training can significantly reduce the time specialist training due to fast and productive set of so-called "training hours", and that the most important thing - to make surgery safer for the patient. Today for us is objectively necessary to create training and simulation training centers precisely on stage postgraduate training, re-training, certification and approval for their work with patients. This will be a major step forward in the proper training of quality professionals specialized medical care. However, such teaching and training centers of high medical technologies have become not only centers of learning, but also centers of certification experts. Many medical institutions throughout the country already have the necessary equipment for this purpose and the tools. In this technique of laparoscopic procedures in various medical surgical specialties have many common points. Optimizing the process of learning laparoscopic surgery is one of the important methodological issues at the post-graduate medical education. In medicine, particularly in surgery, during the development of high-tech methods of providing specialized assistance there is an urgent need to change the system of development of practical skills. Education in operating the type of «look, as I do, and remember" is ineffective and counterproductive. It is advisable to create motivation, which encouraged students to develop practical skills in a training center on a "Bring to make it so" as under the supervision of a teacher, and independently as long as necessary for this learning period. In this case, must necessarily be introduced elements of the game and the competition triggered by the state of excitement, which significantly increases the interest and facilitates the development of practical skills while increasing the effectiveness of training.

The actual implementation of the described concept is feasible when the training methodology and the mandatory application of simulation methods development of practical skills. Feature and the undeniable advantage of simulation training is the possibility and necessity of frequent repetition of certain actions, bring them to the automatism of the highest quality with the commission, which is controlled by the teacher as subjectively and objectively with the use of virtual simulation software. It is extremely desirable that the errors committed in the course of cadet training in the classroom, not in the actual practice in the operating room. A new concept of training can significantly reduce the learning curve of practical skills, making the initial period of self-study of a young surgeon more short-term and less painful for both the doctor and for others of his colleagues and, most importantly, for patients.

Possession of practical skills on models and simulators, mandatory certification practical



skills must be built on the main principles used in the preparation of international practice physician. Here you can take as a basis for an objective structured clinical examination, which is conducted at leading universities in the world. Speaking today about the importance of practical training at the undergraduate level, it is necessary to note the objective needs of the formation of this system on the stages of post-graduate training throughout the professional life. For the implementation of an effective and high-quality training and retraining of medical specialists is necessary to standardize the list of practical skills and specialist skills of different educational levels, to form professional standards that should be targeted indicators of professional competence.

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N.V.Savvina, A.A. Javorskij, E.A.Borisova, L.N. Afanas'eva, M.V.Platonova
ANALYSIS OF DEMOGRAPHIC SITUATION AND HEALTH INDICATORS OF
REPRODUCTIVE AGE WOMEN IN THE REPUBLIC SAKHA (YAKUTIA)

The article represents the results of the study of the dynamics of basic demographic indicators and indicators of reproductive health in the Sakha Republic (Yakutia) within the period 1990-2011. The authors register the decrease in reproductive potential of the population.

Keywords: demography, fertility, abortion, gynecological morbidity, infertility.

Introduction. Nowadays despite positive changes like birth wave, reduction in the number of abortions, reduction in maternal and infant mortality, the number of population is still declining. Negative consequence of depopulation is not only decline in population but also the deterioration of its quality parameters such as demographic "aging" of the population, the growing disparities in number of men and women [5]. In this connection the problem of reproductive health has a great social significance. The Concept of Demographic Policy of the Russian Federation for the period till 2025 emphasizes that demographic policy should be based on a systematic theoretical and practical research in the field of reproduction of the population with the transition to a comprehensive, integrated research on the regional level. The reproductive health plays an important role and is one the most significant problems. Demography and reproductive potential depend on several factors: the health of children and teenagers, physical and reproductive health of women and men, course and outcome of pregnancy, the level of reproductive losses [4].

The analysis of the regional characteristics of medical and demographic situation allows to identify the main trends in health indicators and to develop particular proposals for possible scientific solutions [2,3,6].

This article is based on the data collected by Health of the Sakha Republic (Yakutia) and the Territorial Office of the Federal State Statistics Service of the Sakha Republic (Yakutia). The authors have analyzed demographic and health indicators of the reproductive health of female population.

Analysis of the population dynamics in the Sakha Republic (Yakutia) shows that within the period 1990 - 2011. it decreased on 14% (1111,5 thousand people in 1990 and 955.9 thousand people in 2011) (Figure 1). The most dramatic decrease can be observed in 1993. Thus, in 1993 the population decreased on 20.6 thousand people, in 1996 it decreased on 16.9 thousand people, and in 2000 on 14.6 thousand people due to the political, social and economic changes in the country.

Before 90's the rate of population growth in the Sakha Republic (Yakutia) in comparison with the Russian Federation was much higher. In 60's the rate of population growth in the republic was the highest and reached 33.8% (Fig. 2). In the 70's and 80's the rate of population growth remained positive but compared to the 60's began to decrease on 31.4% and 26.8%. During 1992 – 2003 the

rate of population growth reached its minimum "7.2%". Since the last decade of the last century, the

rate of the population growth became negative. In the first decade of XX century it was "0.5 %". In the last decade of the twentieth century, the rate of the population growth in the Sakha Republic (Yakutia) and the Russian Federation was negative. In the first decade of this century, the rate of population decline in the Sakha Republic (Yakutia) in comparison with the Russian Federation is different. When in the Sakha Republic (Yakutia) the rate of population decline has slowed and is positive, in the Russian Federation it is negative.

During the analyzed period, the female population has decreased on 11%. In the structure of the population by sex there is a predominance of women, the proportion is 51.6% (490.2 thousand people in 2011). Sex structure of the population continues to decline. On average, for 1,000 men of all ages there are 1,068 women (in 1994 1001 women). This sex imbalance, especially in the reproductive age has a negative impact on marriage and, as a result, fertility. The proportion of women of reproductive age (according to WHO- criteria including a group of 15-49 year old women) was 53.9% (264,270 people) in 2011. During the period 1990 - 2011 there was a decrease in its population (33 233 people). At the same time there was a reduction in the number of 0-14 year old girls (on 65,594 people, or 60.6%) and 15-18 year old girls (on 2,871 people - 8.2%), which could adversely impact on the birth rate. A group of women of reproductive age (46 – 49 year old) increased on 13,478 people. The number of women older than 49 years increased on 29,104 persons (23.2%). This is the evidence of the aging of women of reproductive age and is a negative factor for reproduction.

To study the demographic situation in the Republic we have made the analysis of fertility, which is the basic demographic processes, and to a great extent determines the nature of human reproduction.

In the 90's of the twentieth century, the total fertility rate in the Republic decreased by 1.4 times. Respectively, the rate of decline was "-29.3%" (Table 1). It can be connected with poor social protection of the population, as well as the fact that the most fertile age group were women who were born in the 60-70 years and whose mothers were born in war and post-war period, when the birth rate was extremely low. The fertility rate in the first decade of the new century is a positive trend that has increased in comparison with 1999 on 23.4%. In 2011 it was 17.1 per thousand. The year of 2000 can be considered as an initial in terms of the growth of total fertility rate (Fig. 3).

More than 40 years ago, WHO- experts developed and adopted the Concept of family planning. Family planning is considered to be a component of Program of Mother and Child Health Care. The experience of the International Planned Parenthood Federation, representing more than 120 countries, suggests the possibility of solving the problem of maternal, perinatal and infant mortality by reducing the number of abortions. Every year 45 million abortions are made in the world. One in three women having abortion experiences complications, and about 500 thousand women die from complications related to pregnancy. In the last decade, Russia has been a strong tendency to reduce the number of abortions.

In 2001 in the Sakha Republic (Yakutia) the number of abortions was 45.4 per 1,000 women of reproductive age, the abortion rate - 72.6 per 100 births. According to official statistics (statistical Form #13, "Information on the termination of pregnancy before 28 weeks") during 1991-2011 the abortion rate in the Sakha Republic (Yakutia) decreased twice - from 149.5 to 72.6 per 100 births and from 100.0 to 45.4 per 1,000 women of reproductive age. There is a tendency to change the structure and types of abortions. Percentage of spontaneous abortion increased on 3%. Proportion of unspecified abortion increased on 4.3%. Proportion of induced abortions decreased on 7.3%.

One of the consequences of a large number of induced abortions among women population is a high level of maternal mortality in the country. Abortions take the second place in the structure of the preventable causes of maternal mortality in the country, which is 16.3% [5].

Maternal and perinatal mortality rates are rising among young women of reproductive age and older with intervals between pregnancies less than 2 years and a large number of abortions in history. In the Sakha Republic (Yakutia) there is a decline in perinatal (1995 - 24.07, 2010 - 8.1 per 1,000 live births) and maternal mortality (2000 - 76.1, 2010 - 25.0 per 100 thousand live births) mortality, which corresponds to a reduction in the number of abortions.

Contraception is an important aspect of family planning programs. It is the primary method of preventing unintended pregnancy. In Russia there was no contraceptive revolution - the substitution of abortion as a method of family planning methods of modern contraception, which took place in developed countries. As we know, the effective methods include voluntary surgical sterilization, intrauterine and hormone contraception. Today, thanks to the work of family planning services there is an increase in the number of women using these methods. For example, in Russia in 1990 hormonal contraception was used by 1.7 of 10,000 women of childbearing age, in 2006 - 9.8. However, the level of contraceptive use in the country remains very low. In 2006 only 23.3% of women of reproductive age used effective methods of protection from unwanted pregnancy. [1]

In Yakutia there is an increase in the number of women of reproductive age using effective methods of contraception. In 2011 the figure was 279.2. In 2000 - 254.2. The most commonly used

contraception is hormonal one. However, in our Republic as well as in Russia the use of hormonal contraception is a poorly regulated process because women don't need to have a prescription to buy tablets.

Fixture and removal of intrauterine devices is a process controlled by a doctor, so the performance of this method is the most reliable. The popularity of intrauterine contraception is reduced, but remains at a high level. This is confirmed by the number of women using IUDs: in 2000 - 187.9, in 2011 - 137.0 per 1,000 women of child-bearing age. At the same time there is a growth in the number of users of hormonal contraception. In 2000, for example, hormonal tablets were taken by 66.4 per 1,000 women of childbearing age, in 2011 - 142.2.

The analysis of the demographic situation would not be complete without the analysis of the reproductive function of the female population, the state of which can be assessed in terms of gynecological morbidity. We have analyzed the incidence of gynecological morbidity according to official statistical reporting forms (Fig. 4). In recent years there is an increase in menstrual disorders, inflammatory diseases of the pelvic organs, cervical disease, endometriosis, infertility as a consequence, which is a negative trend and reduces the reproductive potential of the female population in the Republic. The growth of female infertility in the Sakha Republic (Yakutia) within the analyzed period from 2000 to 2011 had periodic setbacks. In the first decade of the XXI century the rate of the female infertility growth was 29.6%. In 2011, the fertility rate was 149.4 per 100 000 women of child-bearing age.

Thus, these data reveal unfavorable demographic situation in the Sakha Republic (Yakutia). The implementation of the national project has led to the stabilization of fertility. However, high level of abortions, increase in gynecological morbidity with infertility as a result, and aging of reproductive age women show low reproductive potential.

The patterns lead to the need for the development and adoption of measures to improve the reproductive health of women in Yakutia. To improve the quality of care to the female population it is necessary to promote effective modern methods of contraception especially among adolescents for annual checkups with cytology smears from the cervical canal. Engaging the clinical account of women diagnosed with disorders of the reproductive system, the surgical treatment of background and precancerous conditions of the cervix with a control inspection and removal from the dispensary health of women, the introduction into medical practice of modern methods of diagnosis and treatment such as hysteroscopy and laparoscopy, which will reduce the time recovery of lost health, the construction of the Republican Center for training of professionals working in the field of maternal and child health.

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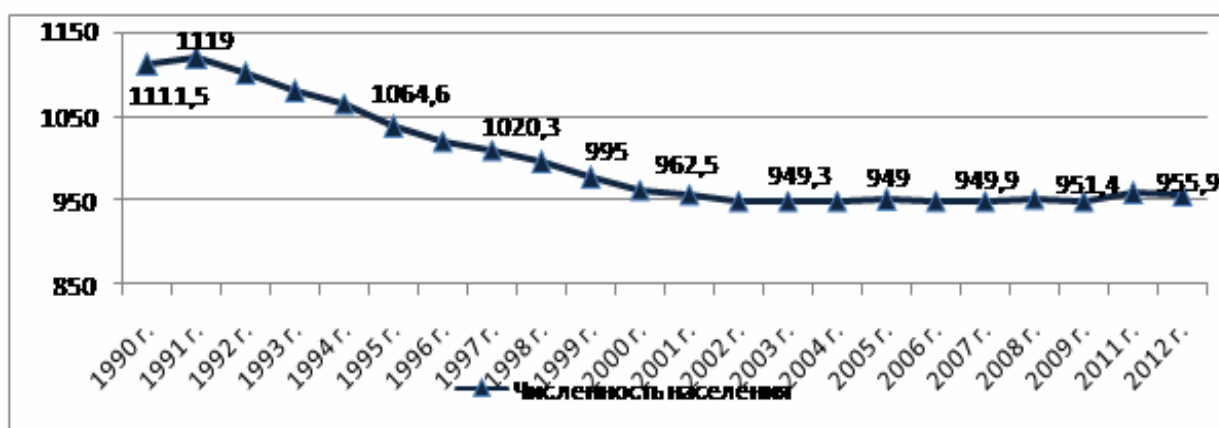


Fig.1. The population of the Sakha Republic (Yakutia) in the dynamics 1990 - 2012 (thousands people)

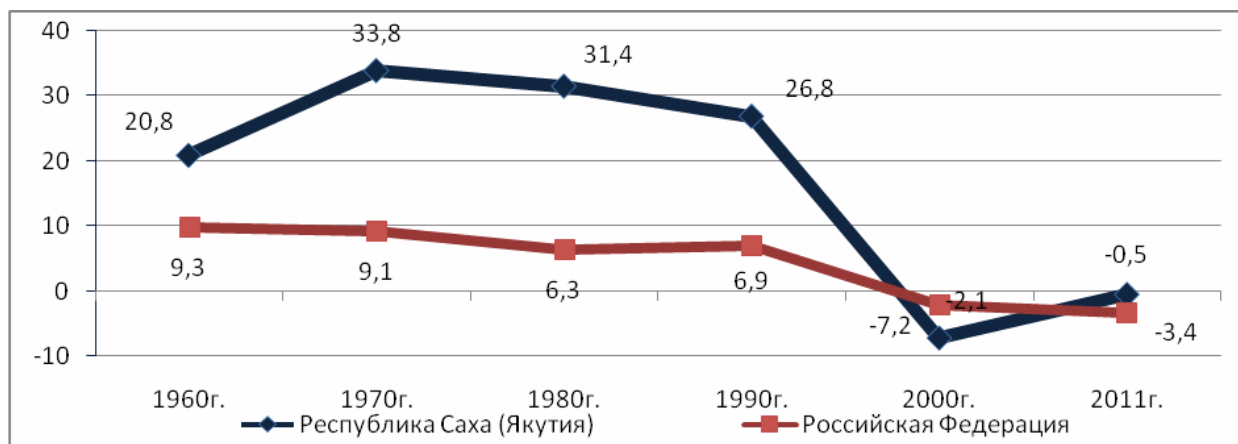


Fig. 2. The rate of population increase (decrease) in the Sakha Republic (Yakutia) in comparison with the Russian Federation within 1960 - 2011. (%)

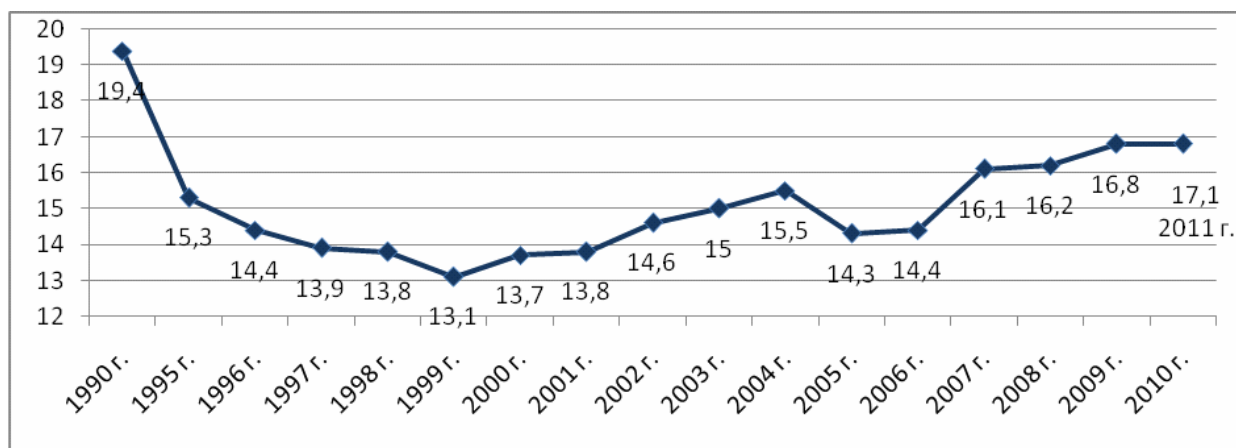


Fig.3. The birth rate in the Sakha Republic (Yakutia) in the dynamics 1990 - 2011 (per 1,000 people)

Table 1.

The rate of increase (decrease) the total fertility rate in the Sakha Republic (Yakutia) in the dynamics within 1990 - 2010

years	The Sakha Republic (Yakutia)		The Russian Federation	
	Per 1,000 people			
	Total	The rate of population increase (decrease) within a decade	Total	The rate of population increase (decrease) within a decade
1990	19,4	-6,7%	13,4	-8,2%
2000	13,7	-29,3%	8,7	-43,2%
2011	17,1	+23,4%	12,5	+30,4%



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THE MAIN INDICATORS OF ACTIVITY OF CAPITAL HEALTH CARE AND NEW
METHODS OF MANAGEMENT IN PRIMARY LINK OF HEALTH CARE OF YAKUTSK AT
THE TRANSITION TO PER CAPITA FINANCING

Summary. Now within modernization of health care the new model of branch based on the principles of receiving the maximum medical, social and economic effect on a unit of cost is formed. The main directions in improvement of the organization of rendering medical care there is a priority development of primary medical and sanitary help, removal of volumes of the help with stationary on out-patient level. Cooptation has to be carried out in the light of adoption of new federal laws in the health care sphere, taking into account a transition period on new forms of financing.

Keywords: per capita financing, optimization, three-level system of medical care.

Now the main sector of national system is the health care of primary link in which the most part of personnel and material resources is concentrated. The branch represents extremely difficult, non-uniform system, differing a considerable originality of elements making it, and also high degree of autonomy from higher bodies of management.

The city of Yakutsk is an administrative center of the Republic of Sakha (Yakutia) occupies the territory with a total area of 3,6 thousand sq.km. As of 01.01.2012 in health system of the city of Yakutsk there was a network from 14 separate legal entities - medical institutions of health care: 7 hospitals (in structure 2 from which 4 medical assistants and obstetric points), 4 polyclinics, State Budgetary Institution RS (Y) "Emergency medical service station", State Budgetary Institution RS (Y) "City specialized children's home", State Budgetary Institution RS (Y) Yakutskmedtrans.

The general power of the medical organizations makes 890 round-the-clock beds in a hospital and 311 beds of the hospital-replacing help, of them 118 beds of a day hospital at the round-the-clock hospitals and 193 at out-patient and polyclinic establishments, 3536 visits per shift in polyclinics.

For qualitative medical care of the population along with other factors important value has optimum placement, sufficiency and a condition of material base. Of 40 medical buildings of city health care only 16 (40%) are constructed according to standard projects (the "Soviet" period), the others 24 (60%) settle down in the adapted buildings. Physical wear of buildings of hospitals makes 43% of the total balance cost. Deficiency of floor spaces on city health care makes on out-patient and polyclinic institutions 12 667,4 of sq.m, on hospitals of 1200,0 sq.m.

The park of medical equipment in healthcare institutions of the city of Yakutsk is presented more than 1600 units of the large equipment, thus 27% of medical equipment are used over an operation established period.

The capital is characterized by steady dynamics of growth of the main socio-economic indexes. From year to year the increase in number of inhabitants of the capital is observed. According to Territorial body of Federal service state statistics on RS(Y) for the end of 2012 the number of resident population made 286691 persons, from them 99,7% are served in the medical organizations of primary link of state budgetary institutions of Yakutsk that is 25798 people more, than in 2010 (260 893). Growth rate in the ratio 2010 by the beginning made 2013 9,9%. Persons of able-bodied age in the city 113 348 people (49,2% of the total number of inhabitants) that is higher in comparison with last year on 11 187 people are. The children's population makes 70 233 people (2011 – 69385).

The demographic situation in RS(Y) for the last years favourably differs from other subjects of Russia a high rate of birth rate, steadily low mortality and positive dynamics of coefficient of a natural increase of the population of the republic, including in Yakutsk. Thus, the annual natural increase of the population increases on the average by 2%, and in 2012 made 14, 5. Thus it is necessary to consider and migratory streams of the population, so, only in 2012 the increase made 4695 people.



Tendencies of mortality of the population, features are of great importance from positions of demographic and social and economic development. The indicator of the general mortality in Yakutsk in 2012 made 8,4 on 1000 population. The population leading causes of death didn't undergo in recent years essential changes. Almost every second dies of diseases of system of blood circulation, every fifth - of accidents, poisonings and injuries. The indicator of an one-year lethality from malignant new growths from 20, 2% in 2011 continues to increase to 28,1% in 2012.

Thus the indicator of the general mortality of the man's population is 1,6 times higher, than female, distinctions of tendencies of mortality of the population at able-bodied age are especially essential. In the comparative analysis it is revealed that life expectancy of the population of the city of Yakutsk is less, than as a whole on the Republic of Sakha (Yakutia) - practically for 1 year, men on the average live 60,2 years, women - 72,3 years

One of the indicators characterizing health of the population, incidence is. In 2012 level of the general incidence of adult population increased for 11, 7% and made 1778,0 on 1000 population (2011 – 1592,2). In structure still, leading places remain behind diseases of system of blood circulation – 15,5% (2011 - 16,1%; 2010 – 15,6%), thus it should be noted the increase for the first time the registered diseases of system of blood circulation from 7856 cases in 2011 to 8948 in 2012, of them diseases being characterized increase of arterial pressure is made by 23,8% that is 18,2% higher in comparison with previous year. And diseases of respiratory organs, generally at the expense of the children's population – 14,8% (2011 - 15,0%; 2010 - 14,8%). So, for the last five years incidence of diseases of respiratory organs increased by 1,2 times, including. growth of incidence by bronchial asthma increased by 1,3 times, chronic obstructive diseases of lungs by 1,2 times. On the dispensary account on treatment-and-prophylactic establishments of Yakutsk 31,3% of all population consist, from them about 86% look annually round and revitalized. Patients make 9,4% of an illness of respiratory organs, 7,3% of an illness of bone and muscular system of 18,4% consisting on the dispensary account with diseases of system of blood circulation.

The main indicator reflecting quality of work of primary link, the indicator of primary exit to disability is. Among the population of Yakutsk this indicator with 56,4 on 10 000 population in 2011, increased in 2012 to 68,4, exceeding republican figures – 64,7 on 10 000 population.

Despite this developed tendency, in the analysis of these visits of specialists doctors, it isn't traced correlations between structure of visits and structure of incidence, mortality: on the first place – visits of the doctor-endocrinologist (37 289), on the second – the physiotherapist (22 598). Visit of the cardiologist only on the third place (18 876), on the fourth – the gastroenterologist (13 226), on the fifth – the urologist (12 023) and on the sixth place – visit of the oncologist (11 297). That is caused, first of all, by deficiency of established posts and natural persons among narrow experts of an out-patient link of city health care (5 cardiologists, at the standard-14; 2 oncologists at the standard – 7,9; 1 gastroenterologist at the standard - 4).

A large number of visits of certain experts is caused them by participation in carrying out additional medical examination and medical examinations of the adult and children's population. Taking second place around the city visits of the physiotherapist for 48-51% are provided respectively with activity of only one hospital, i.e. today the head of the medical organization defines not only priorities when providing with medical care of the population, but also the strategic direction of development of the medical organization.

Now, when control of financial expenses for rendering medical care is the most important function of the head of healthcare institution, as the main tool providing not only a choice of the most effective and qualitative models of medical strategy, but also the analysis of results of application of these or those techniques, technical and economic methods act. With introduction of new funding mechanisms and introductions in the market relations, for preservation of competitiveness of the medical organization there is a need of concentration of an expensive high-informative and difficult technique for the interterritorial out-patient diagnostic centers and special profile offices of out-patient service.

Upon transition to per capita financing the chief physician has to be, first of all, a manager, carry out the analysis of incidence of the attached population, it is correct to choose routes of treatment of patients rationally to use financial means.

Despite carried-out reforms in health system, increase in financing of branch, serious problems which interfere with achievement of the objectives directed, first of all, on increase of availability and quality of rendering medical care, improvement of health of the population and satisfaction of patients with medical services continue to remain.

The key role in development of branch belongs to personnel resources, providing with the qualified medical workers, first of all primary link of health care. Thus indicators of security with medical shots in Yakutsk where it is concentrated 1/3 population of the republic, sharply differ from republican figures and tend to decrease, including due to active development of private medicine. So, security with the medical personnel following the results of 2012 on 10 000 assigned population in Yakutsk made 35,2 (in 2010 - 37,8, 2011 - 37,2), on RS(Y) in 2012 – 50,7, the average medical personnel – 52,7 (in 2010 - 57,6, 2011 – 56,5), on RS(Y) in 2012 – 119,2.

Completeness shots makes - 84% (2011 - 82%), the lowest completeness among average medical staff – 80%, druggists and pharmacists – 50%, during 10 months 2013 the completeness indicator medical staff decreases again.

The number of the decreased doctors in 2012 made 138 people, average medics – 184, thus young specialists there arrived only 33 persons, including 20 doctors, 13 average medical personnel, thus the requirement makes: therapists local – 14, pediatricians local – 27, general practitioners – 31, nurses - 222.

Also the personnel disproportion connected with a high share of medical workers of retirement and pre-retirement age is noted: 38% among doctors, 40% among the average medical personnel.

At the same time at available deficiency of regular number, taking into account introduction of orders of rendering medical care in Yakutsk it is necessary to 1404 pieces of unit, including doctors of experts – 414, the average medical personnel – 594, the younger medical personnel – 396 pieces of unit.

Many authors note that one of the main reasons of low level of health of the population of Russia still has an inefficiency of domestic health care which doesn't answer realities of market economy. Problems in health protection of citizens of the country collect. Considerably they are connected with a condition of medical shots [2,3].

The ratio of number of doctors and average medical workers doesn't meet the modern requirements. Even for general practitioners (family) it makes 1:1,5 instead of 1:2 - 3.

The disproportion of a ratio of number of experts of a medical profile and the diagnostic block, and also doctors of primary link of service of patients and specialists doctors remains.

The standard and legal base of staffing of health care is imperfect. Level of training and qualification examinations isn't fulfilled. Paper work borrows to 30 - 40% of working hours of the doctor.

As a result availability of adequate medical care decreased for the majority of citizens of the capital. Quality of medical care worsens despite growth of positions of the medical personnel and costs of provided services.

Timing of use of working hours of doctors of polyclinic shows that actually the doctor is overloaded, works for 1,5 rates, thus doesn't carry out FMP (function of a medical position) since physically he can't examine demanded number of patients, filling thus a set of obligatory medical documents. Approved function of a medical position isn't confirmed by calculations, doesn't coordinate with an incidence of the population and requirements of expansion of volumes of scheduled maintenance and medical examination of the efficient population. As a result of such standards the doctor practically doesn't manage to give high-quality medical help, and patients suffer from it, first of all. A part is played by high percent of combining jobs, upon transition to new funding mechanisms plan execution by doctors will be determined by FVD performance. Thus the high risk of non-



performance of FVD, according to decrease in volumes of the medical care, conducting to reduction of wages of work of workers and financings of medical institution, exists in stomatologic polyclinic, where the highest coefficient of combining jobs – 2,33. As of 1.01.12 at the staff list of 39,5 established posts, 15 natural persons, completeness of 42,8% actually work that considerably influences availability and quality of given help. Across the Russian Federation in the next five years the deficiency of medical shots connected, first of all, with new system of post degree education, and with low compensation which is on the average 22% lower than an average salary across the Russian Federation is predicted.

One of the important points influencing high-quality development of any branch, competent management of the branch including need of application of strategic planning, increase of responsibility of heads of all levels for achievement of the planned results, uniform for all branch, instead of at desire and level of certain heads is [1].

For today primary link of health care is characterized by low efficiency, extensive development of hospitals, expensive system of rendering an emergency medical service, a formal priority of prevention and early identification of diseases.

Distinctive feature is advancing development of a standard and legal and methodical basis at preservation of the material base which has remained since the Soviet period.

The methodology of the solution of problems of management in medical institutions is defined by traditional ineffective ways of the organization and management. Management of quality of medical services is bureaucratized and has no system character.

The considerable part of problems of rendering medical care can and has to be solved by introduction of modern administrative technologies and a regrouping of the internal resources providing stimulation of the most effective use of means received from society [4].

For the last 15 years the capital health care of the city of Yakutsk underwent a number of the essential changes connected with transition of branch on system of obligatory medical insurance, the powers twice connected with differentiation between municipal and state power levels, implementation of the priority national Health project, modernization, preparation for transition to the new system of compensation focused on the end result, to introduction of elements of the market relations in health system.

For these years structural reorganization of establishments of municipal health care of Yakutsk, quantity them is carried out decreased with 37 to 14, with increase in number of the complex stationary and polyclinic establishments including in the structure suburban hospitals, the uniform city drugstore due to association of the municipal pharmaceutical enterprises is formed. The structure became more simplified, operated, the management device was considerably reduced.

The first stage of reforming of municipal structure of health care of Yakutsk revealed lack of accurate system of the accounting of the population that resulted in considerable difficulties in determination of number of the population attached to treatment-and-prophylactic establishments and as a result this issue wasn't always objectively resolved, is more often a method of disputes and achievements of a consent between the medical organizations, without appealing by statistical data that reduced interest of heads in increase in number of the served population. Uncertainty in quantity and structure of the population testifies to big problems in obtaining objective characteristics of health and, respectively, to a disorientation of the persons making decisions.

Since the beginning of the pilot project of 2012 together with Territorial fund of obligatory medical insurance (TF compulsory health insurance RS (Y)) for transition to per capita financing work on specification of the actual population attached to medical institutions of Yakutsk is carried out, as of May 1, 2012 number made 312 149 people, thus as of 27.06.2012 is identified and it is accepted without mistakes of 280 767 people that made 90% of the population. It is revealed that duplication of patients inside and between the medical organizations (MO) made from 13,9% to 65-68% that was the main reason of emergence of financial risks.

For example: difference with previously approved RS (Y) compulsory health insurance Territorial

program of the per capita standard of 1730,7 rub and the actual cost per capita (on the average around the city to Yakutsk 1859,58 rub), for 7,44% of percent above the approved standard. In the analysis of comparison of a difference of the approved territorial program of the state guarantees from the settlement amount of financing according to the per capita standard it is predicted that only those establishments at which the actual cost is less than the per capita standard, remain in plus, that is upon transition on per capita they can earn more, than at a present tariff of the territorial program of the state guarantees (TPSG).

Establishments at which the actual cost per capita on approved TPGG is one 2013 higher, than the per capita standard, remain in a minus, that is financing of data of establishments upon transition to per capita financing becomes scarce. Respectively on these establishments there will be financial risks which can result in bankruptcy which it is meant:

- ☐ lack of financing on the maintenance of MTB of the organization;
- ☐ impossibility to pay a salary as to own personnel, and work (services) of specialists of the third-party organizations;
- ☐ by experience of other regions carrying out mutual settlements between the medical organizations can make to 40-50%;
- ☐ emergence of debts to creditors, etc.

Thus, in health care of the city of Yakutsk there was the situation demanding acceptance of a number of organizational measures for prevention of risks, directed on increase of efficiency of use of resources (material, financial, personnel, information).

The leading factors defining problems of health care in the city of Yakutsk are:

- Lack of correlation between services of medical care and structure of incidence and mortality of the population;
- Discrepancy to requirements for the medical care, to actually rendered volumes medical, in the specialized help;
- need of reduction of number of shots to standard indicators;
- advancing development of a standard and legal and methodical basis at preservation of the resources which have remained since the Soviet period;
- upon transition to new funding mechanisms emergence of financial risks which can result in bankruptcy;
- low satisfaction with given medical help according to sociological poll of insurance companies.

One of solutions is carrying out reorganization of infrastructure of health care with reduction in compliance with a number and structure of the population of the city of Yakutsk, taking into account incidence structure in the territory of the city of Yakutsk by integration of structure of healthcare institutions with the organization of interterritorial medical associations, instead of six separate legal entities existing today with various resources.

For increase of availability and quality of provided out-patient medical care in the territory of Yakutsk stage-by-stage formation of three-level system (table 1 takes root) according to operating orders of rendering medical care. For achievement of objectives since January 24, 2013 in the capital "The medical downtown of Yakutsk" by merge of three hospitals is organized.

The first level – the medical organizations giving primary medical and sanitary help, including: local therapeutic service, the ophthalmologist, the surgeon, the neurologist, the endocrinologist, the otorhinolaryngologist, the urologist, office (office) of prevention, including a viewing office, fluorography, a X-ray analysis, an electrocardiography, health schools, laboratory diagnostics (the general analysis of blood, urine, blood sugar), physical therapy, with development of offices of the general practitioner (GP) on the remote sites, sleeping residential districts, at opportunity, removal from territorial polyclinics of VOP, as option to apartments or rooms on the first floors of multi-storey buildings, acquisition of modular systems of VOP in suburbs.

The second level - the interterritorial out-patient centers giving qualified specialized out-patient medical help: the center of out-patient surgery, the health centers, the center of the out-patient



oncology, the centralized laboratories, the respiratory center, the osteoporosis center, etc. Development of hospital-replacing technologies (primary specialized offices as day hospitals, hospitals at home), the rehabilitation help (out-patient, stationary and at home), etc.

The third level is a stage-by-stage formation of the consulting and diagnostic specialized out-patient help on the basis of the existing versatile medical centers or the hospitals having possibilities of rendering the consulting and diagnostic help in an out-patient mode. At the level of Yakutsk this development of the consulting and diagnostic center at children's city hospital where consulting and diagnostic researches on the most demanded profiles on the directions from the out-patient centers will be carried out, experts of primary link, the wide range of diagnostic procedures, including endoscopic researches, ultrasonic diagnostics of the expert class, special radiological researches (including a mammography), etc. will be presented.

Carrying out reforming of a network of establishments of primary link of Yakutsk upon transition to per capita financing of health care is necessary for increase of responsibility of medical workers, first of all, local service. Carrying out reforming assumes professional development of doctors of primary link, expansion of a circle of their functions, growth of responsibility for a state of health of the served population. Continuation of introduction of system of the general practitioner and increase of their qualification, will allow to treat the main part of the most widespread diseases at the first level. Narrow experts will deal with more difficult diseases, relying on diagnostic base which will significantly surpass possibilities of former polyclinics. At the level of primary link priority development of hospital-replacing technologies, with high concentration of the expensive stationary help in the large medical organizations is supposed.

Introduction of this model will allow compensating unevenness of development of out-patient medical care that is necessary for improvement of quality of medical care and availability to the population, mainly on to the territorial principle. Performance of this task in full will allow to use rationally the expensive equipment and medical equipment, and also to reduce terms of expectation of medical care and to compensate deficiency of specialists doctors on a necessary profile. I ripened the moment when it is necessary "to leave from old foundations" and to pursue management policy depending on requirements existing at present.

Table 1

Levels	Medical organizations	Structure, functions
I	Medical organizations giving primary medical and sanitary help	Local pediatric, therapeutic service, VOP. (general analysis of blood, urine, blood sugar), physical therapy, etc. Doctors experts of primary link: the ophthalmologist, the surgeon, the neurologist, the endocrinologist, the otorhinolaryngologist, the urologist, an office (office) of prevention, including a viewing office, Rn - a grafiya, an electrocardiogram, health schools, laboratory diagnostics
II	Inter-territorial out-patient and diagnostic center giving qualified specialized out-patient medical help. Primary specialized offices as day hospitals, hospitals at home. Rehabilitation units.	With referral list of doctors of primary link of the first level. These are the city centers of out-patient surgery, the center of out-patient oncology, fracture clinic, the health centers, the respiratory center, offices of the recovery treatment, the centralized



		laboratories, etc. Rendering specialized medical care in out-patient conditions.
III	Clinics the Consulting and diagnostic specialized out-patient help on the basis of the existing versatile medical centers or the hospitals having possibilities of rendering the consulting and diagnostic help in an out-patient mode. The centers, clinical multidiscipline hospitals.	With referral list of doctors of primary link of the first level and specialists doctors of the second level on the allocated quotas, in strict accordance with the accepted orders of interaction between MO.

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INTEGRATED APPROACH TO THE STUDY OF LONG-TERM DYNAMICS OF HIV INFECTION, TUBERCULOSIS AND THEIR COMBINED FORMS MORBIDITY OF THE RS (Y) POPULATION

Abstract In the paper the authors show the dynamics of the incidence of tuberculosis, HIV infection and their mixed forms in the Republic Sakha (Yakutia) on the base of the integration method. Differences in the TB incidence of native and non-native population are revealed. The authors present the possible mechanisms of interaction between M. tuberculosis and HIV, and their reflection in the epidemic process basing on an analysis of the literature review. The important role of tuberculosis mixed - forms and HIV infection in its development is shown.

Keywords: epidemiology, HIV infection, tuberculosis, mixed-forms, integration method.

Introduction.

Traditionally, epidemiology considers the epidemic process of certain infections separately. However, the phylogenesis of all causative agents of infectious diseases was happening under close and selective interaction of certain forms with development of various biocoenoses in the host's organism and the environment. The relations established between the biocoenosis co-members may be both integrated and competing, which, undoubtedly, has an impact on manifestations of the epidemiological process (EP) of certain infections. We have elaborated the concept of integrated-competing development of EP [12] stating that the self-regulation may take place not only in individual parasitogenic systems [2], but also between individual kinds of microorganisms in the formed biocoenoses, as a result of the integrated-competing relations. This leads to certain problems of revealing the interspecific interaction of individual groups of causative agents. The integrated technique helps to reveal such interactions and their manifestations on the population level of the epidemiological process [8].

Tuberculosis and HIV infection, being socially significant infections, represent a global problem causing tension in the national preventive care systems [7]. From the end of the 20th century, the WHO has faced the global challenge of the simultaneous increase in the tuberculosis and HIV incidence, with a definite relation established between these two nosological entities. Most authors relate the deteriorated tuberculosis epidemiological situation with the rapid increase in the HIV pandemic [7, 11, 14]. According to O.P. Frolova et al. [10], tuberculosis causes 66.5% of deaths in HIV patients, and it has become its opportunistic infection, since microbacteria are considered more virulent than other pathogens [15]. HIV infection is a significant factor of developing tuberculosis as a result of the activated latent process or an indirect impact on the mechanism of microbacteria tuberculosis (MBT). Tuberculosis and HIV infection causative agents in co-infected patients acquire new properties when exposed to anti-bacterial preparations and intensive antiretroviral therapy. As a result of the drug resistance and mutations formed, their main biological properties are modified, which leads to increased influence of one infection on the other [7]. The objective assessment of different authors forecast the increase in tuberculosis incidence among HIV-infected people in Russia, thus, it is critical to take urgent preventive measures [4, 11].

The analysis of professional publications shows that most authors study the potential influence of HIV infection on the spread of tuberculosis. At the same time, some researchers also notice that nowadays, in certain regions, HIV infection EP is starting to hamper tuberculosis EP [4]. This allows us to assume that the epidemiology of tuberculosis and HIV infection has an interdependent nature. There has been no such research in the republic so far.

Aim of the Research.

To study the several-years' trend of HIV infection and tuberculosis incidence in the Sakha Republic (Yakutia) and their mixed forms, and to assess the epidemiological situation with the use of the integrated approach.

Research Materials and Methods.

The main research technique - epidemiological - was applied by several methods under the

traditional algorithm [3]. The material for the coupled epidemiological analysis was the data from the federal statistics for the Sakha Republic (Yakutia) - "Information on infectious and parasitic diseases" (Form 2), "Information on tuberculosis patients" (Form 3), "Information on active tuberculosis incidence" (Form 8), the records of infection nidus epidemiological examination (Form 357/y), "Personified registry of tuberculosis patients with HIV infection" (Form 263/y-TB), record books of infectious diseases (Form 60) for the period 1992-2012. The statistical processing of the material was done by the standard epidemiological techniques [9].

Results and Discussion.

The retrospective analysis of the several-years' tuberculosis incidence trend in the republic in 1992-2012 showed two periods in EP development: the first - 1992-1998, when the mean annual incidence rates varied within 56.96‰ (Rinc=1.2%); and the second - 1999 to 2012, with some increase - 78.49‰ (Rinc=1%). Before 2005, the tuberculosis incidence rates in the republic were a little lower than in the RF or comparable, and since 2007 there appeared so-called scissors; the first remained the same with the rest of Russia demonstrating the disease reduction trend (Fig. 1).

Fig. 1. Active tuberculosis incidence trend in the Sakha Republic (Yakutia) and the Russian Federation in 1992-2012 (per 100 thousand people).

The retrospective analysis of the several years' HIV infection incidence trend in the republic showed three periods (Fig. 2). The first - from 1996 to 1999 with its increase (Rinc=70%) and the peak in (13.1‰). The second period was marked by decrease in the incidence (Rdec= -21.8%). However, in (the third period) there appeared again the increase trend (Rinc=3.8%). The pattern of the curve reflecting the HIV infection incidence trend in the Sakha Republic (Yakutia) was in general similar to that of the RF but its peak fell on the year 2000, not 2001 as in the RF.

Fig.2. HIV infection incidence trend in the Sakha Republic (Yakutia) and the Russian Federation in 1992-2012 (per 100 thousand people)

At the same time, the incidence rates in the republic over the years analyzed were considerably lower than the Russia's average. Before 1996 Yakutia was considered an area free of HIV infection. In 1996-1998 the infection was detected mainly in arriving foreign citizens, with the intensive territorial infection of the population starting only in 2002. According to A.A. Kozhevnikov's survey [5], Yakutia is considered an area with low HIV infection which is explained by the fact that the local population restrains from drug abuse and random sex. It is known that starting from the mid-1990s, the three epidemics - drug abuse, HIV infection and tuberculosis - have been following each other [1]. The republic proves this trend and demonstrates the increased drug abuse affecting the spread of HIV infection [6].

The coupled analysis of the HIV infection and tuberculosis incidence in Yakutia showed that the increase in this nosological entity incidence coincides with the intensified HIV infection EP. In particular, the correlation analysis between tuberculosis and HIV infection incidence rates in 1999-2012 revealed the average bond strength line ($r=0.6$, $p<0.05$). Since the annual risk of tuberculosis activation in tuberculin-positive patients with HIV is very high and averages to 7.9% [13], we can assume that the epidemiological potential for developing tuberculosis in the population will increase progressively in accordance with the number of people infected by HIV.

At the same time, it should be noted that the interrelation between tuberculosis and HIV microbacteria is likely to occur in the human body, only, since the both infections are anthroponoses. HIV and MBT are two closely connected infectious agents, pathogenically, interacting with each other indirectly through many recipient's structures. HIV mainly targets at T-lymphocytes, therefore, in most cases, its first clinical manifestations appear as the lymphatic nodes reaction. At the same time we should state the fact of the incredible lymphotropy of MBT, especially at the initial infection of human beings with microbacterium tuberculosis. Therefore,

the lymphatic system organs represent the area of the most intensive interaction between the virus and microbacterium [7]. With the active tuberculosis process localizing in any organ, the specific inflammation development starts with the immune system's cell component disorder caused by both the toxic impact and other biological factors of the microbial effect. That is why the HIV and MBT interaction occurs indirectly, primarily through the immune system. HIV infection increases susceptibility to tuberculosis infection, resulting in the rapid development of the disease and thus affecting the disease spread indicators (incidence and prevalence). Here, cytokines play an important role, as they are able to activate or slowdown the virus replication in the human organism [4].

Therefore, all these facts prove the significant role of tuberculosis and HIV infection mixed forms in EP development. Our research has shown that HIV infection and tuberculosis mixed forms are registered in the republic since 1999 (Fig. 3).

Fig. 3. The incidence trend for HIV infection and tuberculosis mixed forms in the Sakha Republic (Yakutia) in 1999-2012 (per 100 thousand people)

At the same time, we witness a definite growing trend ($R_{inc}=8\%$). A similar trend is typical of the RF on whole [4, 7]. We have established that, with the mono HIV infection mortality in the republic over the past five years averages to 1.6% and of tuberculosis - 4.1%, their mixed forms lead to 11.9% mortality. Indeed, this combination is 'the devil's mixture' as foreign researchers call it [4]. We should emphasize that the mixed form patients are more dangerous as the infection source for contacting people than HIV-negative tuberculosis patients [16]. However, so far, we have not registered cases of mixed forms in the indigenous population of the republic, though they prove to be more susceptible to tuberculosis as a mono-infection. For example, against 49.0 per 100,000 persons in the non-aboriginal population, the Yakut people demonstrate 87.8 per 100,000 and the indigenous peoples of the North - up to 110.5. Unlike the newcomers and Yakuts with the dominating male patients (71.3+2.8% и 58.8+1.6%, respectively), the male-female break-down of tuberculosis patients in the indigenous people differed insignificantly (Fig. 4).

Fig. 4. Male-female break-down of active tuberculosis patients in the indigenous people of the North

Therefore, over analyzed period, the epidemiological processes for both tuberculosis and HIV infection in the republic were quite autonomous. However, HIV infection is starting to influence the tuberculosis EP activity, which is seen in the increase in the mixed forms and the average force line of the correlation bond between tuberculosis and HIV infection incidence figures. Due to higher epidemiological significance of the mixed forms, in comparison with the mono infections, the increase in their number aggravates the epidemiological situation with tuberculosis in the republic, already being alarming.

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O.A.Ushkareva, E.V. Anganova, E.D. Savilov

ASSESSMENT OF SANITARY AND HYGIENIC CONDITIONS OF WATER, AIR AND SOIL IN YAKUTSK AND ALDAN, KHANGALASSKY AND MEGINO-KANGALASSKY REGIONS OF YAKUTIA

The article presents the results of a study of condition drinking water sources, atmospheric air, and soil pollution in Yakutsk, Aldansky, Khangalassky and Megino-Kangalasskiy districts during the 2006-2012. The most favorable situation for compliance with microbiological water sources of centralized water supply has developed in Aldansky region, where the number of non-standard samples was the least ($7.9 \pm 0.7\%$). The highest rate of non-standard water samples was observed in Khangalassky region ($32.3 \pm 2.6\%$). A high proportion of water samples on the non-standard chemical indicators was identified in Khangalassky and Megino-Kangalassky regions and the lowest - in the Aldansky region. Samples of soil, non-standard sanitary-chemical parameters were also detected only in the Aldansky region ($0.2 \pm 0.1\%$) and Yakutsk ($6.4 \pm 0.5\%$). On these territories there is an unfavorable situation for soil compliance to microbiological standards.

Keywords: environment, sources of centralized water supply, atmospheric air, soil, pollution, sanitary-chemical indicators.

INTRODUCTION

One of the most important differences of modern civilization is an expressed change of human habitat, unfavorable transformation of its components-watery (contaminated wastes), atmospheric (air pollution), soil (heavy metals) which have influenced on population's health.

The objective of this research work is to evaluate the condition of drinking water sources, atmospheric air, soil pollution in different districts of the Sakha Republic (Yakutsk, Aldansky, Khangalassky and Megino-Kangalasskiy districts during the 2006-2012).

MATERIALS AND RESEARCH METHODS

The article presents the results of a study of condition of drinking water sources, atmospheric air, soil pollution in Yakutsk, Aldansky, Khangalassky and Megino-Kangalasskiy districts during the 2006-2012, using statistic dates form#18.

RESULTS AND DISCUSSION

Aldansky region is an industrial territory, Megino-Kangalasskiy is a rural one, Khangalassky is a rural and industrial one. There were taken numerous samples of centralized water supply, atmospheric air and soil for compliance with microbiological parameters, sanitary-chemical indicators and others.

The water sources were represented with surface and underground water supply. The main reason of water pollution has become absence of sanitary keeping zone. The favorable situation has been shown in Aldansky area where only 18,2% of water supply do not have sanitary keeping zone.

The analysis of long-term dynamics of frequency of identifying non-standard water samples on sanitary –chemical indicators showed that during the second shift of the analyzed period, starting since 2012, there was a development of specific gravity of water samples.

The most unfavorable area on the level of air pollution are Aldansky and Yakutsk territories. Non-standard samples of atmospheric air were found near highways in living and industrial zones.

Results of laboratory monitoring of soil condition identified non-standard soil samples by sanitary-chemical indicators in Aldansky district and Yakutsk.

Non-standard soil samples by microbiological indicators were observed there as well. This matter of fact increased average index about the region.

The samples taken in Yakutsk did not suit sanitary standards in containing heavy metals and pesticides near industrial, transport and green zones.



The non-standard soil samples by microbiological indicators were set in all the zones where the selection was held. The highest rate there was noticed in a residential Zone, including kindergarten and playgrounds in Aldansky district-27,5%; in Megino-Kangalassky district-in a zone of industrial influence and transport highways(20%); in Yakutsk city-in territories of cultivated production(80%),in zone of sanitary keeping water sources (71,4%) and territories of cattle complexes (50,0%).

Analysis of soil quality by parasite parameters cleared that Yakutsk had non-standard weight of soil samples in 2007 and later there was tendency to releasing.

CONCLUSION

This research work has displayed that in Yakutia for the period of 2006-2012 each ninth water sample did not suit standards on microbiological indicators, each water sample-by sanitary-chemical indicators. Among the three researched territories the most favorable situation concerning water samples by microbiological parameters was in Aldansky region, but the low report in Khangalassky. By sanitary-chemical parameters there were Khangalassky and Megino-Kangalassky and the low rate in Aldansky. The air pollution there was watched in Aldansky and Yakutsk territories. In rural areas of Aldansky, Khangalassky and Megino-Kangalassky districts there were not found any harmful substances. The unfavorable situation of soil samples by sanitary-chemical and microbiological parameters were in Aldansky district and Yakutsk.

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FACTORS, FACILITATING FORMATION OF EATING BEHAVIOR IN CHILDREN AND ADOLESCENTS OF SAKHA (YAKUTIA) REPUBLIC

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Abstract

Results of epidemiological research of actual nutrition and eating habits of children and adolescents of Sakha (Yakutia) Republic with the use of standardized methods, allowed us to reveal complete characterization concerning awareness of children and adolescents of Sakha (Yakutia) Republic about essentials of healthy eating and compliance of that awareness with actual nutritional habits.

Keywords: children and adolescents, parents, factors, awareness, actual nutrition, eating behavior.

Introduction

Nowadays, despite the state policy on healthy eating, we think, that there is a lack of information concerning nutritional behavior as an important factor of health development of children and adolescents.

Nutritional behavior is a set of eating habits (taste preferences, overeating, malnutrition), consisting of adequate response of a child to eating (devotion to healthy eating, awareness of healthy eating, eating schedule) and conditions of food consumption (hygienic skills, culture of eating, favorable environment). Model of eating behavior is formed in early childhood and develops under the influence of certain factors and conditions. [3]

According to researchers in field of dietology, one of the important conditions for the formation of healthy eating behavior is the family, which is thought to be a defining factor of healthy eating awareness. This became a main purpose of our research.

Purpose of the study

To study eating habits of children and adolescents of Sakha (Yakutia) Republic depending on the education and place of residence of their parents.

Materials and methods

The total of 1569 children and adolescents (mean age 13.6 ± 2.1) of indigenous and non-indigenous population of Sakha (Yakutia) Republic were enrolled in our research. Of these, 958 children were urban inhabitants, and 611 children lived in rural areas.

We used standardized questionnaire, which was developed by Institute of Nutrition RAMN GNITS PM MZ RF (Moscow). Some adaptations to that questionnaire were made by Centre of Therapeutic and Preventive Eating (Institute of Health, North-East Federal University named after M.K. Ammosov (Yakutsk)) in order to meet local features of eating.

Statistical processing was made by SPSS 12.0

Results and discussion

We found, that the majority of mothers had higher education, comprising 61.1% of all mothers enrolled in our research, 27.9% had secondary special education, 8.4% had incomplete higher education, and 2.6% had secondary education. Of all fathers in our study, 52.2% had higher education, 33.4% had secondary special education, 9.1% - incomplete higher education, and 5.3% - secondary education.

Comparative analysis of the kind of education of mothers showed that mothers with higher education resided more in the city than in rural areas, respectively, 76.6% and 36.4 %. Secondary special education had 14.4 % of mothers residing in the city and 49.4 % - in rural areas. 67.1% of the city fathers had higher education, whereas in rural areas - 28.5%. Secondary special education had 21.6 % of fathers residing in the city and 52.2% - in rural areas. It should be noted that 18.4% of the surveyed children were raised by a single parent - mother , 0.8 % - by father or did not had mother (Table 1).

Table 1. Education of parents of surveyed children and adolescents, n=1569

Education	City				Rural				Total			
	Mothers (n=958)		Fathers (n=786)		Mothers (n=599)		Fathers (n=494)		Mothers (n=1557)		Fathers (n=1280)	
	N	%	N	%	N	%	N	%	N	%	N	%
Secondary	7	0.7	22	2.8	33	5.5	46	9.3	40	2.6	68	5.3
Secondary special	138	14.4	170	21.6	296	49.4	258	52.2	434	27.9	428	33.4
Incomplete higher	79	8.3	67	8.5	52	8.7	49	9.9	131	8.4	116	9.1

Higher	734	76.6	527	67.1	218	36.4	141	28.5	952	61.1	668	52.2
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It is well known that the eating behavior is formed during upbringing by parents. Parents' eating behavior directly affects formation of food habits in children and adolescents, as many habits begin to form in early childhood, largely by imitation.

Habit is a well assimilated action in fulfillment of which a person experiences a constant need. This action always takes place under certain conditions. Habit occurs after many repetitions of the same action when it ceases to require cognitive and volitional efforts [2].

Thus, we studied the nutritional habits in the consumption of certain foods - fat milk and the use of salt.

We found that the overwhelming majority of children and adolescents (75.3%) reported that their families are preparing food in vegetable oil. Families use butter for cooking comprised 10.1%, margarine and other types of fat - 9.5%, do not use any kind of oil - 5.1% (Table 2).

Table 2. Use of fats for cooking, n=1569

Oil	City (n=958)		Rural (n=611)		Total (n=1569)	
	n	%	n	%	n	%
Do not use	52	5.4	28	4.6	80	5.1
Cooking oil	730	76.2	452	73.9	1182	75.3
Margarine	41	4.3	23	3.8	64	4.1
Butter	92	9.6	66	10.8	158	10.1
All kinds of oil	43	4.5	42	6.9	85	5.4

Butter for sandwiches used 66.0% of surveyees, margarine - 7.1%. 26.9% of children and adolescents surveyed did not use butter or margarine for sandwiches (Table 3).

Table 3. Use of fats for sandwiches, n=1569

Fats	City (n=958)		Rural (n=611)		Total (n=1569)	
	n	%	n	%	n	%
Do not use	285	29.7	138	22.6	423	26.9
Margarine	51	5.3	61	10.0	112	7.1
Butter	622	65.0	412	67.4	1034	66.0

46.5% of the surveyed children and adolescents mostly responded that they prefer to use milk with a fat content of 3.2%, low-fat or skim (fat content of 0.5-2.5%) - 35.0%, did not use this type of product - 17.4% (Table 4).

Table 4. Consumption of milk of various fat contents, n=1569

Consumption of milk	City (n=958)		Rural (n=611)		Total (n=1596)	
	n	%	n	%	n	%
Do not consume	147	15.3	126	20.6	273	17.4
Low fat or skim (fat content 0.5-2.5%)	322	33.6	228	37.3	550	35.0
Fat content of about 3.2%	478	50.0	251	41.1	729	46.5
High fat content (6% and higher)	11	1.1	6	1.0	17	1.1

The study of availability of dairy products in stores with various fat contents revealed following data: "always have products" answered 52.8% of the respondents, "sometimes" 38.5%, and reported 8.7% "rarely or never".

Of the total respondents, 67.5% of urban children said that the choice of milk with different fat were "always" available in stores, whereas in rural areas only 29.8% gave the same answer (Table 5).

Table 5. Information on availability of dairy products with various fat contents in stores, n=1569

Availability of dairy products with various fat contents	City (n=958)		Rural (n=611)		Total (n=1596)	
	n	%	n	%	n	%
Rarely or never	40	4.2	96	15.7	136	8.7
Sometimes	271	28.3	333	54.5	611	38.5
Always available	647	67.5	182	29.8	829	52.8

Survey about salting while eating revealed that 30.5% of children said they "never" add salt, 64.1% said they add salt if they feel, that there is not enough salt and 5.4% always salt without even trying the food first (Table 6).

Table 6. Data on salting while eating, n=1596

Salting food while eating	City (n=958)		Rural (n=611)		Total (n=1596)	
	n	%	n	%	n	%
Never	259	27.0	220	36.0	479	30.5
Salting, if it feels not salted enough	637	66.5	369	60.4	1006	64.1
Always salting, without even trying food first	62	6.5	22	3.6	84	5.4

The present study also examined the sources of information about nutrition. It was revealed that 38.7% of the children receive information from relatives and friends, 32.6% from the media, 16.3% from books and pamphlets, 12.4% from health care workers .

Conclusion

Thus, the greatest amount of information about healthy eating, children and adolescents receive from relatives, friends and from the media, and smallest from books, pamphlets and health care workers. Results of our research aim at the fact that the awareness of healthy eating habits and instillation of proper eating behavior is formed in families by parents and relatives, and does not depend on the type of parental education and area of residence. These data should be reflected in the development of information and educational programs. Regular informational and educational activities in the field of promoting healthy eating will endorse the formation of correct eating behavior in children and adolescents.

On the basis of new knowledge and to endorse implementation of ideas, with the scientific-methodical counseling from Health Research Institute (North-East Federal University named after M.K. Ammosov) under the Agreement on Cooperation between the Republican Centre of Recreation and Health of Children "Sosnoviy Bor" (Ministry of Education of the Republic of Sakha (Yakutia)), platform for the revival and promotion of a healthy diet was established, as well as development of agricultural schools and educational-methodical complexes.

In 2012, Joint scientific publication "Nutrition of children and adolescents in educational institutions of the Republic of Sakha (Yakutia) " received the diploma of the All-Russia Exhibition "Gold fund of domestic science" in the category "Best Textbook in the industry".

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ROLE OF THE HEALTH CENTER FOR CHILDREN IN THE PREVENTION OF ALIMENTARY – RELATED DISEASES

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Abstract

The article is devoted to a comprehensive assessment of health status and actual nutrition in children and adolescents of the Republic Sakha (Yakutia). Mobile team of the Health Center surveyed 243 school children from 6 to 17 years old in the city of Yakutsk and three areas (Olekminsky, Gornuy and Amginsky). The number of urban children was 80, and rural - 163.

Only 15 (6.2%) children were classified as completely healthy (the 1 health group) at the allocation by health groups and levels of physical development. In 210 (86.4 %) children risk factors for certain diseases (obesity, cardiovascular diseases, respiratory diseases, etc.) were found (the 2 health group). By the time of the inspection 14 (5.8%) and 4 (1.6 %) children had already had chronic diseases (digestive, musculoskeletal, allergic diseases, ENT organs, etc.), who are referred to, respectively, 3 and 4 groups. According to the level of physical development 221 (91%) had a harmonious development, and disharmonious - 22 (9%).

At assessing of actual nutrition by the frequency of food consumption method we revealed that the daily diet contained more meat (43 %), milk (45.5 %) and pasta products (49 %). The increased daily sugar consumption was marked in 44 % of the children, as well as confectionery products - 36.5% in comparison with physiological indicators of the average daily consumption.

Ethnic food consumption was very rare.

Keywords: health, children and adolescents, growth and development, prevention, alimentary - dependent diseases, risk factors, actual nutrition, ethnic food, health centers.

Introduction

The article is devoted to a comprehensive assessment of health status and actual nutrition in children and adolescents of the Republic Sakha (Yakutia). Mobile team of the Health Center surveyed 243 school children from 6 to 17 years old in the city of Yakutsk and three regions (Olekminsky, Gornui and Amginsky). The number of urban children was 80, and rural - 163.

The health status of the child population of Russia - our potential, constituting 18.3 % of the population, is poor. According to various authors the primary and overall incidence is growing annually by 5-7%, the number of functional disorders and chronic diseases among children and adolescents of school age is also increasing, mental and reproductive health of the younger generation is deteriorating. [1]

Giving great importance to prevention, the government decided to set up health centers (Order of the Ministry of Health of the Russian Federation № 597n "On the organization of the health centers to promote healthy lifestyle among citizens of the Russian Federation, including a reduction in the consumption of alcohol and tobacco", 19.08.2009). Creating Health Centers is an important milestone towards the development of evidence-based healthy lifestyle concept. The need to organize health centers was dictated –by complex demographic situation. At the same time, according to the WHO, only 10% of the population's health depends on the healthcare system, 20% of the human health depends on the hereditary and biological factors, 70% - on the way of lifestyle: the food stereotype, rest and physical activity, the presence of bad habits. Of all these factors, diet is a major risk for the development of alimentary-related diseases, especially among children and adolescents [4].

Meanwhile, the analysis of the overall morbidity of children and adolescents in the Republic Sakha (Yakutia) revealed a significant increase of alimentary -related diseases. Thus, according to the Ministry of Health of the Republic Sakha (Yakutia) over the last decade increases the incidence of



anemia (an increase from 22 to 24.8 %), gastritis (from 21 to 27.8 %), and functional disorders of the stomach (from 21.3 to 41.6 %). Also cause for concern is increase in the number of obese children (7 to 10.5%) and with atopic dermatitis (from 25.5 to 35.6%) [2].

Epidemiological studies in dynamics for 5 years, conducted by the North-eastern Federal University named after M.K. Ammosov Health Research Institute Center of therapeutic and preventive nutrition characterize the state of the actual nutrition as unsatisfactory. The researchers revealed inadequate consumption of foods containing animal protein, such as meat, fish, dairy products and excess of bakery, confectionery, sugar and sweets. They proved significant relationship of development of osteopenic states in adolescents with low level of calcium and phosphorus in the urine and inadequate intake of dairy and fish products ($p < 0.05$) [3].

Thus, in the system of measures aimed at preserving and promoting the health of the younger generation, in the prevention of alimentary-related diseases, the optimizing of nutritional status of children and adolescents in families and educational institutions is important that is a priority of health centers for children.

In this regard, the objective of this work is a comprehensive assessment of health status and the actual nutritional status of children and adolescents to develop science-based recommendations on optimization of nutrition and the prevention of alimentary -related diseases in the Republic Sakha (Yakutia).

Materials and methods

Mobile team comprehensively surveyed 243 school children from 6 to 17 years in the city of Yakutsk and the three districts of the Republic Sakha (Yakutia) (Olekminsky, Gornui and Amginsky areas). Of the total sample number of urban children was 80, rural - 163 people.

Analysis of a comprehensive survey was conducted by the Health Center for Children of Sakha (Yakutia), "City Children's Hospital". We used the medical records of the registration form N 025-TsZ/u-2.

Comprehensive examination at the Health Center includes:

1. Height, weight, blood pressure and physical development parameters using stadiometer, scales, dynamometer, the caliper and the tonometer included in the hardware-software complex (HSC) for screening - assessment of level of psycho-physiological and physical health, functional and adaptive reserves. Set of equipment for measuring the parameters of physical development (stadiometer, scales, caliper and dynamometer) via USB- connector is connected to a personal computer (PC) the data is automatically entered into the PC.
2. HSC Testing for screening - assessment of the level of physical health and psycho-physiological, functional and adaptive reserves.
3. Evaluation of the functional state of the heart with the help of a computerized heart screening. Rapid assessment of the heart condition by ECG signals is transmitted from the limbs using CardioVisor.
4. Comprehensive assessment of the functions of the respiratory system using computerized spirometer.
5. Diagnosis of dental caries.
6. Rapid assessment of saturation, pulse using oximeter.
7. Rapid analysis for determination of total cholesterol, and glucose in the blood.
8. Analysis of carbon monoxide of exhaled air with the definition of carboxyhemoglobin using smokelayzer.
9. Determination of the body composition (percentage of water, muscle and adipose tissue) through bioimpedansmeter to analyze an internal environment at the apparatus «Medass Ltd».

To study the actual nutrition frequency method of questionnaire developed in GNITS PM Ministry of Health of the Russian Federation and the RAMS Institute of Nutrition (Moscow) and adapted according to the local conditions by the North-eastern Federal University named after M.K. Ammosov Health Research Institute Center of therapeutic and preventive nutrition was used.



Specially trained interviewer interviewed consumption rate of 49 products, including national dishes. Thus, the frequency method is used for nutrition trends estimation.

Results and discussion. Based on the results of a comprehensive survey schoolchildren were divided into groups by health and level of physical development. From the sample as completely healthy only 15 (6.2%) children were classified, in 210 (86.4%) children risk factors for certain diseases (obesity, cardiovascular diseases, respiratory diseases, etc.) were found. These children are assigned to 2 health group. 14 (5.8 %) children at the time of inspection already had chronic diseases (digestive system, musculoskeletal system, allergic diseases, ENT organs, etc.) and assigned to group 3, and 4 children (1.6%) - to 4 health group.

According to anthropometric examination (height, weight, head and chest circumference) the level of physical development of pupils was identified. So a harmonious development had 221 schoolchild (91%) and disharmonious - 22 (9 %).

It is well known that in the children with harmonious development (i.e., non-obese and underweight) 3 somatotypes are allocated on integrated assessment of somatic development: micro-, meso - and macrosomatic. Thus, according to the survey predominance of mesosomatic somatotype was revealed in 177 children (73%), macrosomatotype was detected in 42 (17%), microsomatotype – in 24 (10%) children.

According to a prominent pediatrician Professor I.M. Vorontsov, somatotype denotes not so much a somatic body type, as growth rate characteristic. Microsomatotype is defined as slow, macrosomatotype - accelerated, mesosomatotype - average growth rates [3].

In the first place among the identified deviations in children's health is dental caries. As the dentist infers, 95 school-children (39 %) required sanitation of the mouth.

In the second place is a violation of the body composition. According to the bioimpedance results in 58 (24%) children an excess of adipose tissue was found, indicating a high risk of overweight. In addition, the adipose tissue downside was detected in 24 children (10 %) and the lack of a common liquid - 12 (5.5 %).

In 21 (8.7%) child a decrease in psychophysiological state indices was witnessed, with which they were sent to a psychologist.

In the third place is the existence of obesity and overweight in 19 children (8 %). Further disorders of the functional state of the heart and respiratory function were revealed - 12 (5%) and 17 (7 %), respectively.

Also the increased level of cholesterol was observed (more than 5.0 mmol / l) in 6 (2.5%) patients. These children are prescribed to limit saturated fats and conducting full-scale biochemical analysis of blood to determine fasting blood lipids. 15 (16 %) children with elevated blood glucose level from 5.6 to 11.1 mmol / L were found. Elevated level of carboxyhemoglobin in the exhaled air, which indicates the presence of smoking or passive smoking, was found in 5 children (2 %).

Analysis of the survey results for the study of actual nutrition showed that 45.5 % of children had daily consumption of milk with a fat content of 0.5-3.2 %, which is a source of complete protein, lactose and minerals. 29 % of the children preferred in dairy products imported yoghurt, 16.5% - kefir and 19% - curd, i.e. children practically never ate local sour-milk production.

Of meat products that are a source of complete protein, essential amino acids, salts of phosphorus, magnesium, iron etc. 43 and 11 % of children respectively ate beef and young horse meat. As for other eating pork, hare and venison - these products are used rarely or never, 38.5; 6 and 59 %, respectively. A unique product in its composition and usefulness as a northern fish, which occupies one of the first places on the nutritional value among food products of animal origin, surveyed children consumed inadequately. Only 12 % of the children indicated that they ate fish 1-2 times a week. It was mainly a lake crucian. Fresh frozen "white" fish (chir, muksun, omul, Indigirskiy and Kolyma whitefish), which is not only a supplier of valuable protein, phosphorus, calcium, vitamins A, D and others, but also valuable fish oil and polyunsaturated fatty acids that make up the all cell membranes and membranes, most children (48.5%) consume very rarely or never . Only 27 % of



children reported consumption of this product several times a week. Eggs, which are sources of protein, and a number of other important nutrients - lecithin, the body needs as a building material for renovation of damaged cells and which is a powerful antioxidant; vitamin A, which increases the body's resistance to respiratory infections and having a greater role in ensuring normal visual function of the eyes, skin and mucous membranes; vitamin B12, involved in hematopoiesis, beta-carotene, an antioxidant, and playing the role of a natural immune stimulant - most children use 1-2 times a week, which corresponds to the recommended standards. Despite the considerable value of eggs, we have to indicate a high content of cholesterol - one of the risk factors for atherosclerosis in middle and old age, and the fact that eggs, as well as fish belong to the group of obligate carriers of allergens. Moreover, the eggs may be contaminated with salmonella - pathogens one of the most common bacterial intestinal infections.

Sources of virtually all major nutrients (proteins, fats, carbohydrates, some vitamins (B1, B2, PP), minerals and vegetable fibers) - cereal products (bread, baked goods, cereals, pasta) were used by the majority of children every day or 1 - two times a week. 70% of children ate wheat bread daily and only 7.5 % - rye one. 49 and 33.5 % of children consume 1-2 times per week pasta and cereals respectively.

31 % of children indicated daily consumption of fruits and vegetables, which are an important source of some mineral salts, glucose, vegetable fibers, organic acids and some vitamins. Herewith 29 % of children preferred fresh fruit. Fresh vegetables daily consumed 28.5%, 1-2 times a week - 35 % of children. 54.5 % of children ate potatoes 1-2 times a week.

The researchers revealed an increased daily intake of sugar in 44 % of children, as well as confectionery products - 36.5%. Daily consumption of sweets, fizzy drinks and sausages was observed in 27; 35.5 and 31.5 % of children respectively. There was noted a frequent consumption of nuts and chips - 35 and 50 % of children respectively.

A special section in the study of the frequency of consumption of foods in the diet is given to the use of national dishes. It was revealed that more than 80 % of the interviewed children cited a lack in the diet of such national dishes like salamat, suorat, kuercheh, byyrypah, kumus and black pudding.

Conclusion Thus, a comprehensive assessment of health and nutrition showed the presence of risk factors for certain diseases (obesity, cardiovascular diseases, respiratory diseases etc.) and chronic diseases (of digestive system, musculoskeletal system, allergic diseases, ENT organs etc.) in the surveyed children and adolescents, 86.4 and 7.4 %, respectively. Only 15 (6.2%) of surveyed children by health groups and levels of physical development were assigned to a completely healthy. Actual nutrition condition was characterized as deficient, low or no use of national dishes was revealed, protein and lipid components of the type of food, as well as excessive consumption of sugar, sweets, fizzy drinks and confectionery, which cause the development of dental caries, overweight and in the future body composition disorder and distribution of alimentary-related diseases.

In this regard, within the health centers for children activity since 2010 in the "Children's Hospital" RS (Y) a nutritionist working office functions where the child population has the opportunity to get professional advice on the correct diet and nutritional status. In accordance with the agreement on mutual cooperation 05.04.2012, between the "National Center for Medical Prevention" RS (Y) and the North-eastern Federal University named after M.K. Ammosov Health Research Institute Center of therapeutic and preventive nutrition to the office of Child Health Center nutritionist a scientific and methodological support is conducted. By the staff of the North-eastern Federal University named after M.K. Ammosov Health Research Institute Center of therapeutic and preventive nutrition in recent years to help the practitioner educational-methodical complexes: "Diseases of the stomach, duodenum in children" (2009), "Actual problems of nutrition of the Republic Sakha (Yakutia) population" (2010), "Nutrition of children and adolescents in educational institutions of the Republic Sakha (Yakutia)" (2009, 2012), "Mother's milk is the basis of the child's health"



(2012), "From the milk to the thick food "(2012) " Food - the basis of life and health" (2012) "Culture of the Yakuts nutrition" (2012), "Mother is better" (2013), "Protect your own Health" (2013) were published . A great deal of training seminars on healthy lifestyle and nutrition for medical and educational professionals and the public is held.

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Health and demographic indicators, the environment and health, physical and dental status of indigenous Evenk municipal district of Krasnoyarsk region.

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Introduction . The implementation of national projects in the Russian Federation, including those in health care, such as a national project "Health" that changed the socio- economic conditions of the population and the ways of a healthy lifestyle, allowed at the federal level through the budget to take a program to provide dental care to the indigenous small peoples of the North. Oral health is an integral part of overall health. Patients suffering from many physical conditions are also at risk of dental disease, and that worsen their general condition. High incidence of dental system, poor hygienic condition of the teeth, partial or complete absence of teeth affects the lower self-esteem as human beings, and to the stability of his body to different physical conditions.

Conclusively proven that various somatic non-communicable diseases, diseases of the oral cavity, poor nutrition, smoking, alcohol use, are risk factors for the condition of the overall health of the person. The presence of these factors depends on the desire of man to fight for his health, and timely professional medical help (in this case the dental), is one of the most important opportunities of improvement .

The purpose of the study. Improving the efficiency of dental care to people in remote settlements of the northern territories .

Materials and methods. The medical team consists of dentists dental surgeon , two dentists , physicians, one dentist , podiatrist , dental technician and senior nurse of the number of interns . Terms of conduction of works in the middle sostvlyaet 35 days. In the process of assisting the medical team used the latest advanced medical technology in the field of dental materials and equipment. Having a modern portable X-ray machine «REXTAR» (Korea) and the mobile dental equipment «TASK FORSE» (USA) showed the dental disease at different stages of development, differentiation , and apply the correct method of treatment . This Figure 1 showa mobile dental office team in the village Surinda



Figure 1. Mobile dental office.

Small indigenous population of the three towns Evenk municipal district of Krasnoyarsk region. The total number of 655 people, including men - 287, women - 368 in the age group of 15 to 65 years of age, including children under 15 years of age - 72. On a national basis the division, following in the two villages and Surinda Poligus - 95.3 % of the population - the Evenki and the rest to - Russian . In the village of Sulomai - 75.8 % of the population - keto other 24.2 % comes from the Russian, Ukrainians and Belarusians.

In the methods of the study was questioning residents, which included part of the passport , the issues of social and economic well-being, somatic pathology and oral examination , analysis dukomentatsii primary care (outpatient somatic card). After this reorganization dentition defects removable and non-removable dentures.

Statistical analysis of the results was performed using the program «Microsoft Excel» «Statistica 6», «SPSS 17.0 for Windows». The relationship between the independent variables, measured in nominal and ordinal scales were determined by Pearson (χ^2) for contingency tables (Tables krosstabulyarnyh), which was calculated using the following formula:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

This method is well suited for evaluation as two pairs, and for more qualitative attributes. The differences between samples were considered significant at $p < 0.05$.

To determine the correlation between quantitative and ordinal traits used Pearson's rank correlation

coefficient (r). This criterion is applicable to a linear feature pairs. This analysis is a normal distribution. To determine the degree of correlation of the data ordered by increasing and are replaced by grades. Calculated using the following formula:

$$r = \frac{\sum (X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum (X - \bar{X})^2 \sum (Y - \bar{Y})^2}}$$

wherein X and Y - average values of variables.

Assessment of the degree of correlation was performed according to the following criteria (Glantz, S., 1999):

Very weak correlation - 0.2;

Weak correlation - 0.5;

The average correlation of - 0.7;

High correlation - 0.9;

Very high correlation - more than 0.9

Results and discussion. In terms of socio - economic well-being of residents of the three towns 84.6 % reported as unsatisfactory , and only 15.4 % of respondents as satisfactory. The prevailing number of physical conditions revealed by the survey and analysis of primary medical documentation in township clinics : the part of the respiratory system - 40.4 % (various forms of bronchitis , tuberculosis) , diseases of the gastrointestinal tract - 22.5 % , cardiovascular disease - 21.2% ; cancer - 9.7 % other diseases associated with specific diseases (syphilis , hepatitis, HIV) infection - 6.2%.

Total visits made in paragraph Poligus - 567, § Sulomai - 450, § Surinda - 680. Determination of the intensity index of dental caries (KPU) showed that 85.0 % of the examined settlements average CPU was $11,8 \pm 0,74$ (high intensity of dental caries) . Oral hygiene index in the adult population was $2,2 \pm 0,05$, which is satisfactory (Figure 2).



Figure 2. Patient B., 22 years old, complicated by multiple cavities of the upper jaw.

The spread of diseases of hard tissues of the tooth and periodontal population in 100 % of cases. As part of dental practitioner care were treated caries, complicated dental caries, fissure sealing, conducting professional oral hygiene. The total number of seals was - 631, including the treatment of dental caries - 24.6 %, as complicated by dental caries - 68.3 %, fissure sealing - 7.1%. From these figures it can be concluded that the high demand in the therapeutic treatment of teeth in the indigenous peoples of the North. Exhibited a high degree of correlation relationship in individuals with abnormalities of the gastrointestinal tract with a complicated form of caries posterior teeth in the age group of 15 to 27 years, $r = 0,972$ ($p = 0.001$). In patients suffering from cardiovascular diseases reveal an average correlation relationship with carious lesions of the front teeth in the age group of 33 to 57 years, $r = 0,701$ ($p = 0.001$).

In the volume of surgical dental care settlements conducted extractions of all teeth removed 155, including 47 temporary teeth, according to testimony in connection with the change of the bite. At the age of 19 to 60 years were held by removal of caries with complicated forms of destructive changes in the periodontium.

Of the total number of removable dentures, removable plate fabrication of complete dentures was 73.7%, which indicates a complete absence of teeth in the age group of 29 to 40 years. Needs in prosthetics dentition in age from 19 years to 30 years - 32.0% of the total population, from 31 to 45 years - 48.0%, from 46 to 65 years - 90.0%.

From these percentages are followed, that the need for prosthetics in the population is high, and a large percentage of persons in need of a removable prosthesis.

Conclusions.

1. Search for new ways of organizing dental care adults and children should be focused on



clinical examination and detection of dental disease in its early stages.

2. Causes, social and economic damage, adversely affecting the quality of life of the indigenous peoples, and thus, are preventable with the present level of access to health care .

3. Implementation of outreach projects requires the relationship of dental services with other agencies, primary care network, as revealed correlation relationship of diseases of the oral cavity with physical abnormalities ($p \leq 0,001$).

4. Dental health social patronage patients , towns Surinda , Sulomai , Poligus with a complete lack of teeth in the age group of 19 to 30 years.

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T.Y. Pavlova, N.I. Douglas, Ya.G. Rad'

OPTIMIZATION OF MEDICAL ASSISTANCE TO IMPROVE THE REPRODUCTIVE HEALTH OF RS (Y) WOMEN

Abstract

The article presents the actual material according to the official statistical data on the reproductive health of the female population of the Republic Sakha (Yakutia). Maternal and child health is a special health sector, because it determines the future of the nation, therefore, is an important issue for the state. The problem of health of reproductive age women permanently keeps its significance. Maternal and perinatal mortality is a major integrated indicator of the health system.

Objective: to present the data of the official medical statistics on reproductive health of the female population.

Methods: analysis of official data of medical statistics on reproductive health. In dynamics for 3 years there are tends to improve the health of pregnant women in the country: the decrease in the incidence of pregnant anemia, kidney diseases, and improve the level of normal deliveries, reducing the number of abortions. In 2013 it is planned to complete the construction and commissioning of the Center for Reproductive Health in Yakutsk.

Keywords: reproductive health, Yakutia, women, childbirth.

INTRODUCTION

Protection of mother and child - a special health care industry, as largely determines the future of the nation, so is an important affair of state. The problem of health of women of reproductive age constantly keeps its significance. Maternal and perinatal mortality is a key indicator of integrated services not only maternal and child health and the health care system as a whole, but also social well-being of society.

Reproductive health is a state of complete physical, mental and social well-being in all areas relating to the reproductive system, its functions and processes, including procreation and harmony in the psycho- social relations in the family. Considering the normal functional state of the reproductive system, as an indicator of the health of the woman, VE Radzinsky (2001) believes that it should prevent " failure " of this system , because only a healthy mother can give birth to a healthy child , and only a healthy child may become the healthy mother and a healthy father. Therefore, the problem of birth of healthy offspring and reproductive health of women goes beyond the medical and social is to be resolved at the state level. [3]

Among the medical factors that have a significant impact on the components of the natural movement of the population (total mortality and fertility) are: abortion, the number of births to HIV -infected patients, the prevalence of HIV infection, marital infertility, fruit and infant loss, mortality from malignant neoplasms of female genital mutilation, maternal mortality [4].

The reproductive system of women is characterized by regional characteristics and is highly dependent on environmental and population- demographic situation in the region [1, 2]. The results of the census of 2010 showed that the Republic Sakha (Yakutia) is not retained its status as the region of a million people.

RESULTS AND DISCUSSION

On 01.01.10 .the total population of Sakha (Yakutia) was 949,347 people, is home to 490,218 of the female population, including women of fertile age 26470, 21731 teenage girls, girls 100939.

Extragenital pathology has a great influence on the course of pregnancy, birth outcome, the occurrence of obstetric complications and neonatal morbidity. In the dynamics of 3 years there is a tendency to improve the health of pregnant women in the country, but nevertheless the figures for 2012 significantly higher than those of the Russian Federation and the Far Eastern Federal District (Table 1).

In the structure of pregnant morbidity the first place anemia occupies - 27.6 % (2010 - 44.8 %), followed by frequency - diseases of the genitourinary system, they accounted for 12.8 % (2010 - 25.5 %), and third place - thyroid 16.7 % (2010 - 18.1 %). The decrease in the disease during pregnancy - anemia, kidney and thyroid, and obstetric complications (gestoses) affected preventive measures during pregnancy (free delivery antianemic drugs, minerals, iodine preparations, etc., acquired by birth certificates - ticket number 1). Alarming is the fact of increasing the frequency of preeclampsia 14.5% (2010 - 12.8 %).

For 2012 there were 16922 births due to data of medical organizations of the Republic. 6.9% were born prematurely. The share of normal births was 52.3 %, against 46.5 % in 2011. (Table 2).

Over the last 5 years there has been decline in birth complications: violations of labor (2010 - 88.5 per 1000 births, 2012. -74.7), bleeding in the afterbirth and the postpartum period (2010 - 27.3 per 1000 births, 2012. - 18.1), bleeding due to premature detachment of the placenta (2010 - 14.1 per 1000 births, 2012. - 13.1).

Overall incidence of babies: born sick and ill newborns 4842 (2010, 4510). In connection with the transition from 01.01.2012 .new criteria for registration of birth from 22 weeks of pregnancy, on the recommendation of the WHO, the overall incidence of newborn to 3 years increased by 1.3 % to \$ 286.1 per 1,000 live births, as compared to 2010. (2010, 282, 4).

In the structure of neonatal diseases occupy a leading place certain conditions originating in the perinatal period (73.7 %) and congenital anomalies (23.9 %). In the structure of a class “certain conditions originating in the perinatal period” in infants weighing 500 - 999 g make up the largest share of intrauterine hypoxia, birth asphyxia (27 %), growth retardation and malnutrition (16.1%) ,

neonatal jaundice (13.4 %). Rate per 1,000 live births from asphyxia and hypoxia was 76.4 (2011 - 88.6, 2010. - 99.8), from slow growth and malnutrition - 45.6 (2011 - 46.7, 2010. - 39, 4) and neonatal jaundice - 37.8 (2011 - 40.8, 2010. - 36.8). A figure in newborns with 1000g .and more than made up respectively of asphyxia and hypoxia 75.3 from slowing growth and malnutrition - 45.8 , neonatal jaundice - 37.9 .

By switching to the new criteria was the expected increase in the rate of perinatal mortality in 2011 rate was 8.4 per thousand, in 2012. - About 13.0% (2010 -8, 1).

For 2012.gynecological morbidity rate on the RS (Y) was 55.5 per 1,000 of the female population (2011 - 48.2) . In the structure of gynecological morbidity in the first place - Inflammatory diseases of female pelvic organs 53.2 % (2011 - 53.1 %) , the second - erosion and ectropion of cervix 11.7% (2011 - 11.6% .), the third - menstrual disorders 11.0% (2011 - 11.8 %) in the fourth - endometriosis - 2.9 % (2011 - 2.9 %) , the fifth - infertility - 1.3 % (2011 - 1.6%).

Currently on the RS (Y) remains the growth rate of cancer of the reproductive system in women, including breast cancer (4.6% in 2012 to a level of 2011), the body of the uterus (a factor of 1.8 - 77 8%). Marked reduction in the incidence of ovarian cancer (6.3%) compared with 2011 incidence for cervical cancer remains the same at 20.3 (per 100 thousand of the female population). In 2012, newly diagnosed breast cancer patients 212, uterine cancer - 71, 100 cervical, ovary -59 (Table 3).

In order to improve the accessibility, quality and efficiency of health care for diseases of the breast and the organization of the Breast Service in 2012. Republican Breast Center opened on the basis of number 1 RB - NCM .In 2011. purchased in mammography GBU RS (Y) " The National Hospital № 3", " National Hospital number 1- NCM ", " CRH Verkhnevilyuisk ", " CRH Kobjajsky ", " Tatta CRH ", " CRH Khangalassky ", " Bulun CRH ', Nyurbinskaya CRH ", " CRH Mountain ", " CRH Tomponsky ", " Ust -Aldan CRH . " In 2012, purchased in mammography GBU RS (I) " AMGA CRH ", " CRH zhiganskiye ", " CRH Nizhnekolymskie ", " CRH Srednekolymsk ", " CRH Nam ", " Ust -Maya CRH . " Also in the 21 districts of Sakha (Yakutia) purchased and put into operation Computed Radiography with a workstation doctor to create a single information system. With the help of all the studies done on mammography equipment at the Central Regional Hospital, in digital form will be sent to the National Breast Center for the description and diagnosis, stored in a knowledge base. This will speed up the examination; will increase the availability to the public of the RS (Y), the detection rate of breast cancer in its early stages.

Index of the frequency of abortions per 1,000 women of childbearing age has declined by 1.6 % compared to the previous year and amounted to 36.6 (2010 - 40.7, 2011 - 37.2), the ratio of births to abortion was 1:0, 58 (2010 - 1:0, 68; 2011. 1:0, 61) (Table 4).



Prevention of abortion is one of the priorities of the Republic, aimed at protecting reproductive health and birth of healthy children. Prevention of abortion is one of the priorities of the Republic, aimed at protecting reproductive health and birth of healthy children. As part of the SE " Development of Health of the Republic of Sakha (Yakutia) in the years 2012-2016 " measures are being taken to ensure that modern contraceptive vulnerable people.

Health education work done by obstetrician - gynecologists about the dangers of abortion and female enrollment and intrauterine hormonal contraception reduced the rate of abortion rates in the country. For advocacy of the dangers of abortion are involved NGOs and the media (the media) at all levels.

In order to minimize the consequences of abortion, improve women's reproductive health in 2013 in the program of state guarantees free public provision of Sakha (Yakutia), medical care including medical abortion.

One of the reserves to maintain the level of fertility is to increase the provision of medical care for the treatment of infertility with the use of modern assisted reproductive technologies. Since 2013 in vitro fertilization (IVF) has been included in the program of state guarantees of free medical care provision to population of the Republic of Sakha (Yakutia). The implementation of measures to improve the effectiveness of treatment of infertility using assisted reproductive technologies will increase the availability of this type of assistance and will help increase the birth rate by 30 % of patients treated with the use of assisted reproductive technologies.

In order to provide services on reproductive health, prevention of abortion, diagnosis and treatment of gynecological diseases, as well as for primary specialized medical care to patients in 2013 it is planned to complete the construction and commissioning of the Center for Reproductive Health in Yakutsk.

Table 1

Indicators of physical health of pregnant women of Sakha (Yakutia)

(% to the number who completed the pregnancy)

	Anemia	Kidney disease	Diseases of the circulatory system	Thyroid disease	Late toxicosis
2010	44,8	25,5	9,4	18,1	12,8
2011	43,7	30,1	8,5	16,7	13,2
2012	27,6	12,8	12,2	16,7	14,5
FEFD 2010	33,9	18,5	11,3	8,8	19,5
RF 2010	34,7	19,2	10,4	6,2	18,1

Table 2

The number of births in the Republic of Sakha (Yakutia)

	2010	2011*	2012
The number of births in the Republic *	15905	16193	16922
The number of live births	15973	16260	16925
The percentage of normal births in the hospital adopted by the RS (Y)	50	46,5	52,3
The percentage of normal births in the hospital adopted by the RS (Y)	3,2 %	3,3	1160 6,7%

* Including delivery outside the delivery room



Table 3

The incidence of malignant tumors of the reproductive system in women in the Republic of Sakha (Yakutia) (form number 7)

	2010	2011	2012
Mammary cancer	31	41,4	43,1
Cancer of the cervix	16,5	20,4	20,3
Hysterocarcinoma	10,2	8,2	14,4
Malignant tumors of the ovary	11	12,9	12

Table 4

Dynamics of abortion on the RS (Y)

Year	The total number of abortions (including mini abortions)	The abortion rate per 1,000 women Pert. age (with a mini-abortion)	The ratio of abortions to births
2010	10848	40,7	1:0,68
2011	9 900	37,2	1: 0,61
2012	9754	36,6	1:0,58

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PROBLEMS OF TREATMENT OF CHRONIC HEMORRHOIDS

ABSTRACT

In the contemporary world, in the incidence frequency among coloproctological diseases chronic hemorrhoids takes the first place. The problem of choice of surgical treatment of chronic hemorrhoids keeps its actuality even today. The acuteness of this problem is primarily due to the imperfection of the applicable current methods of treatment and the frequency of complications in the early postoperative period, as well as in the remote terms after hemorrhoidectomy. In light of the development of in-patient replacing forms there is an increasing interest in providing minimally invasive surgical treatment at the proctologic diseases in outpatient conditions.

All above mentioned testifies to relevance of a solution of the problem of optimization of tactics of treatment of patients with chronic hemorrhoids and need of its further studying.

Keywords: chronic hemorrhoids, hemorrhoidectomy, minimally invasive methods of treatment, latex band ligation of the hemorrhoidal clusters, surgical methods of hemorrhoids treatment.

INTRODUCTION

Problems of treatment of chronic hemorrhoids

In the contemporary world, in the incidence frequency among coloproctological diseases chronic hemorrhoids takes the first place. Abundance makes it 140-160 people on 1000 adult populations [4,10]. The specific gravity in structure of coloproctological diseases fluctuates from 34 to 41%. Sharpness of this problem is caused, first of all by imperfection of methods of treatment applied now and frequency of complications in the early postoperative period, and also in the remote terms after a hemorrhoidectomy. Despite perfecting of methods of surgical treatment of hemorrhoids, in process of accumulation of clinical experience and studying of the remote results there are messages on complications and unsatisfactory results of a hemorrhoidectomy [7,15]. 34-41% of patients after a hemorrhoidectomy have an expressed pain syndrome, at 2% bleeding, at 15-26% - a dysuria. At 2% of the operated pyoinflammatory complications develop. In the remote terms after operation at 2% of patients strictures of the proctal channel are formed, at 1% of patients the failure of a proctal sphincter [7] comes to light. The high percent of recurrence and postoperative complications after a hemorrhoidectomy dictates need of more careful choice of indications to a method of expeditious treatment. So according to Rivkin and L.L.Kapullera (2000) radical hemorrhoidectomy is shown no more than 20% of patients, and according to some authors [19] only 6% of patients.

In recent years there is an interest to rendering the operational help of proctologic diseases in out-patient and polyclinic conditions. It is promoted by the fissile development of the modern low-

invasive methods of treatment thanks to which realization of a radical hemorrhoidectomy is shown now no more than in 30% of cases [14]. According to many authors, treatment of patients in out-patient conditions allows to reduce considerably the cost of a medical care, financial costs of out-patient operation average 30% of cost of hospitalization. It should be noted that minimally invasive methods of treatment of hemorrhoids are rather prime performed by, are economic, do not demand hospitalization of the patient, do not lead to the long terms of stay on a leaf of disability and the long-lived rehabilitation of the patient, are not interfaced to risk of anesthesia [23]. However, algorithms of treatment of patients with hemorrhoids still are not developed. There are no legible criteria for realization of low-invasive operations depending on degree and weight of hemorrhoids. Searching of the most efficient, less morbid and economic efficient low-invasive method of treatment of hemorrhoids in out-patient conditions is still conducted.

Hemorrhoids pathogenesis

The term "hemorrhoids" is understood as pathological increase in the external and internal hemorrhoidal clusters, being accompanied by periodic selection of scarlet blood from internal clusters and their loss from the proctal channel.

Now there is a set of theories explaining a hemorrhoids pathogenesis: infectious, constitutional, mechanical, endocrine, toxic, and any of them cannot authentically explain loss of internal clusters and selection from them scarlet blood. Long time a larger role in an etiology of hemorrhoids was given to increase of venous pressure which led to developments of stagnation in veins of a rectum [1,13]. According to L.A.Blagodarnogo (2011), in a hemorrhoids pathogenesis two major factors have leading value: vascular and musculodystrophic.

In the course of a normal embryogenesis cavernous educations which are a basis of hemorrhoidal clusters, in a submucous layer of distal department of a rectum above the gear line (internal hemorrhoidal clusters) and under perineum skin (external clusters) are put. External hemorrhoidal clusters settle down under anodermy and are covered with a multilayer flat epithelium, and internal hemorrhoidal clusters are covered with a cylindrical epithelium. The reason of increase in hemorrhoidal clusters is blood circulation violation in cavernous educations [5]. In turn, the increase in cavernous little bodies (the sizes of hemorrhoidal knot) leads to development of dystrophic processes in a common longitudinal muscle of a submucous layer and Parks's team therefore there is their shift in the distal direction and loss from the proctal channel [6].

W.Thomson in 1975, having studied structure of an unstriated muscle of a submucous layer of the anal channel, described by Treyts in 1853, proves its role of laying (pillow) on an anus circle. It settles down not a continuous ring, and forms three main "pillows" one of which borrows left-hand lateral, the second - right forward, the third - right back situation, according to an arrangement

of internal hemorrhoidal clusters. Internal hemorrhoidal clusters from the external are divided by the anorectal line. Above this line the cylindrical epithelium which does not have painful receptors [18] settles down. More distal than this line in a flat epithelium and under it the mass of painful and sensing receptors settles down. It is extremely important to mean this circumstance at a choice of a method of treatment of hemorrhoids. In communications by feature of an innervation of the proctal channel, realization of low-invasive techniques at pathological changes of internal clusters, according to many scientists, practically does not demand introduction of anesthetizing preparations [2,7,10].

It should be noted also an essential role of internal hemorrhoidal "pillows" in potting of the proctal channel and keeping of intestinal contents therefore coloproctology pay attention to need of realization of less traumatic methods of treatment for the purpose of preservation of cavernous educations [4,20].

Clinical picture

The main symptoms of chronic hemorrhoids are loss of hemorrhoidal clusters and the remittent bleeding bound, as a rule, to the act of a defecation [4,20]. Thus bleeding can be in the form of often dripping drops, existence of blood strips on a feces, or slightly noticeable on underwear or on toilet paper. The second for the frequency of emergence by a symptom is loss of hemorrhoidal clusters. The N of Gudgeon (1986) revealed distinction in loss of hemorrhoidal clusters from the proctal channel. Thus can drop out not only three knots, but also one or two. There is a direct dependence between the disease duration, its stage and frequency of loss [19]. Much less often at chronic hemorrhoids such symptoms, as a discomfort, pain, a proctal itch and mucilage selection from an anus can meet. More often their emergence is bound to the long-lived course of a disease. Practically at all patients with hemorrhoids the disease has wavy character with the periods of aggravations.

Basis for manifestation of sharp process is thrombosis of hemorrhoidal clusters. At sharp hemorrhoids emergence of the expressed pain syndrome, thrombosis of hemorrhoidal clusters and emergence of inflammatory process is characteristic. Sharp process is most often accompanied by bleeding from internal hemorrhoidal clusters. The subsequent aggravations can become frequent, after an error in a diet or an exercise stress.

The most frequent reason of the primary address to the doctor is blood selection from an anus. At 80% of patients selection of scarlet blood is noted during a defecation or right after it. 19% have a blood selection from an anus irrespective of a defecation. At part of patients continuous selection of blood leads to anemia development. Scarlet blood without clots is most often emitted, and is much more rare – dark blood with clots [15].

Character of bleeding can be the most various – from hardly noticeable traces of blood before the expiration by its strong stream at the time of tension of a prelum abdominale and increase of intra belly pressure at a defecation. Thus it can be lost to 80-100 and more milliliters of blood daily. Bleeding develops usually together with the defecation beginning. During the periods decline and the complete elimination inflammatory the phenomena intensity of bleedings decreases. Under the influence of treatment or self-contained they stop, sometimes on the long term. Plentiful hemorrhages lead to chronic anemia. At progressively accruing anemia the index of hemoglobin can reach 40-45 g/l. This complication can be menacing for life of the patient and demands urgent treatment.

The pain syndrome is not the reference sign for chronic hemorrhoids [14]. Pains quickly accrue if hemorrhoids are supplemented by an anal fissure with the reference for it a sphincter spasm. They amplify and become the extremely painful especially during the periods of an aggravation of inflammatory process with infringement of the increased, edematous internal hemorrhoidal clusters. According to various authors of [4,7,17] pains arose generally at development of thrombosis of hemorrhoidal clusters and were one of symptoms disturbing the patient in 96% of cases of a sharp course of a disease. In incipient states at a chronic current the pain syndrome can be absent. But sometimes and at far come disease there is no pain syndrome even at is long dropping-out hemorrhoidal clusters.

In process of development of a disease there are expressed hemorrhoidal clusters. Internal hemorrhoidal clusters are usually shown before external that is bound to friability of a submucous layer and development of dystrophic processes in the holding device of internal hemorrhoidal clusters and increase in the sizes of clusters. Clinically these clusters prove bleeding earlier, than external.

Hemorrhoids classification

Classification of hemorrhoids has more than thousand-year history. During the different periods, almost each author describing hemorrhoids, created the classification and hemorrhoids systematization by forms, stages, complications and a treatment method.

According to Timokhin of Yu.V (1965), Amineva of A.M (1971), on an etiology hemorrhoids can be congenital or acquired. The last, authors divided on primary and symptomatic. On localization, authors divided hemorrhoids on internal and external. This type of classification recognized the majority of coloproctology. In particular, it is described in Braytsev's monographs of B.P (1952), Rykhizh of A.H (1956) and Bacon H. (1949).

Opell V.A (1903) allocated three stages of hemorrhoids depending on expressiveness of loss of clusters. The first stage – clusters drop out of the proctal channel and are set self-contained. The

second stage – dropping-out clusters self-contained are not set, the patient is compelled to render a manual grant at reposition of clusters. The third stage – the set clusters do not keep in the proctal channel and constantly drop out.

V. R. Braytsev's classification (1952) also was based on extent of loss of hemorrhoidal clusters, but included four stages. Thus internal hemorrhoids without loss of clusters did not join in both classifications.

The modern classification of hemorrhoids offered by domestic authors reflects the course of a disease on chronic and sharp. In a form shares on: internal, external, combined. The chronic course of hemorrhoids is subdivided into four stages. Not dropping out hemorrhoidal clusters belong to the first stage edematous, sometimes bleeding, but. To the second stage — dropping-out hemorrhoidal clusters with possibility of self-contained reposition to the proctal canal (with bleeding or without it). Feature of the third stage is loss of hemorrhoidal clusters with need of instrumental and their manual reposition to the proctal canal (with bleeding or without it). To the fourth stage refer continuous loss of clusters (with bleeding or without it) [10,12]. The course of sharp hemorrhoids is subdivided into three degrees: the first degree - thrombosis of external and internal hemorrhoidal clusters without emergence of inflammatory reaction; the second - thrombosis of hemorrhoidal clusters with their inflammation; the third — thrombosis of hemorrhoidal clusters with transition of inflammatory process to a hypodermic fat, perianal hypostasis and emergence of a necrosis mucous clusters.

This classification corresponds to a hemorrhoids pathogenesis, is sufficient is convenient and gives the chance in practical work, depending on a stage of a disease and degree of expressiveness of a symptomatology, objective to define indications as, for low-invasive, and for surgical methods of treatment [6,17].

Now medical practice knows a set of ways of treatment of hemorrhoids which make three larger groups: conservative, low-invasive and surgical methods of treatment.

Conservative treatment

Conservative treatment is shown first of all at sharp hemorrhoids, incipient states of a chronic current, and as a preventive measure of exacerbations of a disease. First of all the factors promoting a course of a disease [3] recommend to exclude the majority of authors. The major action in prophylaxis and treatment of hemorrhoids is keeping of a mode of work and rest, restriction of "a professional harmfulness". Secondly - a mode and quality of a delivery (dietetics). The use of products with the raised maintenance of a fat normalizes activity of a digestive tube. In the third - aperient tools [18]. In the fourth - treatment, with application of preparations of local action directed on efficient removal of the main symptoms.

The indications for medicamentous treatment are incipient states of chronic hemorrhoids and the sharp course of a disease. This type of therapy consists of common and local treatment. Certainly, at sharp hemorrhoids conservative treatment is shown. However it should be noted that its prophylaxis first of all consists in normalization of activity of a digestive tube, treatment of a lock which meets more than at 75% of the patients having hemorrhoids. Ferment preparations, the tools influencing flora and a peristalsis of thin and a colon, hydrophilic colloids (food fibers) against the regular and sufficient consumption of liquid are appointed. For this purpose in our country traditionally apply wheat bran, sea cabbage and a flax seed in their natural look or in the form of pharmacological preparations [10]

Local treatment

Local treatment is directed on elimination of a pain syndrome, thrombosis or an inflammation of hemorrhoidal clusters, and also bleedings. At a choice of local treatment of sharp hemorrhoids it is necessary to consider a prevalence of one of symptoms – pain, thrombosis, abundance of inflammatory process and existence of the destructive component. At bleeding it is necessary to estimate legibly the hemorrhage size, its activity and expressiveness of posthemorrhagic anemia.

The pain syndrome at hemorrhoids is usually caused by infringement of the thrombosed hemorrhoidal knot or emergence of a sharp proctal crack. Most often in the mechanism of its education the sphincterismus bound to inflammatory process in hemorrhoidal knot lies. Therefore for elimination of a pain syndrome application of not narcotic analgetics and the local combined anesthetizing preparations is shown. Such preparations are applied to local therapy of hemorrhoids, as aurobin, ultraproct, proctoglivenol, nephluan, etc. The thrombosis of hemorrhoidal clusters complicated by their inflammation – the indication to application of anticoagulants of local action in a look suppository and the combined preparations containing anesthetizing, thrombolytic and antiinflammatory components. This group treat proctosedyl and hepatrombin H. Hemorrhoidal thrombosis is also shown application of anticoagulants of local action. Heparini and troksevazini ointments belong to this group of preparations. In 70–80% of supervision of fibrinferments of hemorrhoidal clusters becomes complicated their inflammation with transition to a hypodermic fat and perianal area. Thus the above preparations are applied in combination with the water-soluble ointments possessing potent antiinflammatory action. Them treat levosin, levomecol, mafenide [10].

Incessant bleeding within one hour is a sign of sharp process and it is possible to apply the suppositories containing an adrenaline to its elimination. In addition, apply such local haemo static materials, as Adroxonum, beriplast, tahocomb, spongostan, consisting of a fibrinogen and Thrombinum. At introduction to the proctal canal they resolve, forming a fibrinous film [4].

Common treatment

Basis of common treatment of hemorrhoids is application of flebotropny preparations. At the expense of application of pathogenesis reasonable therapy the medical effect (a bleeding stop, decrease of expressiveness of an inflammatory and pain reaction, dissolution of blood clots in cavernous little bodies etc.) is reached. Application of these or those preparations has to be dictated by degree of expressiveness of this or that symptom [10] Single group of the preparations, allowing to solve primal problems of a systemic pharmacotherapy of hemorrhoids by impact on key pathogenetic mechanisms of development and disease progressing, flebotropny preparations are. Among flebotonik the greatest distribution gained derivativ flavonoids – diosmin. At treatment of hemorrhoids micronized forms diosmin are used. Thus, the amount of the active material adjoining to a surface of a mucosa of a gastrointestinal path, increases by 4,5 times, leading to increase of bioavailability of a preparation by 4 times.

It should be noted that despite application of the modern efficient preparations, the conservative treatment which is carried out generally at a sharp phase of a disease, is only palliative measure and gives a short-term positive effect. Renewing of a lock, error in a diet, as a rule, lead increase in exercise stresses to the next aggravation that demands repeated conservative treatment.

Therefore at an inefficiency of this type of treatment, especially in late stages of a disease, it is necessary to carry out the combined treatment including conservative and low-invasive methods or conservative and traditional surgical methods.

Low-invasive surgical methods of treatment of hemorrhoids

Due to the development of new technologies, creation of efficient sclerosing preparations, devices and devices, the increasing distribution is gained by highly efficient methods of low-invasive treatment of the hemorrhoids, applied most often, in out-patient and polyclinic practice [11]. The infrared photocoagulation, sclerotherapy, ligation of hemorrhoidal clusters belong to low-invasive methods of treatment by latex rings, an electrocoagulation, a sutural ligation of hemorrhoidal vessels under monitoring of an ultrasonic Doppler velocimetry, removal of hemorrhoidal clusters by the radiosurgery device [12]. In our country low-invasive methods of treatment are used only in 3% of cases [11] though in recent years domestic coloproctologists actively started introducing them in practice of treatment of hemorrhoids [20].

In the developed countries, most often applied way of treatment, the ligation of hemorrhoidal clusters latex rings (in 38-82%) is. The second place on application frequency (in 11-47%) is taken by sclerotherapy [3,20]. In 3-5% of supervision the infrared photocoagulation and an electrocoagulation of hemorrhoidal hubs [3,9,20] are applied. It should be noted that low-invasive methods of treatment undoubtedly possess a number of advantages: they are prime in application,

are safe, the slight number of complications is noted at their realization. These methods are applied usually in out-patient and polyclinic practice and do not demand larger material and financial expenses. The indication for application of low-invasive methods of treatment are incipient states of hemorrhoids with a dominance of symptoms of bleeding [7,14]. Contraindication to realization of low-invasive methods of treatment are inflammatory diseases of the proctal channel, a perineum and late stages of hemorrhoids with lack of a clear boundary between external and internal hemorrhoidal hubs [7,10].

Ligation of hemorrhoidal clusters latex rings

In our country broad application in out-patient and polyclinic practice was received by a method of a ligation of hemorrhoidal clusters latex rings [2,20,29,31]. Abroad the mechanical device for a ligation of hemorrhoidal clusters latex rings was created by Barron J. in 1963, and in Russia the analog is created by B. N. Reznik in 1977. The principle of this method of treatment consists, in displacement by a latex ring of a leg of internal hemorrhoidal knot, with the subsequent casting-off of fabric of knot under a latex ligature for 7-14 day after operation [30,31]. According to many authors, the method is high performance and can widely is applied on an outpatient basis without disability [2,20,29,30,31].

The relative contraindication for realization of a ligation is lack of borders between external and internal hemorrhoidal clusters, a crack of the proctal channel, a paraproctitis, and other inflammatory diseases of a rectum [10,14,20]. This technique still call "a tiny hemorroidectomy" which showed the high performance at 2 and 3 stages of a disease [12,14,30]. According to L.A.Blagodarny (1999), good results at late stages are noted in 83,3-88,7% which are possible at legible differentiation of borders between internal and external hemorrhoidal clusters. One authors for the purpose of decrease in a pain syndrome recommend to carry out procedure in two-three stages, with an interval in 2 weeks [14], other authors with an interval in 4 - 5 weeks [1,25]. Some authors recommend to impose rings at the same time on 3 hemorrhoidal knots with three-day appointment analgesic [2].

There are publications in which emergence to 40% of recurrence in some years after a ligation [29] is noted. Authors traced effectiveness of a ligation at 2 stages of an illness. In 5 years the good result is noted at 2/3 patients, and in 10 years at 50% of patients [30]. Advantage of a ligation before above-mentioned methods of treatment is possibility of its application at loss of clusters of the second and third stage of hemorrhoids. However, lack of a clear boundary between external and internal hemorrhoidal clusters as it more often happens at the combined hemorrhoids, complicates application of this method [29,30].

Infrared photocoagulation

According to many authors, an infrared photocoagulation as the self-contained method of treatment is effective only at incipient states of hemorrhoids [3,20,22,26]. At incipient states of a disease good results are noted by authors at realization of an infrared photocoagulation in 73-77% [2,3,26,32]. Other authors report about effectiveness of this method in 85,7% at the first stage, and in 76% at the second [6]. Linares Santiago E. from coworkers. (2001) reports about good results after an infrared photocoagulation in 91,5% of supervision at 1 and 2 stages. Kovalev V. K. from coworkers. (2001) notes to 90% of recurrence after application of an infrared photocoagulation as than a self-contained method at incipient states of a disease is more narrow in 2-4 months. At 3 stages good results are received after carrying out 3-4 sessions of treatment at 45% of patients. Linares Santiago E. from coworkers. (2001) after an infrared photocoagulation notes a moderate pain syndrome in 63,4% cases, moderate bleeding in 1,6% of cases, and a palindromia of 9,5%. Certain authors after an infrared photocoagulation note to 3,8% of complications which are most often stopped by conservative actions and generally do not influence results of treatment [2].

Thus, the infrared photocoagulation is most effective only in incipient states of a disease. In late stages of chronic hemorrhoids this method is shown only for a bleeding stop.

Sclerosing treatment of hemorrhoids

In incipient states of hemorrhoids, to a dress, with an infrared photocoagulation apply also a sclerosing method treatment. At hemorrhoids treatment use of sclerosing preparations has an old story. In Russia in I.I.Karpinsky's 1870 g for the first time applied sclerosing treatment.

The sclerosing method of treatment is shown at incipient states of hemorrhoids where a leading symptom is bleeding. In the presence of loss of clusters, as a rule, this method of treatment does not give a positive effect [17,23,27,30].

Indispensable advantage of sclerosing treatment is its availability, possibility of running in to out-patient and polyclinic practice, safety during manipulation and the low cost of a sclerosing preparation. In turn, the method is shown only at incipient states of a disease. In late stages it can be applied to more legible differentiation between internal and external clusters, and to decrease of weight of knot for the purpose of the subsequent combination with other low-invasive methods.

Electrocoagulation of hemorrhoidal clusters

One of low-invasive methods is the electrocoagulation hemorrhoidal clusters. For the first time the method was offered A. Cain in 1939. The essence of this method consists in coagulation of a leg of hemorrhoidal knot by adjustable current of small force (8-20 mA) and safe tension (12B) by means of various devices, Bicap, AKM, Ultroid, WD-2 [10,23,32] good results of this method of treatment are received, mainly in incipient states of a disease [29]. Lack of this method is duration of time of impact on one hemorrhoidal knot till 13 - 17 minutes, a pain syndrome arising both

during procedure, and after it. At 5-7% of patients thrombosis of hemorrhoidal clusters after this treatment [8,23,28] develops.

Ligation of terminal branches of the superior rectal artery under monitoring of an ultrasonic Doppler velocimetry

In recent years there were the publications devoted to identification under monitoring of an ultrasonic Doppler velocimetry of hemorrhoidal arteries, and with the subsequent their vasoligation [10,31]. Ultrasonic Doppler diagnostics carry out by means of the bidirectional pulse device with a frequency of 8,2 MHz, and existence of an arterial blood-groove is confirmed by a noise signal of the Doppler device, in the form of a pulsation, with measurement accuracy of a depth of vessels ranging from 0,1 to 1,5 mm. It is possible to execute this procedure in out-patient conditions without application of express anesthesia. Local ligation of a hemorrhoidal artery according to Morinaga K. (2000) is pathogenetically reasonable method of treatment which allows to cure patients with late forms of a disease. Results of treatment are comparable to results of surgical interventions. Lack of this method is need of express expensive inventory and padding preparation of the coloproctologist.

Surgical methods of treatment of hemorrhoids

The most widespread method of a surgical intervention in Russia is - the hemorrhoidectomy which is carried out at 75-79% of hospitalized patients. In our country in a year about 440480 thousand operations are carried out [6,23,29]. The indications for a hemorrhoidectomy are patients with chronic hemorrhoids of 3-4 stages, with lack of borders between internal and external hemorrhoidal clusters. For the first time such operation was developed and introduced in practice by English scientists of Milligan E. Morgan G. in 1937. Its feature consists in excising of external and internal hemorrhoidal clusters by the uniform block with realization of bandaging of a leg of knot a catgut thread and leaving of a wound of the proctal channel of the open. This operation first of all is directed on excising of three main collectors of the cavernous fabric being internal hemorrhoidal clusters and is carried out by the majority of coloproctologists of the developed countries [3,9,14,22]. Now in literature about 300 modifications of a hemorrhoidectomy are described, but still Milligan-Morgan's operation remains to the most popular among coloproctologists around the world [23,28,30].

Generally apply three options of operations. Open hemorrhoidectomy more popular in foreign practice. At realization of this technique together with clusters cavernous little bodies of a submucous layer of a rectum without an suture of wounds of the proctal channel are removed. After such intervention emergence of such postoperative complications as hypostasis of fabrics of a perineum who is marked out at 3,2% of patients, bleeding - at 1,9%, anus narrowing - at 1,6% is

possible, and recurrence of a disease arises at 3,8% [9]. The closed hemorrhoidectomy with restitution mucous the proctal channel, is more widespread in Russia [1,7,18,22]. According to Abcarion of N (1994), the hemorrhoidectomy as Milligan-Morgan is carried out by 90% of surgeons from the various countries. In 42% of supervision the preference is given to an open hemorrhoidectomy, and 58% - closed. In the analysis of data of literature, by authors it is not established reliable distinctions between the opened and closed hemorrhoidectomy on duration of treatment, expressiveness of the pain syndrome, the received results and number of postoperative complications [11,24].

Rather seldom by coloproctology it is carried out — a submucous hemorrhoidectomy. This operation was offered for the first time by A Parks, in 1956. This type of intervention is characterized by smaller number of complications, than an open technique. The essence of operation consists at a distance hemorrhoidal knot without excising anoderma [10,12]. Operation recommend to carry out generally at hemorrhoids of 3 Art. with a clear boundary [6,31]. According to authors, after this operation expressiveness of a postoperative discomfort decreases, there is no narrowing of the proctal channel, terms of stay in a hospital are reduced and it is more economic [7,12,20,31].

Now after a hemorrhoidectomy a large number of early and late postoperative complications is noted. According to one authors, in the early postoperative period at 6,7%-34,4% of patients the expressed pain syndrome in the field of a postoperative wound is noted and is long remaining pains during a defecation - at 5,1-31% of patients [15,16,20]. According to other authors, in the early postoperative period the expressed pain syndrome is noted at 71% of patients [31,32]. One of often arising complications the sharp delay of an emiction [28,30] is considered. In the early postoperative period the sharp ischuria meets at 6,8-27% of patients, at 5-7% of patients it passes to an atony of a bladder [9,21,27,29]. At 4-6% of patients develops pyoinflammatory complications in a wound or early bleeding [3,20]. According to K.M. Kurbonova and coworkers after a hemorrhoidectomy pyoinflammatory complications in a wound develop in 12-18% of supervision.

According to various authors for many years at 2-4% of patients, in the remote postoperative period the failure of a proctal sphincter and a stricture of the proctal channel remains, the palindromia [7,14,20,28,32] is also possible. Some foreign authors note a proctal incontience in 9,5% of cases after a hemorrhoidectomy [31]. In foreign literature there are descriptions of isolated cases of formation of abscesses of a liver after a hemorrhoidectomy [32]. Average stay of patients according to coloproctologists in the Russian Federation and abroad, in a hospital makes 12-14 koyko-days [1,4,18], and the period of common rehabilitation fluctuates from 3 to 5 weeks [4,9,16,21].

In recent years in domestic and foreign literature there were publications of application of an ultrasonic scalpel in hemorrhoids treatment [14,20,26]. The principle of action of an ultrasonic scalpel is based on mechanical fluctuations of a titanic edge with a frequency of 55000 Hz. By means of high-pitched ultrasonic energy there is a section of fabrics, and at the expense of a denaturization of protein and an obliteration of vessels the coagulative effect is reached. Coagulation of fabric happens only in a cell-like layer in a projection of immediate contact of an electrode, to minimum damaging impact on more deeply lying layers [29,30]. Hemorrhoidectomy with application of an ultrasonic scalpel in comparison with a traditional hemorrhoidectomy led to reduction of duration of an operative measure from 40 to 12 min. Also authentically expressiveness of a pain syndrome decreases and by 1.5 times the period of rehabilitation [7,9,30] decreases. After use of an ultrasonic scalpel terms of stationary stay were reduced till 3,8 days, and common disability - by 7,5 days [20]. The total of early postoperative complications does not exceed 4,8%. In 0,6% cases of the early postoperative period bleeding, in 2% - a sharp delay of an emiction, in 1% - crack formation, and rectum fistula in 0,8% [9] is revealed.

In recent years the great interest causes a new method of surgical treatment of the hemorrhoids, Longo A offered by the Italian scientist. (1997). The essence of this operation consists in use of a circular stapler, for excising mucosa - a submucous layer of a rectum, without removal of hemorrhoidal clusters. Operation is pathogenetically reasonable since as a result of excising there is a pulling up of the copular device and hemorrhoidal clusters to restitution normal a ratio between anatomic structures of the proctal channel, and in a submucous layer branches of the top hemorrhoidal artery that leads to the termination of inflow of blood to hemorrhoidal clusters and their reduction are crossed. All manipulations are carried out above the gear line on 2-4 cm, in the transitional department of a rectum. This method leads to the considerable decrease of a pain syndrome in comparison with a traditional hemorrhoidectomy [7,14,28,29]. The disposable offices PPh 1 33, CDH 33, HCS 33 of firm of "Ethicon Endo-Surgery" are applied to a stapler method [27,28]. Operation duration on the average about 15 minutes [17]. Other authors noted operation duration on the average till 33 minutes (from 15 to 60 minutes) [9].

Indications for stapler operation, according to domestic coloproctologists, are 2, 3, 4 stages of hemorrhoids [20]. Other authors consider as the main indication to carrying out operation 2 and 3 a disease stage [29]. According to foreign authors, the most efficient result is reached by Longo's method at treatment of 3 stages of chronic hemorrhoids [3,27]. The remote good results are received 95 - 95,7% [27]. The palindromia is noted 2,3% [30].

Thus, considering distinctions in loss of hemorrhoidal clusters and their sizes, on 3, 7 and 11 clocks, a majority of surgeons carry out a reference hemorrhoidectomy with removal of three

hemorrhoidal clusters. Shortcoming it is the high frequency of early and late complications in the postoperative period, the long-lived period of rehabilitation [31]. Also this operation does not demand larger material inputs. For Longo's method and a hemorrhoidectomy an ultrasonic scalpel it is necessary to use expensive inventory, and the remote results demand still further studying.

Existence of rather large number of postoperative complications and desire to reduce stay terms on a leaf of disability of the operated patients were the cause of further searching of methods of treatment of a hemorrhoidal illness [30]. The modern opportunities of surgical treatment of patients with chronic hemorrhoids are considerable now. Arsenal of methods of impact on this widespread disease a bike therefore it is necessary to define skillfully indications to treatment and, depending on a stage of a disease to choose the most suitable.

Conclusion

Thus, with development of scientific and technical progress the quantity of factors of the phenomena of a hypodynamia promoting development which in turn conduct to development of diseases of the cardiovascular, respiratory and alimentary system including hemorrhoids increases. Annual acceleration of rates of scientific progress therefore there are no bases to count on decrease in incidence by hemorrhoids is noted.

Sharpness of this problem is caused first of all by imperfection of methods of treatment applicable now and complication frequency in the early postoperative period, and also in the remote terms after a hemorrhoidectomy. 34-41% of patients after a hemorrhoidectomy have the expressed pain syndrome demanding numerous applications of narcotic analgetics. At 15-24% of patients – the dysuric phenomena resulting in need of the long-lived medicamentous stimulation and a catheterization of a bladder develop. At 2-10% in the postoperative period bleedings are noted. Pyoinflammatory complications arise at 23% of the operated patients. In the remote terms at 6-9% operated strictures of the proctal channel are formed, and at 1,8-4% of patients the failure of a proctal sphincter comes to light. Average term of rehabilitation after a hemorrhoidectomy makes not less than 4 weeks. In spite of the fact that the hemorrhoidectomy is regarded by the majority of surgeons as a radical way of surgical treatment of hemorrhoids, within 2-3 years after intervention return of a disease is noted in 1-3% of supervision, 10-12 years later - at 8,3% of patients.

Now, according to many authors, treatment of patients in out-patient conditions allows to reduce considerably the cost of a medical care, financial costs of out-patient operation average 30% of cost of hospitalization. However, algorithms of treatment of patients with hemorrhoids still are not developed. There are no legible criteria for realization of low-invasive operations depending on degree and weight of hemorrhoids. Searching of the most efficient, less morbid and economic

efficient low-invasive method of treatment of hemorrhoids in out-patient conditions is still conducted.

Above-mentioned data testify to relevance of searching of new techniques of treatment of the hemorrhoids, allowing lowering as injury of operation, to reduce number of postoperative complications and to reduce terms of medical rehabilitation. In the light of development of inpatient replacing forms, introduction of low-cost technologies and formation of "hospitals of one day" there is the increasing interest to rendering low-invasive methods of expeditious treatment at proctologic diseases in out-patient and polyclinic conditions

All above testifies to relevance of a solution of the problem of optimization of tactics of treatment of patients with chronic hemorrhoids and need of its further studying.

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Genochronology: gender differences in the length of generations

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Summary. In the assessment of one of the important fundamentals of genochronology – the length of generations, the authors justify the need for significant amendments in the calculation of ages of mutations depending on the basic types of inheritance in isolated populations. The confirmation of the proposed hypothesis in calculating ages of mutations identified in developmental studies forms a representative basis for the application of new approaches in the method of calculation of reliably dated events in the field of genetic archeology.

Keywords: genochronology, gender, length generation, population, Yakuts.

The gene pool of the Yakut population is characterized by a low level of Y-chromosome diversity (passed from father to son), combined with a wide polymorphism of mitochondrial DNA (passed from mother to children). Moreover, if in mtDNA Yakuts are close to other Siberian ethnic groups (in particular, to Tuvins), then in Y-chromosome - they are sharply different from them [1,2,3]. The reported genetic features of Yakuts disagree with the prevailing opinion of their mass migration from the south, and, respectively, suggest different processes in their ethnogenesis [4, 5].

The main dispersal area of the Finno-Ugric peoples include the circumpolar territories of Eurasia, while in the east it is “cut off” on the border with Yakutia, whose male population is genetically related to the Finno-Ugric peoples. Ethnographic literature uses the concept of virilocality of exogamous marriages, whose features include the preservation of fathers’ languages in children. In view of the fact that by Yakuts’ Y-chromosome relates them to the Finno-Ugric peoples [2], we can assume that: 1) Yakuts (men) changed the language of their ancestors; and 2) peoples who today speak languages, relating to the Finno-Ugric group, at some point in history abandoned their “native” Turkic language. In the latter case, the origin of the Finno-Ugric languages becomes unclear, and thus this assumption does not hold water. In this regard, the most preferred is the assumption of the Turkization of the Yakuts’ ancestors’ language [4]. By haplogroup 16, the Yakuts are closely related to the Evenkis and the Buryats [3], whose modern languages belong to different language groups, dissimilar to the Turkic or the Finno-Ugric.

Let us consider a manifestation of the “founder effect” on the model of such a geographically isolated population as Yakuts, in which the transfer of SCA1 mutation in generations can be traced over a long historical period. Modern molecular genetics allows us to



determine the “lifetime” of the population having a common ancestor. For example, according to these calculations, haplogroup N1c which is widespread among Yakut men came into existence about 6,300 years ago, and the “lifetime” of the Yakut population, measured from the time of their common ancestor is 1400 ± 180 years [6]. One of the main concepts used to form the genochronological structures is “the duration of the interval between the generations”, taken to be 25-30 years and which, in our opinion, needs some refinements, depending on the characteristics of the transmission of mtDNA and Y-chromosome.

Results of the study of SCA 1 mutation (dominant form of spinocerebellar ataxia) in the Yakut population showed that all of its modern carriers live across the whole territory of Yakutia and have the same chromosome fragment with a haplotype size of 4.3 cM [7]. To determine the time the mutation started in the Yakut population we used the formula proposed by M. Slatkin [8]. The number of generations with the mutation is 36.6. If the duration of the interval between the generations is taken as 25-30 years, the age of the mutation is 915-1098 years. On the historical chronology scale this time corresponds to the 10th or 11th centuries. The main focus of the mutation is the Lena-Aldan interfluvial area, which in the end of the first millennium, as well as in our days, was one of the areas densely populated by Yakuts.

Over the past two decades, the Research Institute of Health of the North-Eastern Federal University (previously - NPC “Vilyuisk encephalomyelitis”, Ministry of Health of the Sakha Republic (Yakutia), the Institute of Health Sciences of the Academy of Sciences of the Sakha Republic (Yakutia)) collected 57 genealogies of Yakut families burdened with hereditary spinocerebellar ataxia type 1. On the basis of the available evidence we examined 166 cases of the disease in order to determine the average age of fathers and mothers, in which they started passing the mutation (Fig. 1). The indicators obtained can be regarded as the approximate period of the reproductive function (generation length) of individuals at different stages of historical development of the Yakut society. The patients were born in the period from 1890 to 1976, and during this period the men showed a decline in the average age of the parents at the time of the birth of the first child in a family from 37.4 ± 7.9 years (“more mature” among those born before 1910) to 23.6 ± 2.2 years (born after 1960). A similar pattern is observed in women – a decline in the indicator from 26.3 ± 6.1 to 22.6 ± 2.2 years of age [9]. Thus, in the duration of the interval between the generations, as a result of these gender differences, the historical time of the SCA 1 mutation distribution in the gene pool of the Yakut population may in fact be even more ancient. If on the maternal line, the mutation transmission interval may on an average be 25 years, on the paternal line it can be more than 35 years.

An additional argument in favor of this conclusion are documented data on the expressed

difference in the age of the bride and groom, in particular, data from 689 married couples, recorded in parish registers in the period of 1894-1917 of two churches located in Central Yakutia. According to them, in 92.3% of marriages the groom was older than the bride: 44.6% - by 1 to 6 years of age, 25.1% - by 7 to 12 years, 23.8% - by 13 or more [10]. The stability of this phenomenon is evidenced by the observation by V. F. Troshchansky in the 1870s. Thus, summarizing the data of 572 marriages, he found that 44% were cases when the groom was the bride's senior by up to 5 years, 14.2% - up to 10 years, 22.2% - up to 20 years, 3.15% - over 20 years, while in two marriages the groom was 30 years older, in two more cases - 35 years older than the bride [11]. This age structure of the spouses is also an evidence of a pronounced difference in the lengths of generations in the transmission of Y - chromosome and mitochondrial DNA.

Conclusion.

During genochronological studies of isolated populations it is necessary to take into account the fact of pronounced differences in the length of male and female generations. Reaching the age of the male reproductive function is only the lower limit of the length of generation, while the upper limit can reach up to 70 years or more. Average lengths of generations in isolated populations (Yakuts) could have the following indicators: for mDNA the interval is on an average 25-30 years, and Y-chromosome interval - 35 to 55 years or more.

Thus, the historical time of the isolation of Yakuts' ancestors in the Middle Lena should be determined by the age of the Yakut Y-chromosome variant itself with regard to the appropriate length of the male generation, which is significantly higher than that of the female generation. In other words, the predecessors of the Yakut population, in all probability, inhabited Central Yakutia as early as in the first millennium A.D.

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ETHNOCULTURAL FACTORS OF SUICIDAL BEHAVIOR OF THE NORTH PEOPLE

M.P. Dutkin

Summary: This article examines the ethnocultural factors in the origin of suicidal behavior of the North people. The main ethnocultural factor is unestimated psychological self-assessment of the aborigines of the North, which leads to alcoholism and suicide. The reason for this is intercultural conflict – pressure from eurocentrism.

Keywords: suicide, alcoholism, ethnocultural factors of suicide, psychological self-esteem, intercultural conflict, ethnocentrism, eurocentrism.

In the Russian Federation, since 1996 there is a pronounced downward trend in the number of suicides (the peak of suicides occurred in 1995 – 41 suicides per 100 thousand population). In 2011, this figure dropped to 21.4. Thus, the reduction in mortality from suicide in the whole of the Russian Federation amounted to 40% (compared to 1996).

In the Republic of Sakha (Yakutia), the number of suicides is not observed, as in the whole of the Russian Federation, the steady downward trend. The peak of suicides occurred in 2001 - 50.4 per 100 thousand population. In 2007 and 2008, respectively, suicide rate was 48.3 and 48.5, respectively, in 2009 - 46.9. Suicide rates in the three years of the Republic of Sakha (Yakutia) (2007, 2008 and 2009) exceed a similar national average by about 1,6 times. In 2010 there has been a trend to reduce the number of suicides - 40.8. The decline was in 2010 - 5.3%. In 2011, the number of suicides - 40 per 100,000 population.

Suicide researcher in pre-revolutionary Yakutia Dmitri Shepilov in 1928, by analyzing the historical data of the Yakut, wrote in his Suicide in Yakutia (study): "in Yakutia in the early 19th century, the number of suicides in 1809 and 1810, respectively 23 and 17, that is about three times higher than in Russia» [5].

According to federal State statistics service for the 2009 year, leaders on the frequency of suicide among children - Tuva, Yakutia and Buryatia. At 100 thousand children aged 10 to 14 years there have consequently 15.6; 13.4 12.6 and suicides. These indicators are extremely high (3 times the Russian figures). In these same regions, there is the most unfavorable situation among teenagers 15-19 years: in Tuva-120.6 on 100 thousand, Buryatia-86.6 and Yakutia-74.2.

The whole flash suicide walked to the end of the twentieth century to the Indian Reservations USA and Latin America. The main causes of this epidemic of suicides are considered the destruction of ethnic traditions, reduction of habitat, lack of work, alcoholism. The most characteristic example - the Guarani- Kiowa Indian tribe in Brazil. His fate weekly "Newsweek", wrote in November 1991: "The wave of suicides started in 1987 and has since been



growing. Only in the last 19 months, 52 people lost their lives voluntarily. Average age - 17 years. In one of the tribes, numbering only 7,500 members, is now committed suicide annually by 4.5 per thousand people, which is about 150 times higher than the comparable figure for the whole of Brazil".

The high number of suicides in the national republics of the North of Russia (Komi Republic, the Republic of Sakha-Yakutia and the Republic Buryatia, Tuva Republic), especially teenage and childhood, and on Indian reservations U.S. and Brazil, indicates the presence of other than socio-economic factors, and other factors, including and "ethnocultural" factor in the origin of suicidal behavior. The high number of suicides of children and adolescents is a kind of "sensitive barometer of society," testifying to the cultural, spiritual crisis that has hit us.

Èthnocultural factor in the origin of the suicide in the first place there is the example of Hungary, which for a long time, until 1994, was leading by the number of suicides in the world. Hungarian language belongs to the Finno-Ugric language group. In terms of socio-economic development in Hungary was not behind its neighbors in "Kommunismus camp" – Poland, Romania and Czechoslovakia, where the suicide rate was much lower. In the Russian Federation regions, where mostly people related to the Finno-Ugric language group (Komi, Udmurt Republic, the Republic of Mari-El), have always been a high rate of suicide. Other foreign countries with Finno-Ugric population also give similar high rates of suicides: Finland – 100 thousand population at 20.3 (2004), Estonia – 20.3 (2005 year).

Doctor of medicine, psychiatrist B. Polozhii in his article "Suicide in the context of ethnocultural Psychiatry" writes that the study of the frequency of suicide in the Komi Republic found that persons of Finno-Ugric nationalities at 94.9 per 100 000 population, 2.2 times higher than the rate among the Slavs (41.5) at 100 thousand of population and 1.7 times the average for the Republic [9]. The prevalence of suicide among Finno-Ugric tribes has increased in recent years, 1.6 times, and among the Slavs remained stable. These figures, according to Polozhy B., convincingly show a great predisposition to Finno-Ugrians suicide response. The frequency of suicide in Finno-Ugric subpopulation is higher among men (in 2.5 times) and women (in 2.7 times). Doctor B. Polozhii put out several ethnocultural factors that contribute to high suicidal activity of the Finno-Ugric peoples [4].

Chief among them is the factor of religious morality. In contrast to the Slavs, with more than a thousand years of Christian history, in which suicide is a grave sin, and therefore culturally deviant and denounced the act, the Finno-Ugric peoples, such restrictions are virtually absent. This is because, according to B. Polozhii put that Christianity came into their culture is only 350 years ago, and pretty much mandatory that hinder the implementation of the principles in the



consciousness of the people of Christian morality [4].

The second ethnocultural factors of suicide B. Polozhii we consider the existence of national (actually pagan) traditions of the Finno-Ugric peoples, which include belief in a future life in a new way and, accordingly, no fear of death. Therefore, independent of life care involves a quick and easy return to it on difficult situation [ibid.]

The third feature of ethnocultural suicides Finno-Ugric nationalities is, according to BS rely on, their antitsipatsion inconsistency. The fact that the Finno-Ugric culture imposes a taboo on forecasting life, dictating the necessity of anticipating a positive event. As a result, a mismatch of personal forecast of development with its real unfavorable course can take a stressful and suicide character [ibid.]

In our opinion, the level of religiosity in the Russian society low - in the country for too long cultivated atheism (from 1917 to 1993), so few Russians now know the Christian commandment reads scripture. An example of the above may be data of modern Russian political scientists V. Yakunin, V. Baghdasaryan: "The vast majority of believers are denominated in Russia have a very distand relation of religion... Only a very small quantity of Russian regularly visit temples (7%), read the Gospel (2%), and thus the true number of Orthodox faithful in Russia does not exceed 7% of the population "[7, P. 197].

We believe that the main ethnocultural factors in the origin of the high number of suicides among the peoples of the Russian North is a negative impact on the natives of the North of the social and psychological phenomena as Eurocentrism. Eurocentrism is a special variant of ethnocentrism.

The essence of ethnocentrism as a socio-psychological phenomenon boils down to having a total mass of irrational positive views about their own culture as a certain "nuclei" around which are grouped other ethnic groups [Ethnopsychological Dictionary, 1999]. It contributes to the development of poor people's awareness about the customs, beliefs, traditional occupations are members of small ethnic groups, which often leads to conflict.

Ph.D., a sociologist A. Dmitriev writes about ethnic conflicts, as follows: "With regard to the aspirations of various ethnic groups themselves (economic, political, cultural), then, of course, makes no sense to them somehow suppress, much less condemn. Each ethnic group is inherently desire not only to maintain but also to fully expand its territory, to preserve their language, culture and identity "[1, P. 174].

According to the Russian culture expert L. Kulikova Eurocentric cultural superiority manifests signs of all the peoples of Europe in relation to non-European peoples [2, P. 37]. Modern German specialist in communications theory G. Maletske, developing a theory of



intercultural communication in the context of cultural anthropology, said: "At least since the New Age , Europeans , and after them, Americans are convinced that they own the only true culture and civilization . Europeans see themselves as an example of all nations and cultures ... "[by: 2, P. 37].

Eurocentrism leads to the alienation of people of the North (especially young people) from their own culture, when a technological global civilization cultivates in the public mind the image of a " standard" of a successful person , usually belonging to the European race and culture . Alienation from traditional culture, the disparity of their social and physical status of the reference specimen of mass media leads to low self-esteem in a fragile psyche of teenagers and young men. A low self-esteem, in our opinion, is the primary psychological trigger factor of suicidal behavior and leads to alcoholism.

B. Polozhii confirms the above: "The next aspect is occurred in the XX century, the loss of the Finno -Ugric peoples of our country of its traditional religious and cultural roots, which was due to the introduction of violent alien to the Finno-Ugric peoples moral values, principles and behaviors that are not appropriate historical traditions of professional activities, in the suppression of the indigenous population a sense of national identity. All this reduces the psychological stability of people increases their vulnerability psychogenic, resulting in the development of suicidal behavior "[4].

Russian ethnographer and historian S. Tokarev said: "Respect for the culture of each nation, though considered to be backward, careful and cautious attitude to the people - the creators of such a culture. Rejection of the arrogant self-aggrandizement Europeans as carriers allegedly absolute values and infallible judges - all of this, of course, sound scientific idea that deserves serious attention "[3, P. 290].

Ethnocentrism as one of the major anthropological constants, invariably affects the behavior of people in their attitude towards other cultures [2, P. 37]. In this context of cultural studies is a negative phenomenon is considered the biggest challenge of cross-cultural communication, and in overcoming it, we see the main problem in the prevention of suicidal behavior in young people of the North. Therefore, the main task in the prevention of suicide among young people is to cultivate a positive attitude towards cultural differences - the ability to conduct the existence of other indigenous culture and adapt to it, not even to integrate into it. This version of the response to a different culture is much rarer.

Modernity, globalization should lead to the interpenetration of cultures, the exchange of material and spiritual values. At the same time you need to create the conditions for the harmonious development of the personality of each person - self-identity. The famous German



sociologist Norbert Elias stated: "There must come a time of We-are a group identity on the human level" [6, P. 323].

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OUR EXPERIENCE OF SURGICAL TREATMENT OF CAROTID STENOSES

Abstract

This paper outlines study of cerebral hemodynamics in 372 patients, who had undergone 429 carotid endarterectomy procedures. It is highlighted that surgical treatment outcome depends on the initial state of cerebral hemodynamics.

Keywords: carotid stenosis, circle of Willis, intracerebral dynamics, indications for surgical treatment.

Introduction

Blood vessel diseases of brain are one of the most critical problems of clinical angioneurology. Strokes and their effects rank 2nd -3rd in mortality causes [2]. About 30% of patients die within the next month from the start of disease, and 45-48% die by the end of the year. Of stroke survivors no more than 10 -12% return to work, and 25 - 30% remain disabled for life [7]. Ischemic brain damage makes up to 80% in the structure of stroke [1,3]. Currently, the main method of surgical prevention of stroke is carotid endarterectomy (CEA), which is possible only in case of generally accepted indications for CEA. The main indication for CEA in condition of stenosis of extracranial part of internal carotid artery (ICA) is existence of transient ischemic attacks (TIA) or small ischemic stroke [6,8].

The purpose of this study was to assess the state of cerebral hemodynamics in patients with chronic cerebrovascular disease and the results of surgical treatment of these patients. To achieve this goal, the following objectives were set:

1. To study the effect of the functional status of the circle of Willis (CW) and tolerance to cerebral ischemia on the degree of chronic cerebrovascular disease (CVD).
2. To assess immediate and long-term results of reconstructive surgery of carotid arteries, depending on the state of CW, brain tolerance to ischemia, and types of brain protection.

Materials and methods

The basis of this study is formed by observation of cerebral blood flow and outcomes of surgical treatment of 372 patients in the Department of Cardiovascular Surgery of Clinical Center of State budget institution of Republic of Sakha (Yakutia) "Republic hospital № 1 – National Medical Centre" during the period of 2003 through 2012. In our work we used the clinical classification of chronic CVD by academician of RAMS – A. Pokrovsky.

Patients were examined on a unified plan, which, besides physical examination methods (palpation, auscultation, etc.), included special examination methods: ultrasound examination of vessels, transcranial Doppler (TCD) sonography, duplex scanning, radiopaque angiography of extra- and intracranial parts of arterial system.

In case of indications, echocardiography and coronary angiography, Holter monitoring and bicycle ergometry, computer and magnetic resonance imaging of brain and other research methods were used.

Ultrasound examination of great vessels was performed on devices "Acuson – 128/XP-10" (USA) and "Toshiba SSA – 270A" (Japan) using a 5 MHz linear array transducer and a linear multiHertz transducer in 7 MHz pulsed wave mode. Angiography was carried out on "Angioscop-33 with DSA Digitron Card", 8 frames per second.

In order to study cerebral hemodynamics, patients underwent TCD (TC2 – 64 device) with measuring linear blood flow rate in the middle cerebral artery (MCA) and conducting functional tests to determine the viability of collateral flow. Functioning of CW was estimated on a six-point scale [5].

Cerebral ischemic tolerance of brain was determined by cross-clamping of common carotid artery and study of nature of blood flow in the MCA. On the basis of these studies patients were ranked according to four degrees of cerebral ischemic tolerance [4]: high, sufficient, low, and critical. Determination of cerebral ischemia tolerance by TCD before surgery allows the surgeon to pre-select the optimal method of intraoperative cerebral protection: hypertension, pharmacological methods, and temporary internal shunt (TIS) installation.

Intraoperative monitoring of blood flow in brain vessels was performed by "Pioneer" apparatus of "Electric Medical Systems" Austrian firm using 2 MHz ultrasonic sensor. Drop in blood flow rate in the middle cerebral artery below 20 cm per second indicates failure of collateral blood flow and requires installation of a shunt when cross-clamping the carotid artery during surgery. Also, on the monitor we can count the number of emboli, which may appear after removing

clamps from the internal carotid artery after removing of stenosis in carotid arteries and starting the blood flow.

On the severity and extent of diseases of arteries feeding the brain, all patients were divided into 6 groups:

Group I – focal stenosis of one ICA – 48 patients.

Group II – unilateral stenosis of ICA + stenosis of vertebral artery – 32 patients.

Group III – bilateral carotid stenosis of less than 50% – 72 patients.

Group IV – bilateral carotid stenosis of less than 50% + stenosis of vertebral artery – 44 patients.

Group V – bilateral carotid stenosis of more than 50% – 26 patients.

Group VI – bilateral carotid stenoses in combination with intracranial vascular involvement (MCA, siphon) – 26 patients.

The indications for surgery were: TIA, discirculatory encephalopathy, light residual effects of ischemic stroke, asymptomatic ICA stenosis > 60%, a plaque that may lead to embolism with any degree of stenosis and chronic CVD. 79.8% of patients were aged 40 to 60 years; 286 operations were performed. Of the total number of patients, 38 underwent operations on both sides, and in 10 of them, these operations were carried out simultaneously and were due to occlusion of the internal carotid artery and critical stenosis of the contralateral side. The remaining 28 patients had multi-stage operations performed with an interval of 2 weeks to 3 months.

There were 76 combined operations of cerebral ischemia and lower limbs, 40 single-stage operations, and 36 multi-stage operations on two arterial systems. The decisive argument in favor of having to perform a single-stage combined operation on the carotid and aorto-femoral-popliteal systems was diagnosed critical stenosis of the ICA, and critical ischemia of the lower limbs, in case if patient was in a satisfactory condition.

Analysis of long-term results of surgical treatment (208 patients) was conducted in the period from 6 to 64 months taking into account the initial cerebral vascular insufficiency and cerebral hemodynamic status, depending on the localization of the damage of vessels feeding the brain.

Results and discussion

We carried out an assessment of results of treatment by the following criteria: improvement, no change, retrogression, mortality. Under improvement we suggested complete subsidence or decrease of frequency of TIA, regression of neurologic impairment and reduction of symptoms of discirculatory encephalopathy. In addition, we considered it plausible to include patients operated

on in the asymptomatic stage (I degree of chronic CVD) into this group, since the operation had prevented developing severe ischemic damage in their brain. Retrogression meant progression of neurologic impairment or postoperative stroke. We considered mortality from the position of cerebral complications or other causes, not related to the operation.

Functional status of CW is essential to determine the patient's treatment strategy, forecast possible cerebrovascular diseases, and allows you to select necessary number of actions to protect brain at the time of cross-clamping of carotid arteries. Dependence of CW function on the localization of cerebral vessels disease is shown in Table 1. It must be emphasized that with spreading localization of vessels disease, CW function is severely impaired, i.e. the lowest score of CW is diagnosed in patients with multiple defects.

Of greatest interest is the study of cerebral ischemia tolerance (Table 2). It is noted that the patients with low and critical degree of cerebral ischemia tolerance (III and IV) are more common in the groups with multiple and intracranial cerebral vessels disease.

In the immediate postoperative period, the following outcomes were observed: improvement – 69.5%, no change – 25.8%, retrogression – 4.8%, and mortality – 0.8%.

It should be noted that the worst outcomes were observed in patients with intracranial vessels disease (15.4%), positive outcomes were achieved in patients with CW functional status 3 and cerebral ischemia tolerance 2.2 (Table 3). The table shows average values in a group of patients.

In the long-term period improvement was achieved in 65.4%, no change – 16.3%, retrogression – 15.4%, mortality of ischemic stroke – 0.9%, of other causes – 1.9%. It must be emphasized that with the increase of the degree of chronic CVD the long-term outcomes get worse. Improvement was observed in patients with chronic CVD of degree I – 100%, degree II – 79.6%, degree III – 48.0%, degree IV – 43.5%.

Conclusions

1. Positive dynamics of neurological status after CEA surgery was marked in patients with CW functional status over 3 points, as well as high and sufficient cerebral ischemia tolerance.
2. Patients with chronic CVD degree IV and low or critical cerebral ischemia tolerance may be operated only in case of strict indications because of high degree of operational risk.
3. Patients with chronic CVD degree III, IV and intracranial vessels disease should be operated on under the protection of a temporary internal shunt.

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Role of hepatotropic viruses in the development of liver pathology in newborns

ABSTRACT

Viral infections that cause liver damage have a greater prevalence in the population, the tendency to recurrent course during pregnancy, similar epidemiological path and the effect on the occurrence of diseases of the fetus and newborn. Early prenatal diagnosis of viral infections is extremely important, as the outcome of treatment depends on the timely treatment. The aim of this work is the study of clinical manifestations antenatal infection with different hepatotropic viruses of newborns.

Keywords: viral infections, newborns, liver.

INTRODUCTION

Viral infections are the most common and dangerous diseases that can lead to an unfavorable clinical course and outcome of pregnancy, fetal and neonatal pathology. Among the infections that cause intrauterine infection, embryo- and fetopathy, obstetric pathology, the most common are cytomegalovirus, herpes virus, hepatitis B and C. [4]

According to the works of authors [2] the DNA of CMV virus is detected in liver biopsy in 80% of patients with biliary atresia, in blood - 25 %, in the urine - 20 % of cases. It is assumed that the neonatal hepatitis, biliary atresia and common bile duct cyst are manifestations of the same inflammatory process that occurs at different stages of fetus development. The cause of cirrhosis of the liver with biliary atresia is an intrauterine lesion of bile ducts and the hepatic parenchyma due to affection of an infectious agent - cytomegalovirus and, in some cases, in association with other viruses.

Despite the widespread use of vaccination against hepatitis B and significant success in modern antiviral therapy against chronic HBV- and HCV- infection, the problems of chronic viral hepatitis among pregnant and perinatal infection among newborns remain one of the most vital in modern medicine.[3] Therefore, verification of fetal viral infection for infants is the barest necessity.

MATERIALS AND METHODS

A retrospective study of patient medical records was carried out at the Department of Perinatal and Pediatric centers of Republican hospital № 1 of the National Medical Center in Yakutsk : 16 infants and their case stories who were treated in the infectious diseases department for newborns, 12 case histories of infants treated in the nursing premature department, 4 case histories of patients in neonatal pathology department and 15 case histories of children who had treatment at the surgical ward . 5 patients were watched at the City Children's Clinical Hospital № 2 of Yakutsk. The amount of patients directed from regions of the republic and the institutions of Yakutsk was almost equal, the differences in the gender composition also was not noted. To identify the causative agent of the intrauterine disease for all children a study of biological fluids was conducted. The direct method of polymerase chain reaction (PCR) and indirect immuno-fermental analysis (IFA) method was used.

RESULTS

Cytomegalovirus infection was diagnosed among 21 newborns. CMV was detected by PCR in



blood at 5 infants (23.8 %) and urine in 8 (38%) in blood and urine at 3 (14,2 %), negative PCR result was observed at five children (23,8 %), but the IFA of these patients had specific anti-CMV-bodies of IgG and IgM type.

The analysis of the frequency risk factors for intrauterine infections shows that complicated obstetric and gynecological history, pathological course of pregnancy and delivery were observed in 100 % of cases. 19 women (91 %) were diagnosed with anemia, 7 women (33.3 %) had the threat interruption of pregnancy in the 1st half, severe toxemia against acute pyelonephritis had 6 women (28.5 %), which required early delivery.

The physical development of infants with CMV was marked by low birth weight 2939.1 ± 704 . Half of the newborn Apgar score at the end of the first minute was less than 7 points and has averaged 6.5 ± 1.5 , 5 minutes 7.7 ± 0.9 . The birth state was estimated as severe among 11 children (52.3 %). Reanimation measures were conducted for 8 infants (38 %).

The most of infants with CMV was noted with multiple organ failure. The most common diagnose was perinatal brain lesions in 80.9% of cases (17 children). Brain damage in the form of a brain malformation, intraventricular hemorrhage, hydrocephalus was detected among 7 infants (33.3%). The second highest frequency of occurrence of clinical manifestations of CMV infection was detected in the form of cardiovascular system (CVS) pathology: 11 patients (52.3 %) had a combination of heart defects such as STLV (supplementary trabecula of left ventricle, VSD (ventricular septum defect), FAD (functional artery duct), OOW (open oval window), AVS (aneurysm of ventricular septum), and one newborn (4.7%) had LCA (less cardiac anomaly). The pathology of the respiratory system made up 38 % (8 infants) dominating by acute pneumonia: at 2 infants (9.5 %) it was intrauterine, 3 newborns had community-acquired pneumonia (14.2%), also recorded 1 patient (4,7%) had DRS (disturbance respiration syndrome) and 3 children (14.2%) had bronchitis. The gastrointestinal tract defect in the form of necrotizing enterocolitis was observed at 3 patients (14.2%). Infant increase of liver with CMV infection was observed among 19 newborns (90.4 %). In this case visual jaundice was reported among 9 children (42.8 %), and 5 children from this amount (28.5 %) had clinic cholestasis: a significant increase of the liver, bile-tinged, earthy coloring of the skin, achole defecation, dark urine, increased total bilirubin through direct fraction, the level of bilirubin reached more than 189 $\mu\text{mol} / \text{l}$. Clinical signs of acute hepatitis observed at 12 children (57.1 %): the increase of bilirubin averaged $48,5 \pm 2,4 \text{ mmol} / \text{l}$, there was an increase of transaminases in 3-4 times, in 3 cases (14.2%) coagulation pathology was noted.

As a rule, the syndrome of jaundice and hyperenzymia appeared at 2 weeks age. The clinic had a gradual, long duration .

Clinical Example № 1: the third child, the third pregnancy which took with the threat of interruption in its 1st half. The third normal delivery was with the cephalic presentation. Jaundice appeared on the 5th day after birth. At the age of 1 month jaundice began to increase, bilirubin index reached 81.28 mmol / L by direct fraction (58.63 pmol / L), antibodies to CMV - IgG 1:1600. The method of polymerase chain reaction (PCR) defined active replication of CMV. The survey revealed a congenital biliary atresia of bile ducts (proximal parts). The mother also had antibodies to CMV in high numbers. The child was discharged home on the insistence of his mother. After 3 weeks the child returned in serious state with symptoms of ascites, after puncture of the abdominal cavity 2,340 ml of liquid was received. The biopsy of the liver was performed, which found a violation of the structure of the liver due to broad layers of connective tissue with lymphoid infiltration, clumps of pigment in proliferating bile ducts, dystrophy of hepatocytes with accumulation of bile pigment in false lobules. Clinical and ultrasound way of a patient revealed the signs of portal hypertension. Thus by the age of 8 months the child's disease took form of a liver cirrhosis of a cholestatic genesis.

The pregnant women carriage of HbsAg in the Republic of Sakha (Yakutia) is in 2-3 times higher than the national average, and the rate of perinatal infection of newborns from mothers with HCV-infection is 7,2-10,2 % [1.5]. However, during the observation period was diagnosed for sure



in 2 cases of intrauterine fetal virus hepatitis B. The virus hepatitis C was diagnosed at 4 children. Unlike CMV, intrauterine infection with hepatitis B and C does not cause malformations at newborns. All six women had complicated obstetric and gynecological history, in 2 cases - the threat of interruption of pregnancy, 4 - anemia, 2 - severe preeclampsia against exacerbation of chronic pyelonephritis. Taking this into account 4 newborns' condition was regarded as satisfactory, 2 - as average weight, Apgar score was on average 7.2 ± 0.6 .

All children indicated moderate hepatomegaly in the neonatal period. Three infants within 5-8 days had conjugation jaundice - increasing total bilirubin due to indirect fraction, but the signs of hemorrhagic syndrome and hiperenzymia were not revealed.

Diagnosis was established on the basis of finding at 2 children HbsAg (1 of them had HBV DNA), and 3 infants had RNA HCV at their first month of life, and in one case the newborn was at the age of 36 days.

The clinical picture of hepatitis developed from the second month of life. State of two patients was regarded as acute hepatitis of moderate degree (1 - AVHV and 1 - AVHC), 4 cases were regarded as mild.

Clinical Example number two: the infant P. was born from 6th pregnancy, the 4th birth at 38 weeks, delivery operation. The mother had CVHV + D. Pregnancy passed with the threat of interruption, at the period of 32 weeks the mother was diagnosed by the polymerase chain reaction (PCR) DNA HBV (+).

The baby's condition at birth was regarded as satisfactory. The patient was discharged from the hospital in 10 days. Birth weight was 3544.5 g., length 56 cm, physiological jaundice was not observed. It should be noted that in spite of mother's diagnosis, the immunoglobulin was not put to the newborn.

At the age of 1 month baby suffered ARI, acute bronchitis. The pediatrician noted the yellowness of a skin. In the biochemical analysis of blood serum total bilirubin was determined to 22.24 mmol / L by direct fraction 18.04 pmol / L, ALT hyperenzymemia by 9.5 standards and ACT to 10.2 standards. The maximum values of total bilirubin (68 mmol / L) and cellular enzymes (12 standards) reached at the 36th day of illness, and then the positive dynamics was marked. Diagnosis was confirmed by method of polymerase chain reaction (PCR) DNA HBV (+). Now baby is 4 months being under medical supervision.

It should be noted that five women who were examined at neonatal pathology unit were first discovered hepatitis C, which reveals inadequate check-up of pregnant women in the consultation.

Fifteen infants with biliary atresia were observed in the surgical ward. In the case history of almost all infants are after full-term pregnancy, half of which proceeded with the threat of interruption in the 1st half and preeclampsia of varying degrees in the 2nd half of pregnancy. The most of children of this group were evaluated at Apgar score at 8/ 9 - 7/8 points. Yellowness of the skin was marked by 3-4 days of life, carried a wavy character with a tendency to progression. The defecation in the early neonatal period of most children had myconial character, acholia progressing with age, up to 2-4 weeks of age, the majority of patients had unstable acholia of defecation, stools more " lemon " in color, after 4 weeks there was no doubt in the symptom of "acholia" stool. Most of mothers did not establish the fact of color change of urine, but all babies had rich dark urine during hospital entrance. At the hospital in the period of 1-1.5 months severe increase of liver was noted, and 2 months later increase of liver and spleen was clearly manifested with signs of portal hypertension, of hepatic etiology - with hemorrhagic syndrome, vein varicous at lower third of the esophagus.

Prenatal pathology is suspected in three cases: the lack of visualization of the gallbladder during the 3rd ultrasonography III (2 cases) and cystic atresia of the common bile duct (1 case). As to timing and direction of hospitalization in a surgical department it is as follows: the majority of cases were admitted at the age of 1 month - (53 %); at age of 2 months - (33 %); and one case each of 7% - at the age of 2 days (abdominal cystic formation of large size in infants with atresia of



common bile duct); and at the age of 3 months (because of late diagnosis).

The algorithm of diagnostic measures includes ultrasound examination of the liver and bile ducts, if necessary the CT scan of the liver, endoscopy of the esophagus, stomach, and the duodenum, laboratory diagnostics to eliminate neonatal hepatitis. All patients had laboratory signs of cholestasis and in most cases CMV hepatitis (75 %). In order to avoid Alagille syndrome the patients undergo a series of diagnostic tests in the last 2 years: spinal radiography, echocardiography, consult an ophthalmologist, neurologist, and geneticist.

In the laboratory diagnosis of biliary atresia, the earliest sign is the increase in biochemical markers of cholestasis: hyperbilirubinemia due to the predominance of direct fractions in serum (average of 160-420 pmol / L total bilirubin, 91 - 280 pmol / L through direct fraction, increased levels of gamma- glutamintransferase (up to 885), alkaline phosphatase (650), cholesterol (up to 6.0). The level of cytolytic enzymes (ALT, ACT) within 1 month of life of these patients increased moderately grows to 2 months of life in the progression of cytolysis of hepatocytes. The level of protein - synthetic function of the liver has not diagnostically relevant changes. It is possible to reveal the changes of coagulation during late diagnosis.

In order to identify the causes of neonatal cholestasis the markers of hepatitis B, C were taken among all patients and also a study of intrauterine infection was conducted - 75% of the blood test for DNA PCR CMV turned to be positive.

Clinical Example number 3: Boy T. He was transferred from the Infectious Diseases Hospital to the surgical department of the Pediatric Center at the age of 3 months with a diagnosis of biliary atresia against CMV infection. According to the history there is a congenital jaundice, lemon-colored stools. The deterioration of the state at the age of 1 month in the community in the form of appearance of neurological symptoms - convulsions, soporific state, fever. He was transported in critical condition to the pediatric intensive care unit of Yakutsk by sanitary aviation. After comprehensive survey of the child the CMV infection was identified, brain and liver lesion, diagnosed a massive heart attack at temple-parietal and occipital regions from the right, and subarachnoid hemorrhage in the occipital region at both sides. In addition, the child had clinical symptoms of liver and spleen increase, a periodical acholia defecation. According to the ultrasound and CT the infant gallbladder was not revealed. During the period of treatment in the intensive care unit suffered an ulcer bulb of duodenum with profuse bleeding. The compensation of patient's condition was a success with great effort. After stabilization the child was transferred to CMV hepatitis infectious disease clinic for etiopathogenetic treatment, where a neotsitotekt course was provided, and preventive treatment by ursofalk for 2 weeks. There was not clinical improvement in the treatment of jaundice; the patient was stabilized by neurological disorders. At the age of 3 months porto-enterostomy according to Kasai was performed. During the operation is a rudimentary bile duct of 1.5 x 0.5 cm, containing no bile in the lumen, the bulb duct as a thin thread fell into a duodenum. At the gate of the liver the ducts were replaced by fibrous tissue. Later at the age of 9 months baby related liver transplant was performed at the Research Institute of Transplantation of Moscow.

CONCLUSION

The selection of modern laboratory and instrumental methods, the definition of the algorithm patient testing has particular importance in the diagnosis and verification of viral infections, predicting complicated pregnancy and outcome.

Infants with CMV infection have a low birth weight, low Apgar score; they more often need intensive care at birth. Clinical manifestations of CMV infection in the neonatal period are of polyorgan character with a primary lesion of the liver and nervous system. The diagnostics of intrauterine lesions by virus hepatitis B and C is often inadequate today.

It is necessary to introduce the clear algorithms of women screening in planning pregnancy, and examination of them for presence of hepatotropic viruses.

