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EDITORIAL

A.N. Grigoryeva, T.E. Burtseva, D.A. Chychakhov, L.N. Afanasyeva, M.S. Savvina, S.A. Evseeva, A.A. Vasilyeva

THE INFANT MORTALITY RATE - AS ONE OF THE TARGET INDICATORS OF DEVELOPMENT OF THE HEALTH SYSTEM IN THE REPUBLIC SAKHA (YAKUTIA)

ABSTRACT

The article analyzes the infant mortality rate of the Sakha Republic (Yakutia) in the period of implementation of major projects in the health field from 2000 to 2015. It is noted that according to official health statistics, the infant mortality rate in the Republic Sakha (Yakutia) steadily decreases.

Keywords: infant mortality rate, Yakutia.

INTRODUCTION

Infant mortality is one of demographic factors that most clearly reflect the country's level of development and ongoing economic and social changes.

In the late nineteenth century researcher V. L. Seroshevsky pointed out that in the Yakut province "... children are dying in the first years awfully" [5]. In Yakutia in the early twentieth century infant mortality also had a significant size. In the published "Materials of the Commission for the study of the Yakut ASSR" from 1931, in the 1920-ies in the Viluy and Olekminsk districts infant mortality was 608,5‰ [7]. Infant mortality in 1940 in the Yakut ASSR was 237,4‰ [4]. In general, over the years 1940-2015 infant mortality in Sakha (Yakutia) decreased 31.2% and amounted in 2015 to 7.6‰.

MATERIALS AND METHODS

In the article the analysis of indicators of official health statistics for the 2000 to 2015 the Sakha Republic (Yakutia) and for regions, taking into account the socio-territorial zones of Yakutia [6] and staffing physicians neonatologists in areas of the country.

RESULTS

The infant mortality Rate in the Sakha (Yakutia) during the study period 2000-2015 exceeded the national average, however over the period since 2000 reduced 2.5 times in 2015 was 7.6‰ (see table. 1).

The calculation of the total infant mortality rate for the 2008-2015 in the Republic are subject to the staffing physician neonatologist revealed the following features. So, in areas equipped with a neonatologist, the infant mortality rate is clearly lower and amounted to: in 2008 is 8.9‰ at the level of this indicator in the Republic of 9.1‰; in 2009- 10,2 ‰, ((in general Republic of Sakha (Yakutia) – 8,9‰), in 2010 - 8.0‰ (in general Republic of Sakha (Yakutia)

-7.2‰), in 2011 - 6.7‰ (in general Republic of Sakha (Yakutia) - 6.3‰), in 2012 - 10.4‰ (in general Republic of Sakha (Yakutia) -9.6‰) in 2013 - 8.0‰ (in general Republic of Sakha (Yakutia) - 9.6‰) in 2014 - 6.5‰ (in general Republic of Sakha (Yakutia) - 8.0‰) in 2015 - 6.9‰ (in general Republic of Sakha (Yakutia) - 7.6‰). In areas understaffed the neonatologist has a high rate of infant mortality than in the whole of Sakha (Yakutia) with the exception of 2014 (see table. 2).

If you do the analysis of this indicator in the context of the Arctic socio-territorial zone with respect to complex transportation infrastructure consists of 11 districts, in which also there is no neonatologist in the state of central regional hospitals, the infant mortality rate is higher than in the Republic of Sakha Yakutia, and in 2010 reached the highest level and amounted to 15.6‰ (see table. 3).

In the dynamics since 2010 this indicator tends to decrease in 2015 showed 13.0 (in the Republic Sakha Yakutia to 7.6‰). All these areas have the population to 10 thousand people,

so the calculation of infant mortality rates triggered the law of small numbers and even 1 case of infant mortality gives a large number in general. In addition, one should note the positive fact that a number of areas of the arctic socio-territorial zones to prevent infant mortality during the year, 2 years or more, which requires more in-depth analysis of factors that affect such positive results in the protection of mother and child. Undoubtedly, the result of enormous hard work of pediatricians and obstetricians in areas of the Sakha Republic, as well as the perinatal center and pediatric center of Republican hospital №1-NCM, Yakutsk hospitals.

In the structure of infant mortality in 2000. I - rank position is perinatal causes, the II place – congenital malformations, III respiratory illnesses, IV – injuries and poisoning, V – infectious diseases. Then in 2015 notes: I ranked place also perinatal causes, the II place – congenital malformations and in the dynamics of this cause of infant mortality is a clear downward trend, III respiratory illnesses, IV – traumas and poisonings, on the V – syndrome of sudden death (see table. 4).

Table 1

Дynamics of infant mortality in the Russian Federation, Republic of Sakha (Yakutia) in 2000 and 2015 according to Goskomstat of Sakha (Yakutia) from the website: <http://sakha.gks.ru> according to Goskomstat of Russia from the site: <http://www.gks.ru>

	2000	2005	2010	2011	2012	2013	2014	2015
RS (Ya)	17,6	10,6	7,2	6,3	9,6	9,6	8,0	7,6
RF	15,3	11,0	7,5	7,4	8,6	8,2	7,4	6,5

Table 2

Comparative data of the average infant mortality rate in Republic Sakha (Yakutia) subject to staffing neonatologists areas for 2008-2015 [2]

	2008	2009	2010	2011	2012	2013	2014	2015
Districts staffed by a neonatologist	8,9	10,2	8,0	6,7	10,4	8,0	6,5	6,9
The areas are not staffed by neonatologists	14,2	13,2	11,8	11,1	11,4	10,3	6,8	12,7

Table 3

Dynamics of infant mortality in the arctic socio-territorial zone (11 districts) [2]

Areas	2008	2009	2010	2011	2012	2013	2014	2015
Abyysky	-	-	14,9	13,2	-	14,3	-	15,2
Allaihovskiy	-	-	-	18,5	-	20,0	15,4	18,9
Anabar	54,7	-	18,2	14,7	15,6	12,7	12,7	13,3
Bulun	-	16,4	16,0	20,0	14,0	7,0	-	-
Zhiganskyy	10,1	24,7	20,8	-	11,4	-	-	-
Momskiy	24,4	24,1	12,0	-	29,4	11,5	9,4	51,5
Nizhnekolymskiy	26,0	36,2	41,5	12,8	13,3	12,2	-	12,7
Olenek	-	13,0	20,2	-	9,9	20,2	-	11,4
Srednekolymskiy	13,7	15,9	7,2	13,8	6,9	-	-	20,7
Ust-Yanskiy	-	28,9	20,8	19,2	31,5	16,1	6,8	-
E-Bytantayskiy	18,9	-	-	35,7	-	31,2	17,9	-
the average value	13,4	14,4	15,6	13,4	12,0	13,2	5,6	13,0

Table 4

The structure of infant mortality reasons in the Republic of Sakha (Yakutia), 2000-2015 (%) [1-3]

Causes of infant mortality	2000	2005	2010	2011	2012	2013	2014	2015
Perinatal causes	47,8	34,6	37,0	37,4	47,0	55,0	53,1	45,8
Congenital malformations	25,4	21,6	20,2	31,8	31,5	15,0	21,8	19,1
Injury and poisoning	8,8	16,3	11,8	9,3	6,0	7,1	6,8	6,9
Diseases of the respiratory	11,4	7,9	11,8	7,5	5,4	6,5	8,2	9,9
sudden infant death syndrome	...	5,9	7,6	7,5	6,5	8,3	5,4	6,1
Infectious diseases	3,1	3,3	7,6	1,9	0,6	1,8	-	4,6

Table 5

The structure of infant mortality by age periods in the Republic of Sakha (Yakutia), 2000-2015 (%) [1-3]

Ages	2000	2005	2010	2011	2012	2013	2014	2015
Early neonatal mortality (0-7 days)	9,0	4,4	2,9	3,0	4,6	4,5	3,2	3,4
Neonatal mortality (0-28 days)	11,9	5,35	3,7	3,8	6,1	6,0	5,3	4,5
Post-neonatal mortality (29 days to years)	5,7	5,25	3,5	2,5	3,5	3,6	2,7	3,1

Crucial in the mortality of children under 1 year is the age factor. A significant contribution to infant mortality still contributes to neonatal mortality (more than 55 % of the total number of cases). It should be noted that during the study period, there is a persistent decline in early neonatal mortality from 9.0‰ (2000) to 3.2‰ (2015); neonatal mortality from 11.9‰ (2000) to 4.5‰ (2015); post-neonatal mortality from 5.7‰ (2000) to 3.1‰ (2015) (tab. 5).

Conclusions:

The analysis of infant mortality in the Republic of Sakha (Yakutia) during the study period from 2000 to 2015 identified the following positive trends:

1. There is a persistent decline in infant mortality rates 2.5 times
2. In the structure of causes of infant mortality perinatal causes, congenital malformations, diseases of the respiratory system are on the first place
3. There is a persistent decline in early

neonatal mortality, neonatal mortality, post-neonatal mortality.

Infant mortality is a key indicator of the development of the health system. In recent years, the Ministry of health of the Republic of Sakha (Yakutia) carried out huge work on improvement of perinatal and pediatric services in the region, an increase in medical genetic studies of the fetus and newborn, ensuring the availability and quality of high-tech medical aid to children up to 1 year at all stages of its rendering in the Sakha (Yakutia). One of the key points was the establishment of the intensive care advisory services on the basis of the Perinatal and Pediatric centers of the Republican hospital №1-NCM, as well as an effective routing scheme pregnant women and mothers. However, requires constant monitoring of the infant mortality rate that will allow for early identification of preventable causes, and determine development priorities for the maternity

service and child health in the region.

References:

1. Gosudarstvennyy doklad. Osnovnye pokazateli deyatelnosti pediatricheskoj sluzhby RS (YA) za 2001-2005gg. [The government report. Key indicators of the pediatric service of the Sakha Republic (Yakutia)] M-vo zdravookhraneniya Resp. Sakha (Yakutiya), Gos. uchrezhdenie «Yakut. resp. med. inform.-analit. tsentr» [Ministry of health of the Republic of Sakha (Yakutia), State institution «Yakut Republican medical information and analytical centre»]. Yakutsk, 2005, 61p.
2. Gosudarstvennyy doklad. Osnovnye pokazateli zdorov'ya materi i rebenka RS (YA) za 2006-2010gg. [The government report. Key indicators of the health of the mother and child of the Republic of Sakha (Yakutia) 2006-2010], M-vo zdravookhraneniya Resp. Sakha (Yakutiya), Gos. uchrezhdenie «Yakut. resp. med. inform.-analit. tsentr» [The Ministry of health of the Republic of Sakha (Yakutia), State institution «Yakut Republican medical information-analytical centre», Yakutsk, 2010, 176 p.
3. Gosudarstvennyy doklad. Osnovnye pokazateli zdorov'ya materi i rebenka RS (YA) za 2011-2015gg. [The government report. Key indicators of the health of the mother and child of the Republic of Sakha (Yakutia) for 2011 to 2015] M-vo zdravookhraneniya Resp. Sakha (Yakutiya), Gos. uchrezhdenie «Yakut. resp. med. inform.-analit. tsentr» [The Ministry of health of the Republic of Sakha (Yakutia), State institution «Yakut Republican medical information-analytical centre»]. Yakutsk, 2015, 186s.
4. Naselenie Rossii za 100 let (1897-1997): Stat. sb. /Goskomstat Rossii [The population of Russia for 100 years (1897-1997): Stat. collection /Goskomstat of Russia]. Moscow, 1998, p.136.
5. Seroshevskiy V.L. Yakuty. Opyt etnograficheskogo issledovaniya. 2-e izd [The Yakuts. The experience of an ethnographic study. 2nd ed.]. Moscow, 1993, 509 p.
6. Tyrylgina M. A. Problemy okhrany zdorov'ya naseleniya Krajnego Severa (na primere regiona Yakutiya) [Problems of protection of health of the population of the far North (on the example of Yakutia)]. Novosibirsk: Nauka, 2008, p.24-25.
7. Shrejber S.E. Mediko-sanitarnoe obsledovanie naseleniya Vilyujskogo i Olekminskogo okrugov [Health survey of the population of the Vilyui and Olyokminsk districts]. L., 1931, P. 365.
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MATERIALS OF THE CONFERENCE «ACTUAL PROBLEMS OF PEDIATRICS», DEDICATED TO THE 25TH ANNIVERSARY OF RHN^o1 - THE NATIONAL CENTER OF MEDICINE OF THE HEALTH MINISTRY OF THE RS (YA)

L.A. Nikolaeva, K.Ya. Matveeva, T.E. Burtseva, S.A. Evseeva

THE INCIDENCE OF HOSPITALIZED CHILDREN AND ADOLESCENTS OF THE REPUBLIC OF SAKHA (YAKUTIA)

ABSTRACT

Improving the availability and quality of specialized and high-tech medical care to children and adolescent is one of the priority tasks of state policy in the sphere of health care [1-3]. Pediatric center "Republican hospital №1-National center of medicine" (Director, PhD Lyudmila Alekseevna Nikolaeva) is the country's only medical institution providing specialized, highly skilled and high-tech medical care for child and adolescent population. The article presents data of hospitalized morbidity of children and adolescents of the Republic of Sakha (Yakutia) on applications to a Pediatric Centre for a 15 year period.

Keywords: children, adolescent, incidence of morbidity, Yakutia.

INTRODUCTION

Historically, despite the vast territory, the network of medical institutions providing specialised and high-tech medical care for children's population is extremely centralized in the city of Yakutsk. GBU Pediatric center "Republican hospital №1-National center of medicine" this is the only medical institution in the Republic, providing specialized, highly skilled and high-tech medical assistance to children and adolescents.

According to official statistics, reflecting the state of health of patients, primary and general morbidity of children and adolescents is extremely heterogeneous and varies in the Republic of Sakha (Yakutia) over a wide range. During the study period a marked increase in the rates of primary and total morbidity of children and adolescents in Sakha (Yakutia), associated of course with the increased availability of medical care provision to this population, as well as high detection of disease using modern methods of diagnosis [4,5]. And yet, in our opinion the most adequate picture of the health status of children and adolescents can give the analysis of the hospitalized morbidity of children and adolescents in the only specialized medical-prophylactic institution of the Republic.

MATERIALS AND METHODS

In the framework of the present study the aim was to investigate the dynamics

of the hospitalized morbidity of children and adolescents of the Republic of Sakha (Yakutia), GBU Pediatric center of the Ministry of health of the Republic of Sakha (Yakutia) "Republican hospital №1-National center of medicine" for the period from 2001 to 2015. All the results are processed by known methods of statistical analysis.

RESULTS

Pediatric center, GBU RS (Ya) "Republican hospital №1-National center of medicine" started its work in 2000. As shown in table 1 since 2000, the hospital is equipped with 172 beds and bed fund gradually expanded to meet the needs and uptake of child and adolescent population. Thus, in 2001 the hospital is equipped with 302 beds since 2002, 312 beds pediatric.

Annually in the department of the pediatric center come from 7383 kids (2001) 10228 children in 2015. The proportion of patients from the village from 27.1% in 2001 to 33.5% in 2015,

due to the fact that rural areas are home to 45% of the total child population. About 60% of the basis of the specialized branch of medical. Emergency patients account for 40 % of all hospitalized.

The structure of hospitalized patients in perinatal center "Republican hospital №1-National center of medicine" presented in table 2. In our opinion the most adequate picture of the health status of children and adolescents of the Republic of Sakha (Yakutia) reflects the hospitalized morbidity. In dynamics since 2001 in almost all classes of diseases observed increase in the incidence of hospitalized children and adolescents of the Republic of Sakha (Yakutia). In the structure of hospital morbidity of the child population in 2015 1 - diseases of the nervous system (669.6 per 100.000 child population), 2 - diseases of the respiratory system (511.9), 3 - injuries and poisoning (503.8), 4 – diseases of the genitourinary system (403.5), 5 - diseases of the digestive system (371.8).

Table 1

Key performance indicators, hospital GBU Pediatric center of the Ministry of health of the Republic of Sakha (Yakutia) «Republican hospital №1-National center of medicine» for 2000-2015

	2000	2005	2010	2011	2012	2013	2014	2015	2016
The number of beds	277	312	312	312	312	312	312	312	312
admitted to the hospital	7234	8650	9768	9726	10324	9808	10245	10228	10285
discharged from hospital	7203	8661	9784	9596	10361	9757	10212	10194	10271
The proportion of patients from the village, in %	37,4	28,9	31,6	30,4	32,0	31,7	39,8	33,5	29,8
The proportion of emergency patients, in %	32,5	46,0	47,3	44,8	49,0	43,3	41,7	40,9	40,3

The increase of the total hospital morbidity 2010 by 2015 was 337.8 per 100.000 children and adolescents (2010- 3610.0; 2015.-3947.8). The total incidence of hospitalized morbidity of children and adolescents have increased since 2010 in the following classes of diseases: diseases of the nervous system (of 185.6); diseases of the digestive system (22.2); diseases of the genitourinary system (79.9); endocrine, nutritional and metabolic disorders (14.7); neoplasms (57.8), including malignant (14.9). The sharp negative trend in the incidence of hospitalized children and adolescents with diseases of the ear, nose and throat associated with the reorganization and the transfer of responsibility for treatment of these patients in city children's infectious hospital.

CONCLUSIONS

Thus, the analysis of the structure of hospitalized children and adolescents in children's treatment-and-prophylactic institution of the Republic of Sakha (Yakutia) showed that for the period from 2001 to 2015 there is a clear increase in the level of hospital morbidity of children and adolescents. In the structure of morbidity in the first place are diseases of the nervous system, on the second - illnesses of respiratory organs, on the third - traumas and poisonings. The hospitalized morbidity is a continuous process of optimization of the number of beds of the pediatric center.

References:

1. Baranov A.A., Al'bitskiy V.Y. [i dr.] Tendentsii zaboлеваemosti i sostoyanie zdorov'ya detskogo naseleniya Rossijskoj Federatsii [Trends in morbidity and health status of children population of the Russian Federation] Rossijskij pediatricheskij zhurnal [Russian pediatric journal], Moscow, 2012, №6, P. 4-9.
2. Medik V.A., YUr'ev V.K. Kurs lektsij po obshhestvennomu zdorov'yu i zdavookhraneniyu [Lectures on public health and health care]. Moscow, 2003. 456 p.
3. Savvina N.V. Zdorov'e detej i podrostkov Respubliki Sakha (Yakutiya): sostoyanie, tendentsii, perspektivy [The health of children and adolescents of the Republic of Sakha (Yakutia): status, trends, prospects]. Moscow: Littera,

Hospitalized morbidity of children population
The Republic of Sakha (Yakutiya) according the Pediatric center «Republican hospital №1-National center of medicine» (per 100 000 of children population)

Name classes of diseases according to ICD X	2001	2010	2015	growth from 2010 to 2015
All, including	2387,6	3610,0	3947,8	337,8
J00-J99 Diseases of the respiratory system	383,4	528,8	511,9	-16,9
S00-T98 Injuries, poisoning and some other consequences of external causes	327,0	514,8	503,8	-11,0
G00-G99 Diseases of the nervous system	228,9	484,0	669,6	185,6
Q00-Q99 Congenital anomalies, malformations, deformations and chromosomal abnormalities	150,4	372,8	356,3	-16,5
K00-K93 Diseases of the digestive system	286,6	349,6	371,8	22,2
N00-N99 Diseases of the genitourinary system	226,6	323,6	403,5	79,9
EE00-E90 Endocrine, nutritional and metabolic disorders	112,9	232,4	247,1	14,7
C00-D48 Tumors	75,2	216,0	273,8	57,8
Including malignant	-	81,2	96,1	14,9
L00-L99 Diseases of the skin and subcutaneous tissue	161,6	193,2	168,1	-25,1
H60-H95 Diseases of the ear and mastoid process	118,9	171,2	52,7	-118,5
I 00-I99 Diseases of the circulatory system	67,2	149,2	127,0	-22,2

2015, 512p.

4. Chichakhov D.A. Nauchnoe obosnovanie anesteziologo-reanimatsionnogo obespecheniya detskogo naseleniya regiona (na primere Respubliki Sakha (Yakutiya): avtoref.diss...d-ra med.nauk [Scientific substantiation of anesthesiology-resuscitation and welfare of the pediatric population of the region (on the Republic Sakha example (Yakutia): author.diss...d-ra med.sciences]. Saint-Petersburg, 2011, 36p.

5. Chichakhov D.A. Aprsimov L.A. Detskoe naselenie Respubliki Sakha (Yakutiya): problemy sokrashheniya predotvratimyykh poter' [Child population of the Sakha Republic (Yakutia): problems of reducing avoidable losses]. Yakutsk: SVFU, 2011, 150p.

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PRADER-WILLI SYNDROME IN THE PRACTICE OF NEONATOLOGISTS

ABSTRACT

Since the late 80-ies of XX century, due to the expansion of laboratory capacity genetics, amount of new genetic disease has increased significantly. Clarification of the etiopathogenesis of the disease is of great importance to address the issue of disease prognosis, therapy and prognosis of the most important thing for parents about the possibility of the birth of their healthy baby. Therefore, caution is so important neonatologist, a thorough history and careful examination of the patient. The article is devoted and little-known wide range of medical problems - diagnosis and treatment of a rare genetic condition Prader-Willi syndrome in newborns admitted to the neonatal pathology and premature babies Perinatal Center №1 "RH №1-NCM" in the period from 2013 to 2016. We present our 4 cases of laboratory-confirmed Prader-Willi syndrome. On the first stage of nursing infants were suspected neurological conditions with muscular hypotonia, inhibition of unconditioned reflexes, ie, Neonatologist missed. The syndrome has characteristic symptoms, on the basis of which a neonatologist, pediatrician, neurologist, geneticist may be suspected in the newborn disease Prader-Willi. Flaccid syndrome child who manifested suppression of consciousness, faint, brief cry, difficulty in feeding, the oppression of the majority of congenital reflexes, diffuse muscle hypotonia, decreased spontaneous motor activity. The characteristic phenotype: light skin and hair, dolihotsefalicheskaya head shape, narrow high forehead, microgeny, gothic sky, bird-like face, palpebral boys, girls, almond-shaped eyes cryptorchidism boys, girls hypoplasia of the clitoris and the labia minora. The diagnosis was confirmed in all newborns tsitogenetichkim molecular analysis (nuc ish del (15) (q11.2q11.2) (SNRPN) [200]) and found a deletion in a gene SNRPN 100% of the interphase nuclei.

Keywords: newborn, Prader-Willi syndrome, a sluggish child, difficulty in feeding, a mutation.

INTRODUCTION

The basis of hereditary diseases are abnormalities (mutations) of hereditary information - chromosome, gene, and the mitochondrial. Hereditary diseases are numerous (there are more than 6000) and varied in manifestations. Differ hereditary and congenital. Genetic diseases are not always innate, they can occur at different ages: at birth, during childhood, even on the fifth, sixth, seventh decade of life. Some congenital diseases are not hereditary. In particular, some malformations may be associated with the action of harmful factors on the fetus during pregnancy, and the reason for their action is just that, and not damage the hereditary apparatus [1, 3].

One of the rare hereditary diseases is Prader-Willi syndrome, which is caused by the absence of the paternal copy of chromosome 15 site q11-13. In this section of chromosome 15 are the genes involved in the regulation of which genomic imprinting. The frequency - 1: 25000-10000 live births. The syndrome was first described in 1956 by scientists from Switzerland A. Prader, H.Villi and A. Labhart [2, 4]. It should be noted that with a conventional composition chromosomal karyotype studies reveal the pathology impossible. For this purpose special cytogenetic and molecular genetic methods. It turned out that the development of these diseases is associated with the new phenomena of genetic - genomic imprinting and uniparentalnoy Dis. Genomic imprinting - a different expression of the genetic material (homologous alleles) in the chromosomes depending on the paternal or maternal origin, ie, evidence

of the influence of parents on the child's phenotype. Until now it was believed that the contribution to proyavlyaemost (expression) of genes of his father and mother are equal. The identified genomic imprinting has demonstrated the presence of selective expression of certain chromosomal loci according to their paternal or maternal origin. The exact cause uniparentalnoy (uniparental) Dis is not currently installed, but found that the inheritance of the two chromosomes is only one parent is a result of a series of genetic and biochemical disorders [1, 3, 4].

Clinically, this syndrome has certain phenotype, hypogonadism, the disease has two phases course: neonatal and up to 3 months of life sluggish baby syndrome with symptoms of a sluggish sucking reflex in an older age bulimia, which leads to obesity. With increasing child has delayed language skills, unnatural flexibility, intelligence decrease, inability to learning [3, 5].

After studying the forums Prader-Willi found that the biggest challenge is the diagnosis. According to the description of parents diagnosed with the data exposed children from 6 months to 7 years. Awareness of doctors neonatologists should be high, in time to submit to the genetics and molecular genetic analysis.

MATERIALS AND METHODS

Clinical observation of the 4 patients with Prader-Willi syndrome were in the department of pathology of newborn and premature babies №1 (OPNND №1) from 2013 to 2016 in the perinatal center of "RH №1-NCM".

RESULTS AND DISCUSSION

Clinical observations of patients in the neonatal period with Prader-Willi syndrome. All infants enrolled in the Department of newborns pathology №1 from central district hospitals, in prenatal diagnosis no features have been identified, and a woman gave birth in maternity hospitals 1 and 2 levels. The age of mothers was older than 30 years, the average age was 34 ± 3 , 2, two Russian women, two of the Yakut nationality. Children from repeated pregnancies and childbirth. Three women were married and had one older healthy children. One was remarriage; older two children were from another marriage. In the analysis of obstetric and gynecological history revealed that all women have complications form abortion, miscarriages. The first stirring of the fetus 2 women felt at 22-23 weeks' gestation and data, women complained about the low mobility of the fetus. In 1 case, the pregnancy was in the breech position. 3 pregnant women gave birth by surgery, indications for surgery were the: pre-eclampsia, threatening asphyxia, breech presentation. Only one woman's pregnancy ended in premature birth. In terms of physical parameters one newborn had hypotrophy 2 extent. The average weight was 3250 ± 139 g, the average growth of 51 ± 2.5 cm, the average head circumference of $35 \text{ cm} \pm 1.9$, average chest circumference 33 ± 1.7 cm. Two infants were born with a low Apgar score, the average was 6 ± 1.02 at the end of the first minute, 8 ± 1.03 at the end of the fifth minute. Analysis by gender revealed that boys were more (3), one girl. At 3 neonatal condition at birth is estimated as severe, leading syn-

drome doctors noticed muscle hypotonia and stigma dizembriogeneza. Most of the children were in need of intensive care: two of them in the early neonatal period was carried out artificial lung ventilation, all newborns carried out infusion therapy. During the 36 ± 3.6 days newborn needed nutrition through a tube. The lag in physical development was not due to nutrition through a tube.

All children sluggish baby syndrome manifested suppression of consciousness, sucking and swallowing reflexes are reduced, making it difficult for the feeding process, the oppression of the majority of congenital reflexes, weak, short-lived scream, diffuse muscle hypotonia, decreased spontaneous motor activity, decreased tissue turgor. The characteristic phenotype of both sexes: light skin and hair, dolichocephal head shape, narrow high forehead, microgeny, gothic sky, thin upper lip, low-set ears, cryptorchidism in boys, girls hypoplasia of the clitoris and the labia minora. Small differences by gender: boys was palpebral have almond-shaped girls. Those. as well as in Down syndrome children with Prader-Willi syndrome have a characteristic phenotype, physician neonatologist once is enough to see the look, to suspect the syndrome in the future.

Of the guide diagnosis mainly from sluggish lined baby syndrome. An example of the guide diagnoses: 1. Perinatal defeat of CNS, hypoxic genesis. Flaccid baby syndrome. Exclude spinal amyotrophy Verdniga-Hoffmann. Stigma of disembranchogenesis.

2. Perinatal defeat of CNS, traumatic genesis. The syndrome of motor disorders. Stigma disembranchogenesis. hip dysplasia - a child born in the breech position, subdural hematoma in posterior lamellar fossa, clinically and hip ultrasound was detected by brain MRT. The rest of the newborn on the results of laboratory and instrumental methods of concomitant somatic pathology detected.

One child exposed to this diagnosis when re-entering the 3 months of age in the psycho-neurological department for rehabilitation therapy, this patient was the first experience of doctors. Diagnosis subsequently had difficulty, Prader-Willi syndrome in newborns 3 was already clinically suspected and arrives at 20 days of life on the results of molecular cytogenetic analysis (nuc ish del (15) (q11.2q11.2) (SNRPN) [200]) is confirmed in medical genetic laboratory. SNRPN revealed a deletion of the gene in 100% of the interphase nuclei.

All newborns in mind dominance of muscular hypotonia and depression sucking reflex receiving massage, massage sucking muscles, physiotherapy. To activate the child used nootropic agents (piracetam). In the above background therapy 3 children discharged with a distinct sucking reflex, moved horn feeding expressed milk. There was positive changes in physical development

CONCLUSION

Clinical data and examples, we would like to expand the boundaries of knowledge physicians neonatologists, pediatricians, specialists neurologists and endocrinologists, as syndrome are diagnostic difficulties Prader-Willi. Promptly put the correct diagnosis and early treatment leads to a more optimistic forecast of the disease and important is the adoption of the child's parent diagnosis. Parent heard that this disease is genetic breakdown is not looking for somebody to blame for the child's illness. In all the above cases, the early neonatal period were diagnosed: spinal amyotrophy Verdniga-Hoffmann, natal trauma of the central nervous system, the prognosis of this group of diseases exclude the hope of a favorable outcome. When properly diagnosed with the child parents are advised to undergo genetic testing before planning further pregnancies, since there is a risk that the next child in the same parents born with Prader-Willi syndrome.

References

1. Vorsanova S.G., Yurov Y.B., Sil'vanovich A.P. Modern understanding of the molecular genetics and genomics of autism / S.G. Vorsanova, Y.B. Yurov, A.P. Sil'vanovich // Basic Research, 2013. №4. - S. 356-367.
2. Tolziyan E.V. Prader-Willi Syndrome in pediatric practice / E.V. Tolziyan // Pediatric practice. 2014. - №2. - S. 32-39.
3. Yanygina S.V., Sergeev J.S., Shabalov N.P. The urgency and the possibility of early diagnosis of Prader-Willi syndrome / S.V. Yarygin, Y.S. Sergeev, N.P. Shabalov // Pediatrics. 2006. №6. - S. 117-120.
4. Cassidy S.B., Schwartz S., Miller J.L. Prader-Willy syndrome / S.B. Cassidy, S. Schwartz, J.L. Miller et al. / Genet Med. 2012 14: 1: P. 35-46.
5. Heinemann J. Wound healing with Prader-Willi syndrome - How many calories? The Gathered View (published bi-monthly by PWSA). 2010.

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IMPACT OF HEALTH AND SOCIAL FACTORS AND PERINATAL PATHOLOGY ON THE HEALTH AND QUALITY OF LIFE IN INFANTS

ABSTRACT

Currently, one of the features of the diseases of childhood is the growing prevalence of chronic physical and neuropsychiatric diseases that reduce quality of life. With the increasing incidence of neonatal morbidity the study of quality of life in children is very important. The article describes the medical, demographic and social aspects of neonatal morbidity, impact of perinatal factors on health and quality of life of children.

Keywords: newborns, premature babies, fertility, morbidity, perinatal pathology, quality of life.

INTRODUCTION

Among the leading causes of abnormalities in infants are pathological conditions that have developed in the perinatal period, which further leads to a decrease in the quality of life of the child. In general, the frequency of perinatal pathology in the general population exceeds 15-20% and there is a tendency to its growth. For example, according to the WHO, neuropsychiatric disorders are observed at 20% of children, which in 65-80% of cases are due to hypoxic-ischemic lesions of the central nervous system (9).

The World Health Organization pays great attention to the development of the science of quality of life as an important tool in deciding on methods of treatment, prevention, research, training of medical personnel (1, 2, 3).

In our work we used the Russian version of the questionnaire QUALIN to assess the quality of life of children aged 3 months - 3 years, which can be used in both healthy and sick children, as well as its own procedure for recoding responses. The questionnaire was validated in the European multicenter study, and has long been used in domestic pediatrics.

The aim of our study was to investigate the influence of social health and perinatal factors on the health and quality of life of infants born preterm.

MATERIALS AND METHODS:

We analyzed 69 stories disease of the newborn, who were treated at the department of pathology of newborn "Republican Hospital №1 – National Centre of Medicine", interviewing the mothers of preterm infants (n = 17) by means of a QUALIN-questionnaire in catamnesis. Also were used the materials official statistics - Yakut republican medical information-analytical center" of Ministry of Health of Republic Sakha (Yakutia).

The questionnaire consists of two blocks of age – for children from 3 months to 1 year and children 1-3 years. Each block, in turn, includes a form and shape for the parents to pediatricians.

Unit for children up to 1 year consists of 33 questions, the unit for children 1-3 years - from 34 issues. Each unit includes six possible answers: Definitely a "no"; More likely "no" than "yes"; "Yes" and "no"; Rather "yes" than "no"; Definitely "yes"; "I don't know". There are some differences in the blocks of issues related to the child's age characteristics. So the question №9 in the block to 1 year 1-3 years in the block "child friendly" is replaced by the question "child behaves peacefully with others". Also inside each block there is a difference between a single question of parental and medical

forms while preserving a unified semantic load - issue number 31, in the medical form of "psychological development of the child corresponds to the age" corresponds to the question in the form of a parent "of the child's mental development is satisfactory".

The tool describes the four main aspects of the functioning of the child:

- "Behavior and Communication" (PandC) - 13 questions;
- "The ability to be alone" (ABA) - 5 questions;
- "Family environment" (FE) - 4 questions;
- "Psychological development and physical health" (PDandPH) - 11 questions (block up to 1 year) and 12 questions (block 1-3 years).

RESULTS

The birth rate in the Republic of Sakha (Yakutia) in the past decade, has a tendency to grow, ranked 6th in the Russian Federation and the 1st place among the subjects of the Far Eastern Federal District. In 1990, the fertility rate for the RS (Y) was 19,4% o. Since the mid-90s has been a significant decrease in this indicator, which in 2001 reached its minimum - 13,6% o. Today, thanks to the demographic policy of the state and the republic, the birth rate has stabilized and has a tendency to increase. In 2010, it amounted to 16,8% o, 2015 – 17,15% o (Figure 1.).

When analyzing the influence of perinatal period on the further development of the child, it was necessary to take into account the rate of perinatal mortality, the level and the structure of which is a major health and demographic indicators and at the same time reflects the quality of obstetric and neonatal care (2, 4). At the same time the importance of perinatal mortality analysis is that the factors that contributed to the onset of death in the fetus and the child, including medical care defects in concentrated form reflects the negative factors and deficiencies that occur and the surviving children.

The analysis of statistical data in the Republic of Sakha (Yakutia) for 2000-2010, showed a decrease of this index by 2 times, from 16.7 ‰ to 8,21 ‰. After the introduction in 2012 of new criteria of live birth rate of perinatal mortality has increased in the country and has made in 2012 13,0 ‰, in 2013 10,8 ‰.

To assess the impact of health, social and biological factors of perinatal pathology parameters of the quality of life of young children, we have analyzed the stories disease of the newborn, to conduct the survey of mothers in catamnesis under outpatient observation for

2012-2014 years. The sample consisted of 69 stories with perinatal pathology of disease of the newborn (17 of them - premature infants)

Most children with perinatal pathology were born to women early (before 20 years) and late reproductive age (over 30 years), respectively, 35.6% and 43.2% of cases. Age younger than 20 and older than 30 years are social and biological risk factors for perinatal pathology in newborns (9).

The majority of mothers has burdened obstetrical history, in 32.3% of women had spontaneous abortions, in 45.7% - medical abortions. The children were born from the first pregnancy in 35.1% of cases, from the second - 22.3%, and the rest of the third and subsequent pregnancies - 42.6% of cases. All women pregnancy was complicated. Toxicosis in the first half of pregnancy in 21.7% cases, preeclampsia during the second half of pregnancy in 24.6% cases, different diseases of mothers in 100%, among which are common diseases such as: I - anemia in 53.6%, II - chronic pyelonephritis at 37.6%, III - upper respiratory tract disease in 21.7%.

One of the factors of risk of birth of children with perinatal pathology and premature babies are the presence of bad habits in women. Analyzing the factors of smoking, it was found that 69 mothers of 15.9% smoked during pregnancy, 14.5% stopped smoking, but after learning about the pregnancy.

Early delivery was carried out 32.6% of women. The causes of preeclampsia were moderate and severe - 58.8%, premature rupture of membranes in 23.5%, and premature detachment of the placenta in 17.6% of cases. The nature of childbirth in most cases has been operational - 79%, naturally gave birth to 21% of women. Most of the children were born in a very difficult, heavy and able to moderate, 7.2% to 36.3% and 56.5%, respectively.

Among term infants with perinatal pathology (n = 52), 16 children with intrauterine hypoxia and asphyxia at birth, 15 were born with birth trauma, 15 children with respiratory disorders, 6 children with intrauterine growth retardation.

The allocation of preterm infants (n = 17) in terms of gestation revealed that for a period of 30-35 weeks, were born 13 children (76.5%), for a period of 25-30 weeks, 4 children (23.5%). Of those with extremely low birth weight (ELBW) - 3 children, very low birth weight (VLBW) - 4 and with low birth weight (LBW) - 10 children.

The study of infant feeding nature has

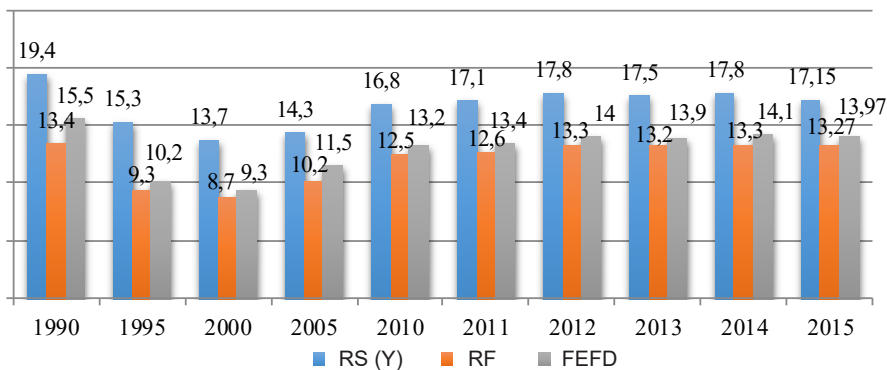


Fig. 1. The birth rate of the population in the Sakha Republic (Yakutia), the Russian Federation, and the Far Eastern Federal District for 1990-2015., per 1000 population (5, 6, 7, 8)

shown that breast-fed are 68% of full-term infants, 53% of premature infants with VLBW and LBW and preterm all to ELBW received artificial feeding.

At discharge, 66.5% of children were assigned to the 2nd health group, 33.5% of the children to the third group. The third group included all newborns with ELBW and full-term infants with severe perinatal pathology.

The social aspect of families with children with perinatal pathology was as follows: in most cases, the child was raised in a complete family (66.6 - 88.2%). Education of the child involved both parents, only 11.8% - 33.3% of the cases the father almost did not participate in training (Figure 2).

Only child had 38.4% of households, 32.3% had a family with two children and 29.3% of the children had three or more. In terms of higher education and / or incomplete higher education were 58.8% of mothers and 40% of fathers; 41.2% of mothers and 60% of fathers received a secondary and / or specialized secondary education. Most of the mothers are on leave for child care (64.7%), 35.3% of working mothers.

In the study of living conditions found that, in a separate apartment inhabited by 52.9% of households, 41.2% have their own home and live in a rented flat 5.9% of households, which means good social status of the parents. A good psychological environment marked by all the family (100%).

All children are born with perinatal pathology consisted in the dispensary in the community. All full-term babies born with birth trauma, intrauterine hypoxia and asphyxia at birth were observed by a neurologist diagnosed residual encephalopathy (REP). All preterm with ELBW were registered with the REB, bronchopulmonary dysplasia (BPD), retinopathy of prematurity have been observed at 66%, according to congenital heart disease

(CHD), deafness and cerebral palsy was observed 33% of children. Prematurely born with VLBW and LBW by the same nosology were registered in 2 times less.

For comparative evaluation parameters and the influence of various factors on the quality of life for children born prematurely, we conducted a survey of mothers in catamnesis, as well as pediatricians, QUALIN by questionnaire and the following results (Table 1) were obtained.

When evaluating the average values for the aspect of "Behavior and Communication", the parents of all three groups below appreciated than pediatricians. In children with ELBW evaluation of this aspect is lower than that of children with VLBW and LBW.

When evaluating the average values for the aspect of "Psychological development and physical health" of children with ELBW this figure was significantly lower than in children with VLBW and LBW. Pediatricians give more subjective answers.

When evaluating the average values of the aspect of the "Ability to be Alone," and parents and pediatricians have given the same answers. Also, the ability to be alone in children with ELBW lower than that of children with VLBW and LBW.

The aspect of "Family environment" from the responses of parents and pediatricians rated more highly than other as-

pects. This suggests that parents of premature babies are making a lot of effort and development of the child's health.

According to the quality of life between 1 and 10 points, quality of life of children with ELBW lower than that of children with VLBW and LBW. The parents of all three groups assessed their children's quality of life is higher than pediatricians.

Assessment of the quality of child care given by doctors. This aspect includes the following indicators: SS - the ability to focus, SLM - child care, PSM - the mental state of the mother. The aspect of "the ability to focus" was higher in children with LBW. Mothers of children with ELBW more tenderly care for their children, as the mental state of these same mothers was significantly lower than that of mothers with children with VLBW and LBW.

CONCLUSION

Thus, this study confirmed that the quality of life of children with perinatal pathology predominantly affecting biomedical factors such as maternal age and various maternal diseases during pregnancy, burdened obstetric and gynecological history, pathology intrapartum period. All children are born with perinatal pathology have II and III health group, composed on the "D" Registered with diagnoses residual encephalopathy syndrome of increased neuro-reflex excitability, movement disorders syndrome, congenital heart disease, retinopathy of prematurity, congenital heart defects, deafness, children cerebral paralysis. It was found that prematurity, significantly affects the quality of life of children.

References:

1. Albitsky V.Y., Vinyarskaya I.V. Novyj podhod k kompleksnoj ocenke sostojaniya zdorov'ja detej s ispol'zovaniem kriterija kachestva zhizni [A new approach to the integrated assessment of the health of children using the criterion of the quality of life] Problems of social hygiene, health and medical history [Problemy social'noj gigeny, zdavoohranenija i istorii mediciny], 2007, № 5, P. 16-17

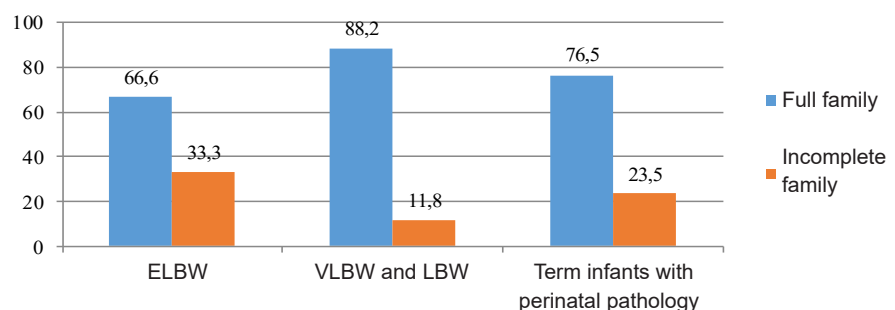


Fig. 2 Family structure

2. Baranov A.A., Albitsky V.Y., Valiulina G.A. i dr. Metodologija izuchenija kachestva zhizni v pediatrii [The methodology of the study of quality of life in Pediatrics] Union of pediatricians of Russia [Sojuz peditrov Rossi], Moscow, 2008, 16 p.

3. Baranov A.A. Sostoyanie zdorov'ja detej v RF [The health of children in the Russian Federation] Pediatrics [Pediatrija], 2012, Tom 91, № 3, P. 9-14.

4. Zdorov'je detej i podrostkov Respubliki Saha (Yakutija): sostojanie, tendencii, perspektivy: monografija / pod red. N.V. Savvinov [Child and Adolescent Health of the Republic of Sakha (Yakutia): Status, Trends, Prospects: monograph / ed. N.V. Savvinov] M.: Littera [M.: Littera], 2015, 512 p.

5. Kiselev S.N. Dinamika i osobennosti pokazatelya rozhdaemosti v dal'nevostochnom federal'nom okruge [Dynamics and features of birth rate in Far Eastern Federal District] Far Eastern Medical Journal [Dal'nevostochnyj medicinskij zhurnal], 2012, №3, P. 98-101

6. Osnovnye pokazateli zdorov'ja materi i rebenka RS (Y) za 2005-2009 [Key indicators of maternal and child health

The quality of life of premature infants, estimated by parents and pediatricians

	B and C		PD and PH		ABA		FE		Оценка КЖ с 1-10 баллов	
	Par	Ped	Par	Ped	Par	Ped	Par	Ped	Par	Ped
ELBW	3,5	4,4	2,8	2,6	3,4	3,2	4,8	4,7	6,7	5,3
VLBW	4,4	4,6	4,0	4,0	3,9	3,7	4,8	4,7	8,8	7,5
LBW	4,4	4,6	4,2	3,6	3,4	3,6	4,7	4,8	8,8	7,9

of Sakha (Yakutia) for 2005-2009] Stat. sb. / Ministry of Health of the YaRMIAC [Stat. sb. Ministerstva zdravooohranenija YARMIAAC], Yakutsk, 2010, 173 p.

7. Osnovnye pokazateli zdorov'ja materi i rebenka RS (Y) za 2007-2011 [Key indicators of maternal and child health of Sakha (Yakutia) for 2007-2011] Stat. sb. / Ministry of Health of the YaRMIAC [Stat. sb. Ministerstva zdravooohranenija YARMIAAC], Yakutsk, 2012, 128 p.

8. Osnovnye pokazateli zdorov'ja materi i rebenka RS (Y) za 2012-2013 [Key indicators of maternal and child health of Sakha (Yakutia) for 2012-2013] Stat. sb. / Ministry of Health of the YaRMIAC [Stat. sb. Ministerstva zdravooohranenija YARMIAAC], Yakutsk, 2014, 159 p.

9. Rahimova N.N. Osobennosti razvitiya i sostoyaniya zdorov'ja detej rannego i doshkol'nogo vozrasta, perenesshih perinatal'noje porazhenije central'noj

nervnoj sistemy [Features of development and the health of infants and pre-school children with perinatal central nervous system] Author. ... Cand. med. [Avtoref. ... kand. med.nauk], Dushanbe, 2009, 24 p.

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T.G. Dmitrieva, Y.A. Munkhalova, V.B. Egorova, A.O. Ostrelina LATENT HBV-INFECTION IN CHILDREN AND ADOLESCENTS IN YAKUTIA

ABSTRACT

The article is devoted to an actual problem of infectology and pediatrics. The introduction into laboratory practice of molecular biology techniques for detecting infectious agents significantly increased the understanding of the characteristics of chronic hepatitis B course (CHB). It was shown that DNA virus with a low copy number continues to be determined in serum and liver tissue in patients with some level of HBsAg nedektiruemy both acute and chronic infection, or even after antiviral therapy. In recent years, it has been convincingly proved the existence of HBsAg-negative forms of chronic hepatitis B, which has led to the emergence of the concept of latent HBV infection, which is characterized by the presence of the virus in the body at undetectable levels of HBsAg. This reduction in the formation of HBsAg to undetectable levels during the development of chronic infection is a very common and well-described phenomenon. This is a special group of patients, who often escape the attention of doctors, since screening is carried out only by HbsAg. With such an important development of CHB, and often the only serological marker of infection the patient is the presence of anti-HVcor IgG.

In the present study we compared the clinical and laboratory data of children and adolescents with HBsAg-negative and HBsAg-positive chronic viral hepatitis (CVH). The study did not reveal fundamental differences in epidemiological, clinical laboratory data in patients with latent chronic hepatitis B, in comparison with the manifest forms of the disease. It is found that these patients suffer from chronic liver disease not less than HbsAg (+) patients. Introduction of a-HBcor to the screening will allow actively identify these patients and to carry out a full range of medical and dispensary activities.

Keywords: children, adolescents, HBV-infection, latent form.

INTRODUCTION

Among the regions of the Russian Federation of the Republic of Sakha (Yakutia) refers to areas with a high incidence of viral hepatitis [2, 6]. The main markers of infection in determining the population is HBsAg. In recent years, it has been convincingly proved the existence of HBsAg-negative forms

of chronic hepatitis B, which has led to the emergence of the concept of latent HBV infection, which is characterized by the presence of the virus in the body at undetectable levels of HBsAg [2.5]. The hepatitis B virus can be a long latency ("latent") state in the liver, and in some cases, and HBsAg-negative patients in the blood [1,2,3,4,6,7]. The children, es-

pecially the first years of life, due to the lack of immunological infectious process proceeds in the form of deleted, anicteric, subclinical [1,4]. Studies dealing with the problem of latent hepatitis C, particularly in children, there are currently little, making the actual operation. The aim of this study was to investigate the clinical and laboratory picture of the flow of latent in-

fection of HBV-children and adolescents in Yakutia.

MATERIALS AND METHODS

We analyzed 153 outpatients sick children diagnosed with CHB. The criteria for selection of patients in the study group were: diagnosis by ELISA and PCR, observation is not less than one year, the study of basic laboratory and instrumental methods of diagnosis. Of 153 patients, 122 (79.6%) patients allocated HBsAg, 31 (20.3%) in the presence of a-NVsor and DNA HBV, and not determined as HBsAg-HBsAg. Physical development in patients with chronic hepatitis B was assessed by centile tables designed for the RS (Y), and taking into account ethnic differences. The patients, in addition to clinical examination, including assessment of the hemogram, the results determine the activity alaninaminotransferase-PS (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), gamma-glutamyl (GGT), evaluation of protein-synthetic function of the liver, the determination of the total levels and conjugated (direct) bilirubin, glucose, cholesterol, triglycerides, β -lipoproteins, prothrombin index (PTI); Standard methods of instrumental studies (US).

RESULTS AND DISCUSSION

In the analysis of sex and age composition of statistically significant differences were found. Among patients in both groups was dominated by teenagers.

In both, the largest number of groups of patients of yakut nationality. Among the patients of chronic hepatitis B (HbsAg +) were 86 children Yakuts (70.4%) among patients of chronic hepatitis B (HbsAg-) - 22 children (70.9%). In 24 Russian patients (19.6%) diagnosed HbsAg, HBV (HBsAg-) was diagnosed in 8 patients (25.8%). All 7 patients at MKNS (Evens, Evenki, Yukagirs, Chukchi), there was a chronic hepatitis B (HbsAg +). Among patients of other nationalities HBV (HbsAg +) was detected in 5 children (4%), HBV (HbsAg-) - in 1 child (3.2%).

Thus indigenous nationalities (Yakuts and MKNS) accounted for the vast majority of both groups

Due to the fact that the clinic CVH scarce, most patients complaints actively usually did not show, but after a detailed survey in 35.2% of patients (43 children) with chronic hepatitis B (HBsAg +) and in 25.8% of cases (8 children) in patients with chronic hepatitis B (HBsAg-) following complaints have been identified. Most frequent complaints related to impaired liver function. Thus, the most frequent complaints related to impaired liver function. Violation of detoxification func-

tion was shown to reduce the health and headaches, synthetic - in the nosebleeds. Pain and dyspeptic syndrome seems to be associated with chronic diseases of the gastrointestinal tract. Patients with chronic hepatitis B disease syndrome occurred in 82.1% of cases, and biliary tract pathology in 30.3% of cases. No statistically significant differences between patients with chronic hepatitis B (HBsAg +) and CHB (HBsAg-) the frequency and nature of complaints is not revealed.

Patients with chronic hepatitis B in most cases marked disharmonious development deficit of body weight. Low levels of body weight of more than half of children diagnosed with CHB indicate if they have a chronic intoxication. And pathologically short stature met 2.2 times less than the abnormally low body weight (Table. 1).

No statistically significant differences between patients with chronic hepatitis B (HBsAg +) and HBV (HBsAg-) in the distribution of centile channels were found ($p > 0.05$) for body weight and growth.

Some patients have been identified "extrahepatic signs", which include palmar erythema, telangiectasia and expansion of venous pattern on the skin of the chest and abdomen. These signs are rare. In 1.7% of patients with chronic hepatitis B (HBsAg +) and 2.3% of patients with chronic hepatitis B (HBsAg-). An objective examination of patients with chronic hepatitis B an increase in the liver - in 31 children (20.3%) often occurs. Splenomegaly is much rarer - in 3.9% of cases (6 children). The ultrasound of patients with chronic hepatitis B are slightly different depending on the presence of HbsAg. Hepatomegaly occurs in patients with chronic hepatitis B (HBsAg +) in 27% of cases (33 children), and for HBV (HBsAg-) only in 12.9% of cases (4 children). However, hepatosplenomegaly in both groups occurred equally often: when HBV (HBsAg +) - 6,6% (8 children) with chronic hepatitis B (HBsAg-) - 6,5% (2 children). Despite the fact that hepatomegaly met more than a third of

patients, the liver parenchyma change observed not at all. The inhomogeneous structure with HBV (HBsAg +) occurred in 9% of cases (11 children), with HBV (HBsAg-) - 6.1% (5 children). Increased hepatic ehoplotnosti occurred in 11.5% of patients (14 children) and 6.5% (2 children) (Tab. 2).

Thus, statistically significant differences ($p < 0.05$) were observed only in the frequency of hepatomegaly.

Intensity of cytolytic syndrome was assessed by levels of ALT and AST in the serum of the patient. Patients with chronic hepatitis B cytolytic syndrome occurs almost one-third. Jaundice is not a common sign of chronic hepatitis in children. According to laboratory data increase in total bilirubin observed in 18.3% of cases (28 patients). Violation of protein-synthetic liver function expressed in lowering albumin levels in the blood serum of the patient noted in 22.9% of cases. However, reduced albumin levels was moderate, did not exceed 16.3% and averaged 7.6% (Table. 3).

Statistically significant differences between the two groups of patients identified were not ($p > 0.05$).

In the hemogram of patients with CHB were detected most frequently were change in hemoglobin levels. Reduced hemoglobin observed in 43.8% of patients (53 patients) in patients with chronic hepatitis B (HBsAg +) and 40% (14 patients) - HBV (HBsAg -). Reducing the number of leukocytes in 4.1% (5 patients) in patients with HBV (HBsAg +) and 3.2% of cases (1 patient) - HBV (HBsAg-). Reducing the number of platelets in patients with chronic hepatitis B were observed in 3.9% of cases (6 children) are - 3.3% (3 patients) in patients with chronic hepatitis B (HBsAg +) and 3.2% of cases (patients 1) - CHB (HBsAg-) (tab. 4).

CONCLUSION

For chronic hepatitis B it is characteristic for oligosymptomatic. For a long time, patients do not experience any health problems and only having read through

Table 1

Table 1. Body weight and height of patients with chronic hepatitis B

Centille	CHB (n=153)							
	HbsAg + (n=122)				HbsAg - (n=31)			
	Body Weight		Height		Body Weight		Height	
	n	%	n	%	n	%	n	%
until 3	6	4,9	3	2,5	1	3,2	0	0
3-10	21	17,2	4	3,3	6	19,4	1	3,2
10-25	35	28,7	20	16,4	9	29	5	16,1
25-75	49	40,2	64	52,5	14	45,2	18	58,1
75-90	5	4,1	16	13,1	1	3,2	6	19,4
90-97	3	6,9	14	11,5	0	0	1	3,2
more 97	3	2,5	1	0,8	0	0	0	0

the years show signs of liver disease. This feature CHB clinics, as well as the fact that children and adolescents may not have much time disease, explains the scant clinical data that have been identified in this study. In most cases, the patients and their parents were unaware of the presence of chronic liver disease, and the disease was discovered by accident.

The study did not reveal fundamental differences in epidemiological, clinical and data in patients with latent chronic hepatitis B, in comparison with the manifest forms of the disease. Children and adolescents with chronic hepatitis B HbsAg (-) is a special group of patients, who often escape the attention of doctors, since screening is carried out only by HbsAg. Introducing a screening-NVsr allowed us to identify this group of patients, and our research shows that these patients suffer from chronic liver disease no less than HbsAg (+) patients.

References:

1. Goryacheva L.G. Diagnostika i techenie virusnyh gepatitov u detej, inficirovannyh na pervom godu zhizni [Diagnosis and course of viral hepatitis in children infected in the first year of life] Materials of the conference "Old" and "new" disease in children in modern conditions" [Materialy konferencii «Starye» i «novye» infekcii u detej v sovremennyh usloviyah], S-Pb., 2011, P. 109-113.
2. Dmitrieva T.G. Osobennosti ehpidemiologii i techenija hronicheskikh gepatitov u detej v respublike Saha (Yakutija) [Features of the epidemiology and course of chronic hepatitis B in children in the Republic of Sakha (Yakutia)] Russian pediatric magazine [Rossijskij pediatricheskij zhurnal], 2015, V.18, №2, P. 5-13.
3. Ivashkin V.T. German E.N. Maevskaya M.V. Skrytaja infekcija virusom gepatita B [Latent infection with hepatitis B virus] Ros. Zh. Gastroenterology, Hepatology, Coloproctology [Ros. zhurn. gastroehnterologii, gepatologii, koloproktologii], 2008, № 2, P. 4-6.
4. Isakov V.A. Strategija lechenija hronicheskogo gepatita B [Strategy for the treatment of chronic hepatitis B] Clinical Gastroenterology and Hepatology [Klinicheskaja gastroehnterologija i Gepatologija], 2013, № 3, P. 112-114.
5. Semenov A.V., Vashukova S.S. Rasprostranennost' latentnogo (HBs-negativnogo) hronicheskogo gepatita B sredi pacientov kabinetov infekcionnyh zabolevanij poliklinik Sankt-Peterburga [Prevalence of latent (HBs-negative) chronic hepatitis B among patients cabinets infectious diseases clinics of St.

Table 2				
Ultrasonic estimation results at patients with CHB				
Indicator	CHB (n=153)			
	HbsAg + (n=122)		HbsAg - (n=31)	
	n	%	n	%
Hepatomegaly	33	27	4	12,9
Hepatosplenomegaly	8	6,6	2	6,5
Heterogeneous parenchyma structure	11	9	5	16,1
Increasing density	14	11,5	2	6,5
Seal wall of the gallbladder	10	8,2	4	12,9
Increased vascular pattern	15	12,3	2	6,5

Table 3					
Biochemical analysis of blood of patients with CHB					
Indicator	CHB (n=153)				p
	HbsAg + (n=122)		HbsAg - (n=31)		
	n	%	n	%	
ALT 1,5 N	5	4,1	2	6,5	>0,05
ALT more than 2N	0	0	0	0	
AST 1,5 N	37	30,3	8	25,8	>0,05
AST more than 2N	0	0	0	0	
Hyperbilirubinemia	22	18,2	6	20,0	>0,05
GGT greater than N	1	0,8	0	0	
Alkaline phosphatase greater than N	0	0	1	3,2	>0,05
Total protein is less than N	24	19,7	6	19,4	>0,05
Albumin is less than N	29	23,8	6	19,4	>0,05
Cholesterol is larger than N	16	13,2	2	6,7	>0,05
β-lipoprotein	2	1,6	3	1	>0,05
Triglycerides	1	0,8	0	0	

Table 4					
Data from clinical blood studies of patients with chronic hepatitis B					
Indicator	CHB (n=153)				p
	HbsAg + (n=122)		HbsAg - (n=31)		
	n	%	n	%	
Red blood cells are less than N	45	37,2	12	40	>0,05
Hemoglobin less than N	53	43,8	14	46,7	>0,05
White blood cells are less than N	5	4,1	1	3,2	>0,05
Platelets less than N	4	3,3	1	3,2	>0,05

Petersburg] Journal microbiology, epidemiology, immunology [Zhurn. mikrobiol. ehpidemiologii, immunologii], 2011, № 3, P. 90-94.

6. Slepova S.S., Tihonova N.N., Samsonova V.K. Osobennosti techenija hronicheskikh virusnyh gepatitov v Yakutii [The course of chronic viral hepatitis in Yakutia] Infectious diseases [Infekcionnye bolezni], 2011, №9, P. 343.

7. Yang C.G. A comparison of clinical and virological characteristics of 1686 cases of HBeAg-negative and HBeAg-positive chronic hepatitis B / C.G. Yang, Y.C. Yu, J.J. Chen et al. // Zhonghua Nei Ke Za Zhi, 2005, V.44, № 9, P. 648-651.

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FEATURES OF CLINICAL AND IMMUNOLOGICAL COURSE OF CYTOMEGALOVIRUS INFECTION

ABSTRACT

The article is devoted to an actual problem of modern medicine - the study of cytomegalovirus infection. A group of children aged 2 to 5 years, often suffering from SARS with low-grade fever of unknown genesis with positive ELISA and PCR for cytomegalovirus (CMV) was examined. It was found that in children with CMV reduction of natural killer cells (CD16 +), T-helper cells (CD4 +), cytotoxic T lymphocytes (CD8 +), increase of IgM, IgG, and the CEC were marked.

Keywords: immunity, virus, antibody, immunoglobulin, herpes, disease, cytomegalovirus.

INTRODUCTION

Cytomegalovirus infection - a disease caused by a cytomegalovirus - a virus of the subfamily of herpes viruses. The prevalence of cytomegalovirus infection is extremely high. Once penetrated into the body, CMV infection does not leave it - often it exists in a latent form and occurs only at lower immunity.

However, the primary infection may be an acute infectious disease. Often infection occurs even in the neonatal period and early childhood. Most often it occurs in developing countries, where the prevalence of cytomegalovirus infection among young people is much higher than in developed countries.

The most dangerous form of cytomegalovirus infection is an antenatal form, which is common for children, whose mothers suffered a primary CMV infection during pregnancy. Congenital cytomegalovirus infection often leads to developmental delay and to the many adverse consequences, including mental retardation and deafness.

The virus enters the blood of healthy people and causes a pronounced immune response that relies in the formation of antibodies - specific protective proteins - immunoglobulin M (Anti - CMV - IgM), and the main protective response against virus - T-cell.

The lymphocytes CD 4 and CD 8 have potent activity against cytomegalovirus. Cytomegalovirus infection actively develops and leads to reactivation of earlier latent infection when cellular immune response is inhibited, like formation violation CD 4 lymphocytes in AIDS, for example.

Anti-CMV-IgM are forming after about 4-7 weeks after infection, and can be found in the blood for 16-20 weeks. Finding them in the blood in these terms may be evidence of primary CMV infection. Then immunoglobulins M are replaced by immunoglobulins G1 (Anti - CMV - IgG), which are present in the blood throughout

the entire life.

In most of cases, when immune status is normal, cytomegalovirus infection is asymptomatic, although it remains in the body for a long time in the form of latent infection. It is unknown where is exactly virus is contained in body, however, its presence is expected in many organs and tissues.

OBJECTIVE OF RESEARCH

Studying the characteristics of immunity in children with cytomegalovirus infection.

MATERIALS AND METHODS

Examination of the group of children (n = 20) aged 2 to 5 years with low-grade fever of unknown origin and manifestations of herpes on the lips with a positive ELISA CMV (Anti - CMV - IgG and Anti - CMV - IgM) and a positive PCR CMV (Table 1). Also, a group of healthy children (n = 10) matched by age was examined.

The immune status of all children was examined (CD3 +, CD4 +, CD8 +, CD16 +, CD22 +, IgA, IgG, IgM, IgE) on the basis of the National Medical Center of the Republic of Sakha (Yakutia). Comparing averages ANOVA was performed using Student's t-test for assessing equal-

ity medium Fischer F-test for equality of dispersion evaluation. The relationship between the parameters was assessed by the coefficients of the linear and rank correlation.

Survey Results: All children with CMV had a low-grade fever, headache, recurrent acute respiratory viral infections, tonsillitis, pharyngitis, increased sweating, fatigue, irritability.

PCR is an important method of diagnosis of CMV infection.

The materials for the study was the saliva or the oral- and the nasal-pharyngeal mucus, scraps of the epithelial cells of the urogenital tract, blood, cerebrospinal fluid, prostatic fluid, urine. Determination of immune status is necessary in addition to serological survey methods, PCR and clinical symptoms of CMV infection.

Elevated levels of IgA, IgM and CIC have been detected in 4 children from an examined group.

Conclusion:

The study of immune status and DNA analysis of a various materials in dynamics, serology (ELISA) are necessary in diagnostics of CMV infection.

The immune status changes, that revealed during diagnostics of CMV:

-Increasing activity of the immune system (increased levels of immunoglobulin IgM in serum, increased CIC,

-Reduced level CD16 + - natural killer cells, decreased T-helper CD4 level

REFERENCES

1. Didkovsky N. A., Malashenkova I. K., E. B. Tselakova Induktory interferona — novyj perspektivnyj klass immunomodulatorov [Interferon Inducers — a new promising class of immunomodulators]. Allergologija [Allergology]. 1998, No. 4, p. 26-32.

2. Egorova O. N., Balabanova R. M., Chuvyrov G.N. Znachenie antitel k gerpeticheskim virusam, opredeljaemyh u bol'nyh s revmaticheskimi zabolevanijami [Value of antibodies to herpes vi-

Indicators of immune status of children with cytomegalovirus and healthy children in Republic of Sakha M ± m

Indicators	CMV-infection (n = 20)	Healthy (n = 20)
CD3+	21,2 ± 1,03	27,2±1,04
CD4+	18,9 ± 0,5*	28,3±0,6
CD8+	16,9 ± 0,8*	24,1±2,5
CD16+	11,1 ± 1,2*	22,0±1,01
ИРИ	0,7 ± 0,6	1,08±0,02
IgA	1,6 ± 0,1*	2,9±0,6
IgG	18,2 ± 0,7	17,1±0,09
IgM	5,2 ± 0,08*	2,2±0,09
CD25+	13,9 ± 1,2*	24,6±0,7
ЦИК	186,2 ± 1,5<0,05*	70±0,07

The decreased CD4 + lymphocytes content, reduced the number of natural killer cells (CD16 +), T-helpers (CD4 +), cytotoxic T-lymphocytes (CD8 +), increase of IgM (Table 1) has been detected.

ruses that is determined in patients with rheumatic disease] *Terapevticheskij arhiv* [Therapeutic archive]. 1998, No. 70(5), P. 41-45.

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ESTIMATION OF PSYCHOPHYSIOLOGICAL STATUS OF STUDENTS ADAPTING IN THE SUB-ARCTIC REGION

ABSTRACT

The study was conducted on the basis of the Medical Institute NEFU. 44 volunteers from the university students between 18 and 23 years were the object of the study. All surveyed were male. We studied the features of psychophysiological state at forming adaptive reactions of the students M.K. Ammosov NEFU from countries with a hot climate (the main group). The control group consisted of students, representatives of indigenous ethnic groups (Yakuts, Evens). It was revealed that at adaptation to extreme subarctic climate in foreign students there are marked a shift in the balance towards the activation of the sympathetic part of the vegetative nervous system, moderate and high levels of personal anxiety, not accompanied by the perception of the majority of situations as threatening and the development of anxiety. On Harvard step-test graduation index in both groups there were no persons with the assessment of physical performance "excellent". By indicators of heart rate variability in the main group the activity of stress-limiting systems dominated, whereas in the control – optimal adaptation indicators. It was found that the adaptive possibilities of the body of persons in the control group, estimated by the capacity of slow and fast waves, are characterized by low levels of mobilizing and reduction potential, in the main - a moderate level.

Keywords: psychophysiological status, population, adaptation, subarctic, region.

INTRODUCTION

The role of psychophysiological state in forming adaptive-adaptive reactions, and in the preservation of health allows expanding our knowledge of the mechanisms of regulation of adaptive processes in the conditions of emotional stress and exposure to stressful factors in extreme climatic conditions in Yakutia [3].

Objective: To evaluate the psychophysiological status of students in adapting to the subarctic region.

MATERIALS AND METHODS

The main group consisted of 14 people (Tajikistan - 8 Afghanistan - 2, Kyrgyzstan - 3, Indonesia - 1), came from different regions. The second group (control) included 30 natives of indigenous nationality (Yakutsk, Evens) from different regions of the Republic of Sakha (Yakutia). All the examined were aged 17-19 years old. The survey was conducted due to ethics, with informed voluntary consent of the students to participate in the research. At the time of the research, all participants had no signs of any diseases and were considered relatively healthy.

The questionnaire of state anxiety (SA) and trait anxiety (TA) by C.D. Spielberger in adaptation of Y.L. Hanin (1976) was used to assess the mental and emotional condition of the person. As a functional test for the assessment of physical activity Harvard step test (HST), conducted by standard method (Dubrovsky

V.I., 2002) was used [1, 5]. The indicators of respiratory rate (RR per minute), heart rate (HR, beats / min), systolic blood pressure (SBP, mmHg) and diastolic (DBP mmHg), pulse (PAD mm Hg .st.), mean dynamic (FBC mm Hg) at rest and after exercise were studied. Also Kerdo vegetative index (VIK, c.u) was used to assess vegetative tonus. Condition of the autonomic nervous system was determined on the basis of cardio-rhythm studies using diagnostic system "Valenta" (10 minutes record).

Statistical analysis of the material was performed by using IBM SPSS STATISTICS 22 package.

RESULTS AND DISCUSSION

The main and control groups were formed by anthropometric parameters, the main indicators of the cardiovascular system and respiratory rate were practically identical. At the same time, results in heart rate and FIV indicators suggested a displace of the representatives of the principal balance of the group towards the activation of the sympathetic part of the autonomic nervous system. Due to the fact that the cardiovascular system is an indicator of adaptive reactions of the whole organism [1], the detected changes can be regarded as a reflection of adaptation processes to the new climate and the learning process occurring in students from countries with the hot climate.

Some features of adaptive reactions

taking place can be seen in the figures obtained state anxiety and trait anxiety among foreign students. If the groups did not differ in the level of state anxiety, the performance level of trait anxiety of the main group were significantly higher, not only compared to the control, but also with the available scientific data in the literature [8, 9]. This allows us to interpret the level of personal anxiety core group of students as high. When calculating the coefficients for indicators of state and trait anxiety by Spearman rank correlation (r) we've got opposite results. May be it is possibly because of age-related psycho-emotional characteristics of the individuals. Students of the main group showed the moderate and high levels of trait anxiety, no one with the low levels. 35.7% of high level of trait anxiety among foreign students indicates the presence of their expression of emotional stress. However, they do not tend to take most of the situations as threatening and respond to the alarm condition. Results of the control group, the distribution of the first-year students by level of state anxiety and trait anxiety is different from the literature data, according to which most students have a domination of high- and moderate-anxiety (93.3%) and low- and moderate-anxiety (93.3%) respectively. At the same time the prevailing in the first case are high-anxiety (53.3%), in the second - low-anxiety (66.7%) first-year

students. [7] A limitation of this study is the small size of the main group.

The results of the research showed no statistically significant differences in the main indicators of the cardiovascular system at rest between the main and control groups, except for a high rate of heart rate in the group of foreign students. Some studies indicated the inertia of arterial pressure, which is associated with North people adaptability living in cold climatic conditions [3]. After physical exercises the main and control groups had statistically significant increase in heart rate indicators, SBP, DBP, FBC, VIK. PAD levels have not changed, the representatives of the main groups DBP values were significantly higher than in the control one, in other indicators, including IGST, no differences were found. From the data obtained, a more pronounced change in sympathicotonia values was observed in the control group. A number of the researches indicated that the activation of the tone of VNS values VIK exceed zero [4, 10]. From the values of VIK group were not significantly different, but the state of the autonomic nervous system tone at rest in the main group was evaluated as eutonia whereas in the control group - a preponderance of parasympathetic tone card.

In assessing the state of physical health on IGST in both groups there were no one with a rating "excellent". All the representatives of the control group the activity corresponded to the average or below average level. In the main - the similar estimation including students with bad and good physical condition.

The analysis of heart rate variability (AMO MI, BA, MB) showed that in the main group compared with the control had a statistically significant lower voltage value of the index, mode amplitude and higher power of fast and slow waves of the 2nd order. According to Baevsky's voltage index we can make a conclusion that [2, 3] that individuals in the main group with the position of physiological regulation had predominance the activity of stress-limiting systems and in the control group - optimum values of adaption.

High power of fast waves in the main group showed predominant influence of the parasympathetic part of the autonomic nervous system in the regulation of sinus rhythm. Adaptation capabilities of persons from the control group, estimated by the power of slow and fast waves were characterized by low levels of mobilizing and reduction potential. In the main group the same data correspond to the moderate level. A similar pattern is observed in relation to the power of

slow waves of the 2nd order of values that reflect the activity of ergotropic and humoral-metabolic mechanisms of heart rate regulation, assessed as the moderate level of mobilizing potential.

The obtained results do not differ from those of other researches that the university students studying in extreme climatic conditions of the North have reduced adaptation mechanisms and functional system reserves [3, 6, 8]. A limitation of this study is the small size of the main group.

CONCLUSION

The peculiarities of psychophysiological state in forming adaptive reactions of organism, heart rate and VIK allow to suggest displace of the principal balance to the activation of the sympathetic part of the autonomic nervous system of the representatives of the main group. At the same time, the foreign students' high level of trait anxiety is not accompanied by the perception of the majority of situations as threatening and do not develop their anxiety. By graduation of GTS index in both groups, there was no one with the assessment of physical activity as "excellent". The activity of stress-limiting systems is dominated in assessing heart rate variability in the main group. Adaptive capacity of the organism in the control group estimated by the power of slow and fast waves were characterized by low levels of mobilizing and reduction potential, in the main group - the moderate level. It was found out that the relationship between psychological characteristics and environmental factors arising in the course of adaptation to extreme subarctic climate exists as to the successful adaptation influenced by subjective factors and environmental groups, including the physiological characteristics of a person.

REFERENCES

Baevskiy R.M. Berseneva A.P. Ocenka adaptacionnyh vozmozhnostej organizma i risk razvitiya zabolevanij [Evaluation of adaptive capabilities of the organism, and the risk of diseases]. Moscow: Medicina, 1997, p. 236.

Baevskiy R.M. Teoreticheskie i prikladnye aspekty ocenki i prognozirovaniya funkcional'nogo sostojaniya organizma pri dejstvii faktorov dlitel'nogo kosmicheskogo poleta [Theoretical and applied aspects of the assessment and prediction of the functional state of the organism under the influence of long-duration space flight factors] *Aktovaja rech' na zasedanii uchenogo soveta Gematologicheskij nauchnyj centr Rossijskoj Federacii* [Act speech at a meeting of the Academic Council of the Russian Federation State Research Center]. Moscow: IMBP

RAN, 2005, p. 20.

Borisova N.V. Mediko-fiziologicheskoe obosnovanie adaptivnyh reakcij organizma studentov v jekstremal'nyh usloviyah Jakutii [Medical and physiological basis of adaptive reactions of an organism of students in the extreme conditions of Yakutia] *Avtoreferat dis. ... doktora medicinskih nauk: 14.03.03, 03.03.01* [Abstract dis. ... Doctor of medical sciences: 14.03.03, 03.03.01]. Mesto zashchity: GOU VPO Jakutskij gosudarstvennyj universitet [Protection Place: GOU VPO Yakutsk State University]. Yakutsk: 2011, pp. 5-218.

Demin A.V. Ivanov A.V. Fizicheskaja interpretacija vegetativnogo indeksa Kerdo [The physical interpretation of the vegetative index Kerdo] *Obrazovanie: Nauka* [Education: The science]. Moscow: Scientific personnel, 2013, №2, pp. 151-156.

Dubrovskiy V.I. Sportivnaja medicina: Ucheb. Dlja stud. Vysh. Ucheb. Zavedenij [Sports Medicine: Textbook for high schools students]. Moscow: VLADOS, 2002.

Zashihina V.V. Cyganok T.V. Vlijanie klimatogeograficheskikh faktorov na adaptacionnye vozmozhnosti studentov vuzov [Influence of climatic factors on the adaptive capacity of university students]. Moscow: Sovremennye problemy nauki i obrazovani, 2014, №3.

Maslova T. M. Dinamika trevozhnosti studentov vuza v processe ikh professionalnogo stanovlenija [The anxiety dynamics of students of higher educational institution in the course of their professional study]. *TSU vector*, 2014, 4 (30), pp. 168-171.

Poborskiy A.N. Judina M.A. Pavlovskaja V.S. Funkcional'nye vozmozhnosti organizma studentov, nachinajushchih obuchenie v neblagoprijatnyh klimatogeograficheskikh usloviyah sredy [The functionality of an organism of students who start training in adverse climatic and environmental conditions]. *Arkhangelsk: Jekologija cheloveka*, 2010, №12, pp. 27-31.

Sherbatykh Y. V. Vegetativnye proyavleniya examinacionnogo stress: avtoreferat diss.... doktora biol.nauk: 03.00.13, 19.00.02 Mesto zhashity: SPeterb. gos. un. [Vegetative displays of examination stress: thesis abstract.... Dr.Sci.Biol.: 03.00.13, 19.00.02 Place of defence: Page - Peterb. state. un-t.]. SPb, 2001, p. 32.

Kérdö I. Ein aus Daten der Blutzirkulation kalkulierter Index zur Beurteilung der vegetativen Tonuslage. *Acta neurovegetativa*. 1966, Bd.29, №2, p. 250-268.

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S.U. Artamonova, M.V. Handy, L.E. Nikolaeva, A.I. Moskvina THE PRIMARY IMMUNODEFICIENCY IN PATIENT WITH BRONCHIAL ASTHMA

ABSTRACT

The article is devoted to an actual problem of primary immunodeficiencies. Primary immunodeficiencies are rare diseases, and awareness of this pathological condition is not enough. It leads to late diagnosis and inadequate treatment of patients suffering from primary immunodeficiency. Allergic diseases often dominate clinical picture of immunodeficiency states. There is a case's description of primary immunodeficiency in a child with asthma.

Keywords: bronchial asthma, primary immunodeficiency, clinical case.

INTRODUCTION

Primary immunodeficiency is the congenital disorder of the immune system associated with genetic defects in one or more host defense mechanisms, namely cellular and humoral immunity, phagocytosis, complement system. Despite the achievements in diagnostics, more than 70% of patients with immune deficiencies are not diagnosed, and their typical manifestations are severe bacterial, viral and fungal infections, autoimmune and allergic diseases. Primary immunodeficiency is diagnosed in children most times, commonly in early childhood [2].

We can identify common features characteristic of all primary immunodeficiency's forms despite expressed inhomogeneity of both clinical and immunological manifestations.

Primary immunodeficiency has a main feature – inadequate susceptibility to infections, while other manifestations of immunodeficiency are overfrequency of allergies and autoimmune manifestations, as well as propensity to neoplasia, which is relatively small and highly irregular.

Allergic manifestations occur in 17% of patients on average. Allergic diseases are obligated for Wiskott-Aldrich syndrome and hyper-IgE-syndrome and hurried in the selective deficiency (atopic dermatitis, bronchial asthma) – occurs in 40% with usual character of the course [3]. Observation is very important to understand the nature of allergic reactions. According to it, allergic diseases in the majority of primary immunodeficiency's more severe form absent together with the loss of ability to produce IgE and to

develop a delayed type hypersensitivity reaction pseudoallergic (parallergic) reactions (toxicoderma, exanthema in drug and food intolerance) are possible for any form of immunodeficiency. Autoimmune diseases are diagnosed in 6% of patients, which is much higher than in normal pediatric population. However, their frequency is very irregular. The same goes for malignant diseases, which occur with overfrequency only in some forms of primary immunodeficiency [1, 4].

The aim of our study was demonstration of clinical case about primary immunodeficiency in a child with asthma.

MATERIALS AND METHODS

Clinical observation's data of primary immunodeficiency in a child with asthma.

RESULTS

Patient P., 6 years old, resident of Yakutsk, was repeatedly hospitalized in pediatric pulmonology department of the Republican hospital №1 with a diagnosis "bronchial asthma, atopic form, moderate-to-severe condition, uncontrolled; allergic rhinitis, persistent; atopic dermatitis; dysplasia of connective tissue, undifferentiated".

From anamnesis we know that the child from a family with anamnesis record: mother - pollinosis, paternal grandfather – bronchial asthma, elder brother – primary immunodeficiency, unspecified, bronchial asthma. Girl is from the second pregnancy that occurred with toxemia, threat of interruption, chronic pyelonephritis, from operative delivery at 35-36 weeks of pregnancy. Birth weight is 2995g, length is 49 cm, Apgar score - 8/8 points. Diagnosis in the first month:

perinatal affection of CNS hypoxic genesis. Conjugational hyperbilirubinemia. The child was breast-fed from birth until 4 months. BCG vaccination was in maternity hospital.

Allergic anamnesis: redness of the cheeks on fish, semolina, syrups.

Anamnesis of the disease: shortness of breath and rhythmic paroxysmal cough, recrudescing at night and during physical exertion, are marked from 4 months. The girl was repeatedly hospitalized and examined according to the place of residence. Also pains in stomach and legs, upregulation of AST in blood are periodically observed from an early age. Past medical history: frequent ARVI (10-12 times annually), bronchitis, chronic sinusitis, acute bilateral multisegmental pneumonia (3 years).

In 2010, she was sent to the Institute of Medical Genetics in Tomsk, where cystic fibrosis was excluded.

In 2012, the diagnosis was found in the pulmonary department of the Republican hospital №1 for the first time: bronchial asthma, atopic form, mild disease; allergic rhinitis, persistent; atopic dermatitis; undifferentiated dysplasia of connective tissue; facial dysmorphism. Background therapy was assigned, strokes were observed once in every 2 months. According to computer assisted tomography, nothing abnormal was detected. Immunoassay: IgG 10,66 g/l, IgA 1,93 g/l, IgM 4,28 g/l, IgE 8,3 g/l; immunophenotyping of lymphocytes CD3- 70 %, CD4 – 52, CD8 – 26, CD16 – 11, CD19 – 10, CD3/HLA – 8%, Immunoregulatory index – 2; α1-antitrypsin – 271 mg/dL. In 2013,

Seretide 25/125 mcg in 1 dose x 2 times, singular, was assigned as basic therapy. On the top of already administered therapy, according to her mother, strokes of cough were constantly persisted.

In January 2014, the girl was hospitalized in Immunology Department of the Federal Research Center of Pediatric Hematology, Oncology and Immunology named after D. Rogacheva with suspected primary immunodeficiency for the first time. Adenoiditis and chronic tonsillitis were detected on admission. Dextral catarrhal otitis. Antibacterial symptomatic therapy was assigned. In the course of the treatment, ENT specialists said that state with positive dynamics. Bronchoscopy was conducted for diagnostic purposes, diffuse catarrhal endobronchitis was detected. The child's condition remained stable during her time in department. At the time of hospitalization, diagnosis "primary immunodeficiency" is not confirmed.

In 2015, the patient was hospitalized in the Federal Research Center of Pediatric Hematology, Oncology and Immunology named after D. Rogacheva again with complaints of periodic febrile (monthly), chronic sinusitis, pains in joints and abdomen. Exacerbations of asthma were observed each month against the background of infectious manifestations.

She was in the department from 24.03.15 to 10.04.15, at which the following research was conducted:

Measurement	Findings	Standard
CD3%	77,6	66-76
CD3+	0,598	1,4-2
CD3+/ CD4+%	38	33-41
CD3+/ CD4+	0,293	0,9-2,86
CD3+/ CD8+%	35,6	22-38
CD3+/ CD8+	0,2745	0,63-1,91
CD3+/CD16+/ CD56+%	3	0-10
CD3+/ CD16+/ CD56+	0,0231	0-0
CD3+/ HLADR+%	7,2	3-13
CD3+/ HLADR+	0,0555	0-0
CD3+/ CD25+%	5,7	0-0
CD3+/ CD25+	0,034	0-0
CD19+%	9,7	21-28
CD19+	0,075	0,7-1,3
CD3-/CD16+/ CD56+%	11,8	10,6-22,4
CD3-/ CD16+/ CD56+	0,091	0,276-0,896
CD3-/ HLADR+%	16,1	5-20
CD3-/ HLADR+	0,124	0,06-0,6
WBC	5,04	4,8-9
Lym %	15,3	36-43
lym	0,771	2,4-5,81
Mon %	8,2	4-8
Mon	0,413	0,285-0,5
Gra %	76,5	34-56
Gra	3,856	2,074-5,6
Ratio CD4:CD8	1,067	1,1-1,4

Complete blood count: hemoglobin 117 g/l, erythrocytes 4.2×10^{12} , leukocytes 2.7×10^9 , segmented neutrophils 38.0, 4.0 eosinophils, lymphocytes - 52.0, monocytes - 6.0 ESR - 8 mm/h.

Immunological analysis: IgG 7,1 g/l, IgA 1,3 g/l, IgM 0,893 g/l, IgE 24,8 g/l, CRP 1.4 mg/L, RF 10.7 13 ASO.

Immunophenotyping findings are shown in Table 1.

Culture analysis: streptococcus salivarius 10^3 cfu/ml, sensitivity of linezolid.

Conclusion of bronchoscopy: double interfacial endobronchitis.

Conclusion of computer tomography: focal and infiltrative abnormalities in lungs, enlarged lymph nodes of mediastinum, lung roots and axillary areas weren't detected.

Conclusion of respiratory function: baseline measurements of spirometry - within normal limits, test with ventolin - negative.

MSCT of the sinuses from 03/04/2015. Conclusion: minimal thickening of right department's basic sinus mucous membrane.

Conclusion of ECG: The vertical position of Electric axis of the heart. The rest of pacemaker's migration is from sinus node to right atrium myocardium, moderate bradycardia, acute arrhythmia. Migration of pacemaker sinus node to the myocardium of the right atrium is stored in the tilt test, heart rate increase amounted to 19%.

Following experts are consulted in the department:

- Cardiologist: sinus node dysfunction, pacemaker migration. Dysplasia of connective tissue.

- Neurologist: dysplasia of connective tissue. Dysarthria, coordination violations.

- Endocrinologist: height 114 cm, weight 19 kg. Body mass index - 14 kg / m². Conclusion: Height and weight figures correspond to the average age norm border.

- Otolaryngologist: acute rhinitis, residual effects.

She received basic therapy with Seretide 25/125, also antimicrobial (cefepime, sumamed), symptomatic therapy in the department.

CONCLUSION

Considering complaint, personal history, physical examination and results of examination (family history, infectious medical history, laboratory lymphopenia, transient neutropenia, marked reduction of CD3+, CD4+ CD19+ lymphocytes, the level of serum immunoglobulins within lower limit of the age norm - IgG - 7.1 g/l, IgM - 0.89 g/l, IgA - 1.3 g/l), the child is diagnosed: primary immunodeficiency, unspecified.

Thus, the clinical diagnosis of the pa-

tient was worded as follows: primary immunodeficiency, unspecified. Bronchial asthma, moderate, persistent, preventable. Allergic rhinitis, persistent. Sinus node dysfunction: migration pacemaker. Dysplasia of connective tissue. Dysarthria, coordination violations. Considering that primary immunodeficiency is a genetically determined disease with irreversible dysfunction of the immune system including high risk of severe life-threatening bacterial infections, and autoimmune processes, the girl was shown holding constant prophylactic antimicrobial and regular life-long replacement therapy with immunoglobulin preparations for intravenous immunoglobulin Octagam - dose of 0.4 g/kg for health reasons. Broad-spectrum intravenous antibiotic treatment (cephalosporin 3-4 generations, aminoglycosides, fluoroquinolones, macrolides) is shown during development of infectious process. Seretide is designated as the basic treatment of 25/125 mcg in a 1 dose for 2 times a day, singular 5 mg/day.

Prognosis of disease depends on timely diagnostics of bacterial infections and complex therapy.

References

- Latysheva, E. Primary immunodeficiencies: state of the problem today. LMF-centers in Russia / E. Latysheva // Problems of modern pediatrics. - 2013 - 12 - p.74.
- Kondratenko, I. Primary immunodeficiencies / I. Kondratenko // Medical Immunology. - 2005 - vol.7. - № 5-6. - S.469.
- Khaitov, R. Immunology: textbook - 2nd ed., Revised and ext. / R. Khaitov - Moscow, 2013 - 528 p.
- Khaitov, R. Manual of Clinical Immunology / R. Khaitov, A. Bolgov. - M: Medpraktika - M, 2005. - 232 p.

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CURRENT TRENDS IN THE HEALTH OF CHILDREN AND ADOLESCENTS LIVING IN THE ALDAN DISTRICT

ABSTRACT

The health of children and adolescents living in regions of the Far North is extremely actual. In these regions there is a clear effect on the body unmanageable climatic-geographical and social factors that contribute to the formation of various diseases. Organization of rational nutrition is the most important area in the health of the younger generation. We conducted a study of children and adolescents living in the Aldan district the RS (Ya), which included a comprehensive, in-depth examination of the health status of children, the determination of the elemental composition in biological substrates and questionnaire on nutrition. We diagnosed in children and adolescents more often diseases of the respiratory tract, gastrointestinal disorders and low vision. It was revealed that inadequate provision of macro- and micronutrients may lead to the development of various pathologies. Nutrition of children and adolescents is moderately rational; in addition to natural products they consume unhealthy foods. According to the results we gave practical recommendations.

Keywords: children and adolescents, health status, macro-, microelements, nutrition.

INTRODUCTION

The health of children is one of the most sensitive indicators of changes in environmental quality. Anthropogenic impacts, including excessive intake of heavy metals and the deficit of vitally important chemical elements and adverse climatic and geographical conditions of residence of a significant part of the population of Russia contribute to the reduction of health, primarily in children [1-4, 6, 7]. Deviations of intake of macro- and micronutrients, a violation of their ratios in the diet have a direct impact on the activities of the growing organism and can affect its resistance, adaptation mechanisms, impair mental and physical development, imperfection of homeostasis, metabolic processes, low immunity, chronic various diseases etc. [2, 3, 8, 11].

The Aldan district is located in the South of the Republic of Sakha (Yakutia), occupying one of leading places on volume of gold and probable reserves of gold, is one of the forest districts of the Republic. Around 18 localities, including 13 rural and 2 district towns, 3 village. In General, the Aldan area, the level of natural background radiation in settlements does not exceed the standard (33 MKR/hour) and is registered in the range of 20 mcR/hour, but it was noted that these indicators are still somewhat higher than the average values, and individual stations, Aldan and suburbs have higher values, up to 40 microroentgen/hour [5, 10, 12].

In the Aldan district of the small peoples of the North inhabit the towns, villages and lands of tribal communities. Over the past 20 years, the number of representatives of indigenous minority peoples of the North, who consider their national language native, is steadily declining: the Evenki of 2.5%, even 14% of

Yukaghir – 15.7% and the Chukchi – 25% (Yakutia No. 286, November 19, 2010).

The development of social infrastructure of settlements in places of traditional residence and economic activities of the indigenous peoples of the North depends on many factors such as: sustainable financing and logistics, the improvement of regulatory documents in accordance with the future development of settlements, industrial infrastructure and traditional industries, in this connection, it is necessary to form new views and concepts of the social infrastructure of small settlements. As for the problems of medico-demographic situation and health services in places of compact residence of indigenous peoples (KMN) in the Republic of Sakha (Yakutia), it should be noted that in the structure of total morbidity is in the first place pathology of the respiratory system, in second place, injuries and poisonings, the third of diseases of the digestive system. Moreover, have a tendency of constant increase in the indices of diseases of the nervous system, etc. (Makarov, 2008), the most acute problem of alcoholism.

Thus, the aim of this work is to study the health status of children and adolescents living in the Aldan district.

MATERIALS AND METHODS

We analyzed data on number of diseases registered at patients, living in area of service of the medical organization of child and adolescent population for the year 2016: the city of Aldan, Tommot, S. Khatystyr. Nutrition was studied in 209 schoolchildren in the city of Aldan, the average age was 13.6 of 1.5 (11-17 years). Determination of the elemental composition of biological substrates took place was carried out using atomic emission and mass spectrometry with inductively argon plasma by the

method approved by MOH in especially because ANO «Center for biotic medicine», Moscow (accreditation certificate gsen.EN.CSC.311, registration number in State register POCC RU.0001.513118 on may 29, 2003). Processing of the results was carried out using the package of applied statistical programs SPSS 23.

Results

At analyzing data of appealability for medical aid in medical institutions during 2016 in the nosological structure in the first place were diseases of the respiratory system (58.1%), followed by diseases of the gastrointestinal tract (11.9), the third – eye disease (4.9), the fourth – diseases of the nervous system (3.5), the fifth – infectious and parasitic diseases (2.5), on the sixth – diseases of the skin, subcutaneous fat (1.8), the seventh – diseases of the ear and mastoid process (1.7), on the eighth and ninth – diseases of the blood and the urinary tract (1%) (Table 1).

Diseases of the respiratory system have half (58.1%) of children and adolescents, predominantly acute respiratory infections upper and lower respiratory tract (92.6%). Chronic tonsillitis, hypertrophy of the tonsils of various degrees were diagnosed in 1% of children, chronic bronchitis, bronchial asthma, allergic rhinitis – in 0.6%.

Diseases of the digestive system were observed in 11.9% of children and adolescents. This class of diseases are presented by the pathology of stomach, duodenum – 7.3%, hernias – 3.1, non-infectious enterocolitis – 1.9, and biliary dyskinesia is 2.7%, other diseases of the intestines – in 12.5%.

Pathology of the eye (4.9%) was presented by diseases of the eye muscles, disorders friendly eye movement, accommodation and refraction (myopia,

astigmatism, spasm of accommodation) – 71.6% of children and adolescents, conjunctivitis and keratitis – 24.1%.

Diseases of the nervous system have 3.0% of children and adolescents. Disorders of the vegetative (Autonomous) nervous system (23,4%), episodic and paroxysmal disorders (epilepsy) (7,9%), cerebral palsy (3,8%) and etc. were diagnosed.

Infectious and parasitic diseases was 2.5% of applied children aged 1 year to 14 years. At 9.3% of children identified intestinal infection, 3 (0,7%) children with viral hepatitis.

Diseases of the skin and subcutaneous fat were found in 1.8% of children. Frequent diagnoses were dermatitis contact – 52,5%, atopic – in 22.2%.

Diseases of the ear and mastoid was diagnosed in 1.7% of the child population, of which otitis media – in 46.5%, the outer – 14,3%, hearing loss at 4.8%.

Diseases of the blood and blood-forming organomagnesium in 1.0% of children and adolescents, including in most cases (79.8 per cent) were anemic.

Diseases of the urinary system identified in 1.0% of the child population, one third of them – glomerular, tubulointerstitial kidney diseases, other diseases of the kidney ureter.

Pathology of the endocrine system (0.7 percent) were represented by obesity in half of the cases (45.9 per cent), rarely were detected in thyroid disease of various degrees (27,6%), diabetes mellitus type 1 – 7 children.

In the class of congenital malformations (0.5%) were registered congenital anomalies of the heart (53,5%), nervous (24%) and other systems.

Pathology of the musculoskeletal system (of 0.5%) are established diseases of the joints (juvenile arthritis, reactive arthritis) - 65.7% of children and adolescents, at least – deforming dorsopathies.

Diseases of the circulatory system (0.3 percent), mainly represented by other diseases of the heart and blood vessels (cardiomyopathy).

Of tumors (0,3%) is more often benign, 21.4% of children with malignant forms of (often leukemia, malignant neoplasms of the Central nervous system).

According to appealability to medical facilities revealed that children and adolescents living in the Aldan district, mainly affects viral diseases of the upper and lower respiratory tract, disorders of the gastrointestinal tract, often associated with errors in the diet, loss of vision, vascular dystonia. Occur in children intestinal infection, the phenomenon of dermatitis, otitis. Less likely to be diagnosed anemia,

kidney disease, endocrine pathology, diseases of heart, joints. The prevalence of neoplasms in children and adolescents Aldan area does not exceed the average figures for Russia as a whole.

Based on the analysis of the content of chemical elements in hair of children living on the territory of South Yakutia, revealed high rates of Co, Se, Sn, Zn, and relatively low - Be, Cr, Pb. The children had discovered an insufficient intake of a wide range of elements: Al, Co, Cr, Cu, I, K, Mg, P, Se, as well as high frequency low contents of Al, Cr, K, Mg. For girls was characterized by a high frequency of reduced content in the hair Co (up to 96%), Cu (100%), I, Se and a relatively high content of Fe, K, Mn, Na. The obtained data allowed to visualize the elemental profile of children [9].

Thus, we can conclude that this region of the country prosperous the elemental balance, as evidenced by the provision of essential chemical elements and a relatively low load of elements-toxicants. However, there is uneven provision of the child population of macro - and micronutrients and, consequently, there is a risk of development of various pathologies.

The analysis of questionnaires on frequency of consumption of food has shown that most students eat well (table 2). Every day, more than half of the children in the diet are meat (62,2%), soups (52,2%), fresh fruits (52.2 per cent). Almost half of all schoolchildren in the diet are fresh salads (41,6%), biscuits and cakes (41.1 per cent). The third and more children eat sausages (35.4 per cent), dairy products (34,0%), pasta (35,4%), sandwiches with cheese and sausage (32,5%), cereals (30.1 per cent), butter (30.1 per cent), eggs (28,2%), chocolates (39,2%), drink juices (38,3%), fruit drinks, compotes and jellies (34%), milk

(28,7%), coffee (28.7 per cent). A small number of students every day in the diet are canned meat (13.4 per cent), rustic cream (22,1%), cakes and pancakes (19,6%), sweet drinks (17.2 per cent), cheese (15.8 per cent), cakes and pies (12.9 percent), caramel and marmalade (19,1%), seeds and nuts (15.3 per cent). The chips provided - at 11.5%, and instant noodles (instant noodles, Rolton) – 11.5% crackers bags – 7.2% of pupils. Almost all children and adolescents eat every day bread and drink pure water (Table 2).

In general, the school meals you could say are moderately rational, as in daily diet of natural foods there are also foods that contain digestible carbohydrates, refined sugar, TRANS fats, colors, flavors.

CONCLUSION

Thus, children and adolescents living in the Aldan district, mostly suffer from viral respiratory diseases, disorders of the gastrointestinal tract, often associated with errors in the diet, loss of vision, vascular dystonia. Register in the children the phenomena of dermatitis, diseases of the ear, anemia, kidney disease, endocrine pathology, diseases of heart, joints.

We noted the uneven provision of macro- and microelements in children that can lead to the development of various pathologies.

In general, the nutrition of children and adolescents moderately rational, in addition to natural products, children and adolescents take in food products containing easily digestible carbohydrates, trans - fats, colors, flavors.

To reduce the incidence and improve the health of children and adolescents there are required wellness activities, including lectures and interviews for children and their parents, classroom hours on the correct healthy eating lessons for

Table 1
Distribution of children by types of diseases

types of diseases ICD-10	2016 г.	
	абс.	%
I. Infectious and parasitic diseases	634	2,5
II. Oncology diseases	86	0,3
III. Blood diseases	248	1,0
IV. Endocrine diseases	178	0,7
V. Mental diseases	0	0
VI. Nervous diseases	760	3,0
VII. Diseases of the eye	1251	4,9
VIII. Diseases of the ear	440	1,7
IX. Cardiovascular diseases	88	0,3
X. Diseases of the respiratory system	14700	58,1
XI. Diseases of the gastrointestinal system	3024	11,9
XII. Diseases of the skin, subcutaneous tissue	463	1,8
XIII. Diseases of the musculoskeletal system	217	0,9
XIV. Diseases of the urinary system	248	1,0
XVII. Congenital malformations	157	0,6

Table 2

Frequency foods

How often do You consume the following foods, drinks and meals: Products	Every or almost every day	A few times a week	Less than 1 time per week	Do not eat very
Products				
1. Porridge (any cereal, including rice, semolina, buckwheat, oats, etc.)	30,1	32,5	29,7	7,7
2. Soups (any)	52,6	37,8	9,1	0,5
3. Dairy products (kefir, yogurt, swaret, etc.)	34,0	39,7	22,5	3,8
4. Cheese/curd, dish of cottage cheese	15,8	32,1	34,0	18,2
5. Fresh fruit	52,2	37,3	10,0	0,5
6. Fresh vegetables and salads fresh vegetables	41,6	42,1	12,4	3,8
7. Carrots	31,1	31,6	28,7	8,6
8. Beet	12,0	28,2	35,9	23,9
9. Cabbage	23,4	34,9	28,7	12,9
10. Zucchini	7,2	11,5	32,5	48,8
11. Sweet pepper	17,7	23,0	28,7	30,6
12. Bread	78,9	14,4	3,3	3,3
13. Meat dishes	62,2	31,6	5,3	1,0
14. Fish dishes	18,2	40,2	34,0	7,7
15. Eggs and egg dishes	28,2	37,3	27,3	7,2
16. Sausage	35,4	38,3	19,1	7,2
17. Chips	11,5	18,7	39,7	30,1
18. Crackers bags	7,2	19,6	35,9	37,3
19. Sandwiches with cheese, sausage, etc.	32,5	44,0	16,7	6,7
20. Cookies, gingerbread	41,1	38,8	15,3	0,5
21. Chocolate, candy	39,2	44,0	13,4	3,3
22. Caramel, marmalade, lollipops, marshmallows	19,1	39,7	30,1	11,0
23. Cakes	12,9	27,3	50,2	9,6
24. Pies, pancakes	19,6	38,3	33,5	8,6
25. Pasta	35,4	42,1	19,6	2,9
26. Stew	13,4	29,2	30,1	26,8
27. Butter	30,1	29,7	22,5	17,7
28. Cream rustic	22,1	22,0	32,1	24,8
29. Doshirak, Rolton	11,5	14,4	36,8	37,3
30. Seeds, nuts	15,3	31,1	32,5	21,0
Drinks				
31. Milk	28,7	21,5	21,1	28,7
32. Coffee	28,7	21,5	21,1	28,7
33. Juices	38,3	32,1	23,9	5,7
34. Morse	34,4	30,1	27,3	8,1
35. Compote, jelly	31,6	21,1	26,3	1,0
36. Tea	86,1	10,5	1,4	1,9
37. Water clean	84,7	10	3,3	1,9
38. Sweet carbonated water	17,2	18,7	38,8	25,4

General physical training.

References:

1. Agadzhanjan N.A., Marachev A.G., Bobkov G.A. Ekologicheskaja fiziologija cheloveka [Agadjanyan N.A., Marachev A.G., Bobkov G.A. Ecological physiology of the man], M.: KRUK, 1999, 398 s. [M.: KRUK, 1999, 398 p.]
2. Agadzhanjan N.A., Petrova P.G. Chelovek v usloviyah Severa [Agadjanyan N.A., Petrova P.G. Man in conditions of North], M.: AGMA, 1996, 179 s. [M.: AGMA, 1996, 179 p.]
3. Borisova N.V., Petrova P.G. Ekologo-fiziologicheskoe obosnovanie formirovaniya funktsional'nykh rezervov u korenykh zhitelej Respubliki Saha (Jakutija)

[Borisova N.V., Petrova P.G. Ecology-physiological substantiation of formation of functional reserve of inhabitants of Republic Sakha (Yakutia)], Nauka i obrazovanie, №2 (50), 2008, S. 55-61. [Science and education, №2 (50), 2008, P. 55-61.]

4. Gorbaney S.A. Majmulov V.G., Vorob'eva L.V. Monitoring sredy obitaniya s uchetom prirodnykh i tehnogennykh faktorov [Gorbaney S.A., Maimulov V.G., Vorob'eva L.V. Monitoring of environment in view of natural and technogenic factors], Materialy X Vserossiyskogo s'ezda gigienistov i sanitarnykh vrachej (kniga II), M., 2007, S. 634-638. [Materials of the X All-Russia congress of sanitary doctors (book II), M., 2007, P. 634-638.]

5. Doklad ob ekologicheskoy situatsii v Respublike Saha (Jakutija) za 2015 g. [Report on anecological situation in Republic Sakha (Yakutia) for 2015].

6. Ermakova N.V. Ekologicheskij portret cheloveka na Severe i voprosy etnicheskoy fiziologii [Ermakova N.V. Anecological portrait of the man in North and questions of ethnic physiology] Materialy XI Mezhdunarodnogo simpoziuma «Ekologo-fiziologicheskie problemy adaptatsii», M.: Izd-vo RUDN, 2003, 183 s. [Materials of the XI International symposium «Ecology-physiological problems of adaptation», M.: RUPP, 2003, 183 s.]

7. Markova S.V., Petrova P.G., Borisova N.V., Antipina U.D., Pshennikova E.V., Egorova G.A. Zdorov'e i elementnyy status detej Juzhnoj Jakutii [Markova S.V., Petrova P.G., N.V. Borisova, Antipina U.D., Pshennikova E.V., Egorova G.A. Health and elemental status of children in southern Yakutia], Jakutskij medicinskij zhurnal, Jakutsk, 2012, №2, S. 86-88. [Yakut medical journal, Yakutsk, 2012, № 2, P. 86-88.]

8. Zdravoohranenie v Rossii 2015: Stat. sb. / pod red. Dianova M.A., Nikitina S.Yu. [Health care in Russia, 2015: Stat. SB / edited by Dianova M.A., Nikitin S.Yu.] Rosstat, M., 2015, 174 s. [Rosstat, M., 2015, 174 s.]

9. Kaznacheev V.P. Problema adaptatsii cheloveka [Kaznacheev V.P. A problem of adaptation of the man], Nekotorye itogi i perspektivy issledovaniy, Novosibirsk, 1978, 56 s. [Some results and perspective of researches, Novosibirsk, 1978, 56 p.]

10. Nefedov B.N. Nekotorye ekologo-tehnologicheskie riski sozdaniya krupnykh gidrotehnicheskikh ob'ektov na severe Sibiri [Nefedov B.N. Some ecology-technological risks of creation of large hydraulic engineering objects in North of Siberia], Materialy IX Mezhdunarodnogo simpoziuma po razvitiyu holodnykh regionov, Jakutsk, 2010, 42 s. [Materials of the IX International symposium on development of cold regions, Yakutsk, 2010, 42 p.]

11. Panin L.E. Gomeostaz cheloveka v usloviyah vysokikh shirot [Panin L.E. Homeostasis of the man in conditions of high latitudes], 13 Mezhdunarodnyy kongress po pripoljarnoy medicine, 12-16 iyunya 2006 g., Novosibirsk, 2006, S. 12-13. [Materials of XIII International congress on Polar medicine, June 12-16 2006, Novosibirsk, 2006, P. 12-13.]

12. Solomonov N.G., Egorov I.Ja., Chernjavskij V.F. i dr. Sovremennoe sostojanie i jepidemiologicheskij prognoz po prirodno-ochagovym i osobo opasnym infektsijam na territorii Jakutiiv usloviyah

intensivnogo promyshlennogo regiona (megaproekty) i global'nogo izmeneniya klimata [Solomonov N.G., Egorov I.Ya., Chernyavsky V.F. Modern condition and epidemiology the for ecostone specially dangerous infections in territory of Yakutia in conditions of intensive industrial region (megaprojects) and global change of a climate], Materialy IX Mezhdunarodnogo simpoziuma po razvitiyu holodnyh regionov, Yakutsk, 2010, 228 s. [Materials of IX the International symposium on development of cold regions, Yakutsk,

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ORIGINAL RESEARCHES

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COMPLIANCE TO MEDICATION OF PATIENTS WITH PREVIOUS Q - POSITIVE MYOCARDIAL INFARCTION

ABSTRACT

In the article the issue of compliance to medication treatment of patients with previous Q - positive myocardial infarction within one year after discharge from the hospital is considered. 113 persons were included in the research. The control was conducted after 6 and 12 months. Lower compliance to treatment was noted concerning all groups: β -adrenergic blockers, APF/ARA inhibitors, double antithrombotic therapy, with a greater proportion of reducing statins (50 %).

Keywords: secondary prevention, compliance.

INTRODUCTION

According to the WHO estimation, over 17 million people die from cardiovascular diseases (CVD) annually in the world. It is expected that CVD mortality rate will reach about 25 million people a year in the world by 2020 [2,6]. In Russia the death rate from blood circulation illnesses remains high and its share in the total mortality of the population for the last years has amounted to 59,1 % [1]. The current situation in Russia has been characterized by the high mortality rate in the country for last 15 years at the expense of young, able-bodied and reproductive age. According to many researchers, frequency rate of new cardiovascular complications and the mortality cases is noted to be the highest within the first 3 months after myocardial infarction (MI). Both patients with previous acute myocardial infarction and even patients discharged for further ambulant therapy have high risk of cardiovascular death and repeated MI [4,7,9].

The insufficient prophylaxis oriented on preventing the development and progression of the disease can be one of the reasons of high mortality rate from CVD and repeated MI in our country, it being based on the scientific concept of risk factors and struggle against them [5]. The secondary prevention is impos-

sible without regular medication intake proved the efficiency in numerous clinical researches [3].

Aim: to study the compliance to medication treatment of patients with previous Q-positive myocardial infarction, at the level of primary health care.

MATERIALS AND METHODS

The work included data from the clinical survey 'Secondary prevention of patients with previous Q-positive myocardial infarction'.

The set of clinical samples was conducted in the department of urgent cardiology with a group of intensive therapy (DUC and GIT) of the Regional vascular centre (RVC) Republican hospital №2 - Centre of emergency medical care. The total amount of patients with Q - to positive MI, hospitalized since January 2013 till July, 2014 included 177 patients. Of them 64 patients withdrew from participation in the given research that states obviously their low compliance to the treatment. In this connection, 113 patients with Q - positive acute myocardial infarction from Yakutsk city were included in the survey. All patients signed the informed consent. The research report was approved by the local Ethical committee. Of 113 patients the transdermal coronary intervention was conducted at 99 (87,6 %).

Criteria for inclusion of patients in the survey:

- presence of Q-positive MI clinical and electrocardiographic signs;
- consent to the survey.

Criteria for exception of patients from the survey: development of lethality during hospitalization; acute cerebrovascular event within the last 12 months; comatose state; comorbidities: malignant tumor; nonresident patients; withdrawal from the survey.

For the division of patients into groups WHO age criteria were applied: from 25 till 44 years - young age, 45 - 59 years - middle age, 60 - 74 years - senior age, 75 - 89 years - senile age, 90 years and over - long-livers [5].

I group of able-bodied patients till 59 years consisted of 60 persons. 53 patients were included in II group at the age 60 and more senior - patients of retirement age.

AMI was diagnosed according to recommendations of the European society of cardiologists, 2012, based on clinical data, electrocardiographic results, significant increase in the level of cardiac enzymes in the blood and asynergy signs on the echocardiography.

According to the treatment standard of sharp coronary syndrome, the inpatients with AMI underwent the therapy including

nitrites, unfractionated or low-molecular heparin (under control APPT), preparations blocking β -adrenergic receptors, disaggregants, inhibitory angiotensin-converting enzyme, calcium antagonists and statins. Transdermal coronary interventions were conducted immediately after performing diagnostic transdermal coronary intervention (TCI).

When discharged the patients were recommended to carry out preventive actions, to change lifestyle as well as to take all the medical preparations.

The evaluation (control) of the general state and outcomes was conducted in 6 and 12 months later. The repeated examination after discharge included the following methods of the survey: electrocardiogram, EchoCG, control lipid profile tests, ALT, AST, blood sugar, urea and creatinine in blood serum.

Statistical analysis. Statistical data processing was conducted by means of the software package IBM SPSS statistics 19. The normal-theory check of quantitative signs in both groups was carried out with the use of Kolmogorov-Smirnov and Shapiro-Wilk's criteria. As the distribution of quantitative signs did not submit to the normal theory measures of central tendency of dispersion were presented in the form of a median and interquartile range in a format of Me (Q25; Q75). For statistical significances between groups nonparametric methods were used: Mann-Whitney method for 2 independent groups, a contingency table, Pearson's chi-squared test. Distinctions were statistically significant at $p < 0,05$.

RESULTS AND THEIR DISCUSSION

The majority of patients of I group were males (81,7 %) and the middle age of the patients was equal to 52 [47,3; 56].

In II group, at mostly elderly patients no gender distinctions were noted and the middle age has made 64 [61; 70,5] years. According to literary data the MI higher prevalence rate is frequently revealed at men till 60 years, there as this parameter is identical at both male and female patients aged 60 and over, as obtained in our research.

After discharge from the hospital the control survey after 6 months revealed essential reduction of a share of the patients, who continued taking the appointed preparations. To some extent reducing the frequency of admission included preparations of all basic groups (Table 1): beta blockers, APF/ARA inhibitors, clopidogrel / brilinta. On 6th month after discharge there was decrease in frequency of clopidogrel / brilinta on average 14 %, β - blockers 25 % in both groups, APF/ARA inhibitors 31 % in I group and on 28 % in II group. The greatest 'loss' has been registered in the relation of statins as almost every second patient in both groups stopped taking the medication from this group.

The second control survey in 12 months has found out a little increase of the number of patients taking such recommended preparations as clopidogrel / brilinta, β -blockers and statins (Table 1). We consider that positive dynamics on the medication taking has probably been due to repeated consultation and repeated appointment of preparations on 6th month. But at the same time in comparison with the appointed therapy after discharge and in 12 months later, there was low compliance to the therapy remained. The reduction in the frequency of taking the preparations of all basic groups: clopidogrel / brilinta on 15 % at

patients of I group and 16 % at patients of II group, β - blockers on 7 % and 16 %, APF/ARA inhibitors on 31 % and 26 %, statins on 14 % and 18 %, accordingly was noted.

According to the literary data progressive cardiac insufficiency at patients with previous Q-positive MI is noted despite the appointed therapy. In our work we have obtained similar outcomes when analyzing the patients, in these connection diuretics have been added to the treatment. So, for 12 months in both groups the number of taking diuretics increased. Due to the deterioration of IHD clinical course as the increase in exertional angina functional class, the number of the patients taking nitrites has increased, the share of taking nitrites among the patients of elderly group has sharply increased (Table 1).

When analyzing the withdrawal of the medicament treatment two principal causes have been noted: independent refusal and doctor's recommendation. The more detailed study of refusal causes in the groups of preparations revealed that among all cases the causeless independent withdrawal from β -blocker was in 94 % of cases in I group, at 86 % in II group, APF/ARA inhibitors in 82 % and 50 % of the cases, from clopidogrel / brilinta in 80 % and 25 %, from statins in 81 % and 68 % accordingly. It is necessary to note that 66,5 % of patients of retirement age have independently cancelled clopidogrel / brilinta because of its costly price.

Due to hypotonia APF/ARA inhibitors were cancelled by doctor's recommendation in I group - 9,1 % and in II second - 12,2 %.

Of all the analyzed patients, 13 patients (21,6 %) from the I group and 12

Table 1

Frequency of taking medicaments at the moment of discharge and under the control in 6, 12 months after previous Q - positive myocardial infarction

Preparations	Recommended when discharged (1)		P	Intake after 6 months (2)		p	Intake after 12 months (3)		P	P1-2		P1-3		P 2-3	
	Irp. n=60 (%)	IIrp. n=53 (%)		Irp. n=58 (%)	IIrp. n=50 (%)		Irp. n=58 (%)	IIrp. n=49 (%)		Abled	Retired	Abled	Retired	Abled	Retired
Aspirin	60 (100)	53 (100)	*	58 (100)	52 (100)	*	58 (100)	49 (100)	*	*	*	*	*	*	*
Zilt / brilinta	60 (100)	53 (100)	*	49 (86,0)	43 (86)	NS	49 (84,5)	41 (83,7)	NS	<0,05	<0,05	<0,05	<0,05	NS	NS
B-βλοxxep	60 (100)	51 (96,2)	NS	43 (74,1)	38 (76)	NS	54 (93,1)	41 (83,7)	NS	<0,05	<0,05	<0,05	<0,05	<0,05	NS
PAAC inhibitors/Sartans	58 (96,7)	51 (96,2)	NS	40 (69)	36 (72)	NS	40 (69)	36 (73,5)	NS	<0,05	<0,05	<0,05	<0,05	NS	NS
Statins	60 (100)	53 (100)	*	29 (50)	23 (46)	NS	50 (86,2)	40 (81,6)	NS	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05
Diuretics	13 (21,7)	20 (37,7)	NS	18 (31)	23 (46)	NS	25 (43,1)	26 (53,1)	NS	NS	NS	<0,05	NS	<0,05	NS
Nitrites	5 (8,3)	11 (20,8)	NS	6 (10,3)	16 (32)	<0,05	8 (13,8)	18 (36,7)	<0,05	NS	NS	NS	NS	NS	NS

Notes: NS – no significant statistical distinctions

patients (22,5 %) from the II were repeatedly hospitalized concerning repeated ACS or XCH decompensation in the course of 12 months. At the same time there were also lethal outcomes during the study: from I group 2 patients (3,3 %) and 4 patients (7,5 %) from II group. Of them 3 people died in a hospital with the diagnosis of repeated myocardial infarction in the first 6 months, and 3 persons died at home because of sudden cardiac death. When comparing «final points» in the groups no statistically significant distinctions (Table 2) were observed.

CONCLUSION

When discharged from the hospital all patients got recommendations about changing lifestyle, modification of risk factors as well as taking the medications: double antithrombotic therapies, β -blockers, APF/ARA inhibitors, statins and diuretics.

At the control after 6 and 12 months the majority of patients have independently withdrew a number of preparations. Especially it is necessary to point out the low compliance to taking statins. The majority of patients with previous myocardial infarction refused from the recommended treatment independently without any cause. The double antithrombotic therapy was cancelled by the senile aged patients in most cases due to costly price of the medicaments.

In connection with the withdrawal of IHD medicaments the increase of functional class of exertional angina and XCH is noted as well as repeated hospitalization of the patients concerning ACS or XCH decompensation, some lethal outcomes are registered. According to the literary data the discontinuation of medicament therapy in the case of previous MI increases the cardiovascular death risk: the withdrawal of three preparations (aspirin, β - blockers, statins) - OP 3,81; one preparation (aspirin - OP 1,82; β - blocker - OP 1,96; statins - OP 2,86) [8].

The results obtained by us testify to the low compliance of patients with myocardial infarction to the recommended treatment and the insufficient work on secondary prevention of the recurrent myocardial infarction at the level of primary health care.

References

1. Bokeriya L.A. Al'ternativnye metody ocenki rasprostranennosti serdechno - sosudistyh zabol'evanij i ocenki potrebnosti v medicinskih tekhnologiyah [Alternative methods of estimating cardiovascular diseases and requirement for medical technologies], Zdravoohranenie [Health care], 2006, №2, P. 37 - 44.

Cardiovascular complications at patients with previous Q – positive myocardial infarction, in the course of 12 months

Data (n- 107)	I group		II group		P
	Abs. numbers	%	Abs. numbers	%	
Died	2	3,3	4	7,5	0,321
Repeated hospitalization due to ACS	5	8,3	8	16,3	0,242
Repeated hospitalization due to XCH	8	13,3	4	7,5	0,342

2. Efanov A.Y. Priverzhennost' pacientov, perenesshih ostryj koronarnyj sindrom, k modifikacii obraza zhizni, a takzhe priemu osnovnyh grupp medikamentoznyh preparatov [Compliance of patients with previous coronary syndrome, to modifying a way of life, as well as taking main groups of medicaments], Sbornik materialov okruzhnoj nauchno-prakticheskoy konferencii «Proekt YUgra-Kor v ramkah realizacii nacional'nogo proekta v sfere zdavoohraneniya na territorii Hanty-Mansijskogo avtonomnogo okruga-YUgry» [The collection of materials of district scientific-practical conference 'Yugra-Kor project within the national project realization in health care in the territory Hanty-Mansiysk independent district Yugra'], Surgut, 2010, P. 37 40.

3. Ehrlich A.D., Gratsiansky H.A. et al. Registr ostryh koronarnyh sindromov REKORD. Harakteristika bol'nyh i lechenie do vypiski iz stacionara [The Register of acute coronary syndromes RECORD. The characteristic of patients and treatment prior to hospital discharge], Kardiologiya [Cardiology], 2009, №7, P. 4-12.

4. Harchenko V. I, Virin M. M, Koryakin M. V, et al. Starenie naseleniya Rossii – odna iz prichin rosta smertnosti ot osnovnyh boleznej sistemy krovoobrashcheniya [Ageing of the population of Russia as one of the causes of increased mortality from basic circulatory system diseases], Problemy social'noj gigieny, zdavoohraneniya i istorii mediciny [Problems of social hygiene, public health care and history of history], 2006, №3, P.8-16.

5. Ehrlich A.D. Rezul'taty sheshtimesyachnogo nablyudeniya za bol'nymi s ostrymi koronarnymi sindromami v Rossijskom registre REKORD [Outcomes of six-monthly monitoring of patients with acute coronary syndromes in the Russian register RECORD], Kardiologiya [Cardiology], 2011, №12, P. 11-16.

6. Efanov A.Y., Nizamova D.F., Dorodnina E.F., Shalaev S.V. Effektivnost' korrekcii modifiziruemykh faktorov riska IBS sredi bol'nyh, perenesshih os-

tryj koronarnyj sindrom. Priverzhennost' k terapii [Correction efficiency of IHD modified risk factors among patients with acute coronary syndrome. Compliance to therapy], Materialy «Chelovek i lekarstvo [Materials 'Man and medicine. The Ural Mountains], Tumen, 2010, P. 80.

7. Braun-wald's heart disease: a textbook of cardiovascular medicine, 9th ed./Bonow R., Mann D., Zipes D., Libby P. et al. - Philadelphia: Saunders-Elsevier, 2012.

8. Impact of medication therapy discontinuation on mortality after myocardial infarction./Ho PM1, Spertus JA, Mousoudi FA, Reid KJ, Peterson ED, Magid DJ, Krumholz HM, Rumsfeld JS.//Arch Intern Med. 2006 Sep 25; 166 (17):1842-7.

9. Underestimated and under-recognized: the late consequences of acute coronary syndrome (GRACE UK-Belgian Study). Eur Heart J./Fox KA, Carruthers KF, Dunbar DR, et al. - 2010; 31:2755-2764.

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EFFECT OF UTERINE FIBROIDS ON HORMONAL PARAMETERS IN WOMEN OF ADVANCED REPRODUCTIVE AGE

ABSTRACT

The aim of this study was to investigate the level of steroid and gonadotropin-releasing hormone in women of reproductive age older to identify early markers predicting uterine fibroids. The study included 140 patients aged 35-55 years with uterine myoma, corresponding in size 6-10- and week-aged pregnancy with interstitial, submucosal and subserous localization of uterine fibroids. The main group included 60 patients treated with hormonal therapy, in the form of the drug, "Ulipristal acetate". There were 40 patients in comparison group (II group), including 12 patients taking gestagen ("Djufaston", "Utrozhestan"), at 10 VMS-"Mirena" for more than 1 year, 18 patients received hormone therapy with different drugs. The control group (III group) consisted of 40 patients, which were carried out various surgical interventions on the occasion of the diagnosis "Uterine fibroids." We have recognized "Ulipristal acetate" ("Esmiya", Hungary), as the most effective drug, for the conservative treatment of uterine fibroids. An in-depth study of the clinical and laboratory, including hormonal parameters will improve the tactics of directing patients, develop indications and contraindications for the use of the drug, increase their efficiency, develop an algorithm for the treatment of patients with a diagnosis of "uterine fibroids."

Keywords: uterine fibroids, hormonal parameters, ulipristal acetate, hormone therapy.

Despite numerous studies of domestic and foreign authors, devoted to the diagnosis and treatment of uterine fibroids, the problem still remains not fully solved [1,3]. Uterine fibroids are diagnosed in 20-25% of women of reproductive age and over the age of 40 years, it is diagnosed in 40-50%.

The development of uterine fibroids – is a hormone-dependent process. Numerous studies confirm that one of the most important factors affecting the molecular genetic processes of proliferation, apoptosis, hypertrophy and hyperplasia and uterine myometrium cells are estrogen and progesterone [2].

The most important aspect of the etiology of uterine fibroids – the initiator of tumor growth - remains unknown, although there are theories of initiating its tumorigenesis. One of them confirms that the increase in the level of estrogen and progesterone leads to increase in mitotic activity, which can promote the formation of fibroids, increasing the likelihood of somatic mutations. Along with traditional views on the leading role of estrogen in the pathogenesis of hormone-dependent diseases, it is reviewed the relation to progesterone in recent years, as a stimulator of tumor growth [8]. An importance is attached to the role of tissue receptors of steroid hormones, synthesized under the influence of many factors: the number and ratio of sex hormones, the menstrual cycle, the degree of pathological lesion of body, metabolic disorders [7].

Knowing the factors of predisposing allows an understanding of the etiology of uterine fibroids and to develop preventive measures.

Purpose of the study. In this regard, we aim to assess the level of steroid

and gonadotropin-releasing hormone in women of advanced reproductive age to detect early prediction markers of uterine fibroids.

Materials and methods. The survey included 140 patients in the age from 35-55 years, with uterine fibroid, corresponding to size of 6-10- and week-long pregnancy with interstitial, submucosal subserous localization of uterine fibroids.

The work was performed at the Department of Obstetrics and Gynecology 1, of the Azerbaijan Medical University. To achieve this goal, we have examined 140 patients with uterine fibroids in the period from 2012 to 2015.

Exclusion criteria: young and average reproductive age, abnormal uterine bleeding, suspicion to endometrial hyperplastic processes, organic pelvic pathology, concomitant extra genital pathology.

The main group consisted of 60 patients treated with hormonal therapy, in the form of the drug, "Ulipristal acetate" ("Esmiya" Gedeon Richter, Verngiya). The drug was administered on the first day of the menstrual cycle on a daily basis, continuously at a dose of 5 mg. The course dosing of the drug was 1-2 courses for 3 months. Among the surveyed women, 45 of them took the drug during the 1st course, 15 patients took the drug during the 2nd course. The comparison group (II group) included 40 patients, including 12 patients taking gestagens ("Djufaston", "Utrozhestan"), at VMS "Mirena" for more than 1 year, 18 patients received hormone therapy with different drugs. The control group (III group) consisted of 40 patients, which were carried out various surgical interventions on the occasion of the diagnosis "Uterine fibroids."

Among the examined ones it was con-

ducted a questionnaire survey, analysis of medical records, general clinical and gynecological examination.

To evaluate the hormonal status before treatment, during the treatment course and the subsequent menstrual cycle in different phases of the cycle: in follicular phase, periovulation period and average luteal phase – it was conducted determination of estradiol (E), progesterone (PG), follicle-stimulating hormone (FSH), luteinizing hormone (LH), prolactin (PRL) and cortisol (K). Determination of these hormones in the blood plasma was carried out using a radioimmunoassay by using Bio-Rad Laboratories Inc. (USA) company standard sets for radioisotope analyzer Immunochem-2100 Microplate Reader using the procedure recommended by the manufacturer.

Results and discussion. Based on the data of comprehensive survey in the study group, under the influence of conservative treatment, after 3 months of treatment, the number of complaints of pain was reduced in the lower abdomen and sacrum and lumbar spine in almost all patients in the study group. The pain decreased in 7.5% of women in the comparison group taking the treatment, and in the control group, positive dynamics was insignificant - in 5.7% of the patients.

Violation of the menstrual cycle returned to normal condition in the main group in 40% of cases, the duration of menses reduced by an average of 2.2 ± 0.5 days, menstrual blood loss decreased by 17%. In the comparison group, the recovery cycle was observed in 52.2% of patients, cycle time decreased by an average of 1.5 ± 0.5 days, blood loss decreased by 9.2%. However, in the main

group, the effect of blood loss lowering was significantly higher than in the comparison group.

Dysuric disorders and constipation in the study group and the control group decreased slightly, but in the control group it remained unchanged.

Complaints about the anxiety in the main group were observed in 55% ($p < 0,05$), irritation - 33.3%, instability in mood - in 51.7% of patients. In the comparison group, after the treatment course, which included diet and gestagens, the complaints of anxiety and irritability were without any significant changes. In the control group, the psycho-emotional state had a tendency to increase.

At the end of 12 months treatment, the study group showed improvement of mental and emotional status: complaints on anxiety were observed in 30%, irritability - 15%, mood instability in 16.7%.

Clinical examination includes a detailed examination of the nature of the menstrual cycle, namely the volume of long-term blood loss in patients with uterine fibroids.

It was determined the level of estradiol (the E), progesterone (the P), free testosterone (T), prolactin (nR), follicle-stimulating (FSH) and luteinizing hormone (completion LH), cortisol (K) in the first, sixth months and after 12 months of

patients follow-up.

The presented data show that in the majority of patients, menstruation was abundant, in all groups. Scanty menstruation was observed in only 65%, 2.5%, 12.5%. Also different was the length of menstrual bleeding. Thus, in 61.7%, 67.5% and 42.5%, menstruation lasted more than 7 days.

After 12 months of treatment, the average content of estradiol in the main group maintained the reduction dynamics from the initial indicators, in the I and VI months ($p_{I-VI} < 0,001$, $p_{VI-XII} < 0,005$).

It should be noted that in the 6th months, there was a significant decrease in this indicator by 1.2 times compared to the beginning of treatment. The concentration of estradiol in the comparison group also tends to decrease, but not significantly at 70 units. Analyzing the data table showed that the first and second studied groups, there was a statistically significant increase in the level of estradiol - 17 β serum. Among the patients who received "Ulipristal acetate", the average content of this indicator decreased from 323.73 to 113,4 + 5,91 ($p < 0,001$), for the studied who were treated with combined oral contraceptive estradiol 296.15 to 210.92 nmol / l ($p < 0,001$).

The study of progesterone concentration showed a progressive increase in

progesterone in the main group and the comparative group of survey ($p < 0,001$). (21.51 + 0.48 and 20.38 + 1.05 compared with 5.71 + 0.32 and 8.02 + 0.66).

In carrying out surgery in the control group, the content of Pr in the VI month increased 15,06 + 0,41 ($p < 0,001$), but in the 12th months almost three times it was decreased 5,23 + 0,35 ($p_{IV-XII} < 0,01$ and $p_{I-XII} < 0,01$). The values of the indicators after the treatment were significantly higher compared with the comparison group.

Thus, we found significant reduction of estradiol - B17 and increase the concentration of progesterone in the main group, which corresponds to the data of various authors.

Our studies have shown that taking the drug "Ulipristal acetate" (Esmiya) causes significant changes in the concentration of progesterone and estradiol, approaching the performance of healthy women, promotes regression of fibroids.

The content of prolactin was significantly reduced in patients receiving the drug "Ulipristal acetate" from 24.46 + 0.83 down to 17,27 + 0,47 ($p_{I-VI} < 0,001$). In the second group, it was observed positive dynamics of prolactin in the blood, but the changes were not statistically significant ($p_{I-VI} < 0,001$).

In the study of the concentration of free testosterone (T) in the study and control groups, in the I and XII months, we found no significant changes. However, among the patients of the comparison group, there was a significant increase in testosterone from 1.73 to 2.94 + 0.19.

One of the fundamental risk factors for fibroids development is stress, which manifests itself in violation of the cortisol hormone secretion. The level of cortisol of the main group patients before the treatment was 454.38 + 0.33 and in the VI month, the concentration already decreased down to 377,50 + 7,99 ($p_{I-III} < 0,001$). A year after the start of treatment, the respondents noted a reduction down to 252.45 + 6.50, ie, the findings were consistent with standard indicators. When comparing with the clinical presentation 1, there is a significant improvement in the study group patients on the part of the psycho-emotional background.

The mean FSH content was significantly reduced in the case of "Ulipristal acetate" 36.77 + 0.38 to 18.76 + 0.21 and after a 36.31 + 0.52 to 28.32 + 1.55.

Thus, a complete or partial clinical response to taking "Ulipristal acetate" is observed in the majority of patients of the main group. The downward trend of oestradiol-17 and progesterone increase is a reflection of the normalization of

Hormonal study in the patients with uterine fibroids (study group)

Hormones	Frequency of research		
	1 month	6 month	112 month
Estradiol (n = 60)	323,73 \pm 10,74 302,25-345,21	201,13 \pm 9,08 182,97-219,28 $P_{I-VI} < 0,001$	113,4 \pm 5,91 101,59-125,21 $P_{I-XII} < 0,001$ $P_{VI-XII} < 0,05$
Progesterone (n = 60)	5,710 \pm 0,32 5,07-6,35	16,42 \pm 0,31 15,79-17,04 $P_{I-VI} < 0,001$	21,510 \pm 0,48 20,54-22,47 $P_{I-VI} < 0,001$ $P_{VI-XII} < 0,001$
Testosteron (n = 60)	1,980 \pm 0,09 1,80-2,15		1,7 \pm 0,06 1,57-1,82 $P_{I-XII} < 0,05$
Prolactin (n = 60)	24,46 \pm 0,83 22,79-26,12		17,27 \pm 0,47 16,32-18,22 $P_{I-XII} < 0,001$
FSH (n = 60)	35,89 \pm 0,50 34,88-36,90	23,26 \pm 0,17 22,92-23,61 $P_{I-VI} < 0,001$	13,82 \pm 0,34 13,15-14,49 $P_{I-XII} < 0,001$ $P_{VI-XII} < 0,001$
LH	45,53 \pm 0,69 44,15-46,91	26,59 \pm 0,30 25,88-27,19 $P_{I-VI} < 0,001$	13,35 \pm 0,50 12,33-14,35 $P_{I-XII} < 0,001$ $P_{VI-XII} < 0,001$
Cortisol (n = 60)	454,38 \pm 0,33 433,72-475,05	377,50 \pm 7,99 361,52-393,48 $P_{I-VI} < 0,001$	252,45 \pm 6,50 239,45-265,45 $P_{I-XII} < 0,001$ $P_{VI-XII} < 0,001$

hormonal balance. On the background of the drug treatment it was significantly reduced the frequency of menstrual disorders, the psycho-emotional disorders, in this, a more expressed clinical benefit was observed in patients of the main group.

Changes in the indicators of hormonal status, discovered by us in case of dynamic observation regardless of the choice of therapy in the examined patients, confirm the importance of studying in hormonal balance, as a method for early diagnosis of uterine fibroids.

As early diagnostic criteria at the pre-clinical stage of uterine fibroids detection, we suggest using indicators Pg levels, E2, K in the peripheral blood of high-risk groups on the development of uterine fibroids.

Currently, the most effective drug for conservative treatment of uterine fibroids is "Ulipristal acetate" ("Esmiya", Hungary). Several publications of foreign researchers also confirmed the high efficiency of this method.

An in-depth study of the clinical and laboratory parameters, including hormonal parameters, will improve the tactics of directing patients, to develop the indications and contraindications of the drug application, improve their performance, to develop an algorithm of therapy of patients with a diagnosis of "Uterine fi-

broids."

References

1. Buyanova S.N., et al. Current concepts of etiology, pathogenesis and morphogenesis of uterine fibroids / S.N. Buyanova, M.V. Mgeliashvili, S.A. Petrakov // Russian messenger of obstetrician-gynaecologist.- 2008.- T8, No.6.- p. 45-51.
2. Gynecology. National guideline. Quick Edition / Ed. G.M. Savelevoy.- M.: GEOTAR-Media, 2013. - 704 p.
3. Gritsenko Y.V., etc. Uterine fibroids in the modern world. Actual questions of the pathogenesis, diagnosis and treatment. / Y.V. Gritsenko, O.D. Konstantinov, S.V. Cherkasov // the Bulletin of the Orenburg Scientific Center of Uro RAH. - 2012. - No3. - p. 2-23.
4. Strizhakov A.N., Davydov A.I., Pashkov V.M., Lebedev V.A. Benign disease of uterine.- M.: GEOTAR-Media. 2011.- 281 p.
5. A.L.Tikhomirov, D.M.Lubnin. Current concepts of etiology and pathogenesis of uterine fibroids // Questions of Gynecology., Questions of obstetrician. and perinatol. 2004.- 3 (6) .- s. 62-69
6. Arthur R, Kachura J, Liu G et al. Laparoscopic myomectomy versus uterine artery embolization: long-term impact on markers of ovarian reserve // J Obstet Gynaecol Can.- 2014.- vol.36 (3).- p.240-7.
7. Benecke C, Kruger TF, Siebert TI

et al. Effect of fibroids on fertility in patients undergoing assisted reproduction. A structured literature review // Gynecol Obstet Invest.- 2005.- vol.59.- p.225-30.

8. Arthur R, Kachura J, Liu G et al. Laparoscopic myomectomy versus uterine artery embolization: long-term impact on markers of ovarian reserve // J Obstet Gynaecol Can – 2014.- vol.36 (3).- p.240–7

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EVALUATION OF PRECONCEPTION PREPARATION IN PREVENTION OF COMPLICATED GESTATION IN WOMEN AFTER MYOMECTOMY

ABSTRACT

We examined 300 women with uterine fibroids and carried out over the next 12-24 months myomectomy, 150 of which had preconception care (treatment), 150 - not. The average age of women - $33,4 \pm 3,2$ years, duration of disease (uterine fibroids) - $4,25 \pm 1,4$ years. The comparative evaluation of the effectiveness of preconception care in the prevention of complications of pregnancy in women after myomectomy is presented.

Keywords: uterine fibroids, myomectomy, preconception care.

INTRODUCTION

Uterine fibroids is diagnosed in 25-30% of women over the age of 35 years [16,1]. Uterine fibroid in some cases requires surgical or pharmacological treatment [5,8]. The basic task of gynecology is sparing treatment of uterine fibroid patients, which use a variety of methods (myomectomy, embolization of the uterine vessels, focused ultrasound ablation controlled by magnetic resonance imaging, anti-recurrence pharmacotherapy and others.) [6,5]. However, to exclude recurrence of uterine fibroid, inefficiency of the chosen method of therapy, unwanted side effects are possible, which is especially important for women planning pregnancy [6, 2,3, 4,5].

Hitherto proposed various recommendations on preconception preparation of women with different pathologies [4, 9, 10,11]. However, there is no uniform guidelines for preconception preparation of women with uterine fibroid who underwent different treatment methods. In the international literature accumulated clinical experience on the specifics of the prediction, diagnosis and treatment of gestational complications in women with uterine fibroid [7,3].

Objective: To estimate the effectiveness of preconception preparation in the prevention of complications of gestation in women after myomectomy.

MATERIALS AND METHODS

Presented by the non-randomized, controlled, open-label study of 300 women with uterine fibroid and conducted previously myomectomy. Criteria for inclusion in the study: the reproductive age; uterine fibroids; myomectomy, produced over the next 12-24 months;

spontaneous pregnancy without assisted reproductive technologies; a history of infertility or miscarriage as a result of the uterine fibroid; late reproductive age (limited time for attempts to implement fertility). The average age of the women studied was $33,4 \pm 3,2$ years, duration of disease uterine fibroid - $4,25 \pm 1,4$ years. Depending on preconception preparation was carried out or not, the women were divided into two clinical Groups. In the clinical Group I were included 150 women, which after myomectomy undergo preconception preparation. In the clinical Group II included 150 women who after myomectomy has not been evaluated preconception preparation. The sample of women with inclusion criteria was conducted in antenatal clinics in Krasnodar and Novorossiysk. Examination and treatment was carried out on the bases of Krasnodar: gynecological department of the «Regional Clinical Hospital №2» Perinatal center, gynecological department the «Maternity» №4, and Novorossiysk: gynecological department of the «Perinatal Center» from 2010 to 2014.

Women in both Groups were comparable in age, gynecological, obstetrical and extragenital pathology.

The women in the Group I surgical treatment within the scope of myomectomy was performed by the authors endoscopic access routinely: the interstitial - submucous and submucous - interstitial localization (with a little interstitial component) by hysteroscopic resectoscope in other cases by laparoscopy (subserous nodes on the stem, subserous - with little interstitial interstitial component) with the imposition of endoscopic sutures,

comparing the maximum wound surfaces on the uterus. The dynamics performed transvaginal ultrasound access.

Women of the Group II as surgery performed endoscopic access routinely in the amount of myomectomy. All women of this group of myomectomy was performed in different hospitals of Krasnodar, Krasnodar Territory (Krai), Russia. Information about the uterine fibroid features (number of nodes, their location, volume of the uterus, etc.) before and after myomectomy was obtained from medical records (outpatients, in-patient cards, ultrasound protocols, operations). Some women in the clinical the Group II ignored the recommendations proposed by him after myomectomy for anti-recurrence therapy of uterine fibroid, and pregnancy who just came spontaneously.

Women of the Group I performed immunohistochemical study of fibroids removed, determines the frequency of detection of mutations in the p53 factor Bcl-2 and Ki-67 expression intensity of Bcl-2 factor.

After myomectomy to defer pregnancy for the regeneration of the myometrium, endometrium, anti-recurrence treatment of uterine fibroid appointed micro dose combined oral contraceptives (COCs) for a period of 9-12 months.

Preconception training included the B vitamins (B6 and B12), folic acid, omega-3 polyunsaturated fatty acids, progesterone (Dydrogesterone 20 mg per day during the second phase of the cycle) was performed 2-3 months before the expected reproductive cycle.

For the statistical analysis of the results of the study used statistical package SPSS v15.0, Microsoft Excel 2007. Were

calculated: the numerical characteristics of a variation number (N - number of women; M - the average (mean), m - standard error of the mean; the accuracy of the various samples (p) on t - t-test; relative risk (relative risk, RR) with 95% confidence interval (lower and upper limits of the 95% CI (confidence interval, CI), sensitivity (Se) and specificity (Sp) In order to assess the effectiveness of preconception preparation. It calculated the number of patients needed to treat, (number needed to treat, NNT) - one of the indicators of treatment (number of women with uterine fibroid who need to make preconception preparation for the prevention of gestational complications).

RESULTS

In studying the anamnesis of the disease uterine fibroid main complaints were determined to appeal to a gynecologist. In 62% of the women was a violation of the basic premise of menstrual-ovarian function in 85% - characteristic pain syndrome, 10% had been diagnosed violation of fibroid node power, 24% of impaired function of adjacent organs. At the absolute number of women (100%) of uterine fibroids is the dominant factor infertility.

In studying the characteristics of reproductive function was found out that only 60% of women in the Group II had a history of childbirth, 20% of women suffering from infertility, 16% of spontaneous abortions were noted. Noteworthy is a history in 76% of women surveyed artificial abortion, indicating that the undisciplined, uncontrolled regard to the majority of women to their own reproductive function. The number of abortions per woman was 3.73 ± 2.09 . Just when analyzing contraceptive history revealed that the COC took only 12% of women, and advantageous methods of contraception were selected barrier method (male condom), coitus interruptus, the rhythm (calendar, biological, thermal) method.

Initial size (before myomectomy) of fibroids were similar in both Groups, reached in a maximum diameter of 110 mm (45.82 ± 20.76 mm). The number of nodes per woman were from 3 to 11 (5.18 ± 2.5). Among them: subserous-interstitial - 4.8 ± 0.51 , subserous - 1.46 ± 0.34 , interstitial - 1.0 ± 2.05 . After myomectomy number of not removed fibroid nodes for various reasons (small size and intersti-

tial localization, localization in the vascular bundles of the uterus) was 3-5, the dimensions of which do not exceed 15 mm.

Immunohistochemical study of removed fibroid nodes at the Group I found out, the detection rate of p53 mutation was 21.4%, Bcl-2 - 85.7%, Ki-67 - 64%. In the presence of mutations in Bcl-2 expression intensity of this factor of 54% was poor, 46% - intensive.

It was evaluated the time interval between the end of treatment and the onset of pregnancy (in the Group I after cessation of COCs, in the Group II - after myomectomy). In the Group I it was 2.8 on the average (1 to 5) months, in the Group II - 6 (1 to 14) months. It should be noted that in one case in the Group II the pregnancy after myomectomy in the subsequent menstrual cycle, and the first time a woman went to the doctor of female consultation in pregnancy of 15 weeks.

An ultrasound of the uterine scar after myomectomy in women in the Group I in the preconception period in the myometrium visualized structure without clear contours, medium echogenicity with point hyperechoic inclusions (presumably - suture material) loci with or without blood flow loci. Loci blood flow were determined up to 3 months after myomectomy, 6 months later is not determined by any one woman.

In the 1st trimester of pregnancy based on the utero-chorionic Doppler circulation in women of the Group I vascularity index (VI) was 6.4 in the central zone; in the paracentral zone - 6.0; 6.2 in the peripheral area. In women of the Group II the same Doppler parameters were as follows: in the central zone of VI was 5.7; in the paracentral zone - 5.0; 4.52 in the peripheral zone. This difference was seen as a lack of sufficient heteromorphism vascular tissue forming the placenta as ultrasound marker of the risk of primary placental insufficiency.

In assessing the complications of gestation revealed that in the I trimester of pregnancy (Table 1). Group II women threatening miscarriage rate was significantly higher ($t = 3.15$; RR 1.719 [1.332-2.219]; NNT = 3.984; Se 0.634; Sp 0.618). In Group II, in some cases required hospitalization up to 25 days. Ultrasound signs of detachment of chorionic varying severity in both Groups revealed a comparable frequency. Note-

worthy is that 12% of women in Group I and 14% of women of Group II in the 1st trimester of pregnancy revealed iron deficiency anemia mild.

Analysis of complications of gestation in the II trimester of pregnancy (Table 2) found a higher incidence of threatening ($t = 3.97$; RR 3.0 [1.959-4.594]; NNT = 3.409; Se 0.750; Sp 0.604) miscarriage women Group II. In addition, the ultrasound showed signs of placental abnormalities in 2% of women.

The course of pregnancy in women trimester III Group II was much more complicated than that of women in Group I (Table. 3). So the women of Group II threatening preterm delivery ($t = 3.24$; RR 1.971 [1.395-2.783]; NNT = 4.545; Se 0.663; Sp 0.583) were significantly more likely identified prematurity ($t = 3.31$; RR 4.833 [2.067-11.302]; NNT = 5.522; Se 0.829; Sp 0.543), mild preeclampsia ($t = 2.42$; RR 2.333 [1.332-4.089]; NNT = 7.5; Se 0.7; Sp 0.54). Only Group II women diagnosed with severe preeclampsia, premature abruption of normally situated placenta, placental abnormalities. Note that only 11% of women of the Group II clinical had signs of placental anomalies in 7% of women placenta accreta, from 1% - increta placenta, placenta from 2 percreta. Noteworthy is the fact that in all cases of abnormally invasive placenta conception occurred in the first 3 months after myomectomy. Ultrasound signs of chronic disease were observed in the absolute number of women of the Group II, and 86% of women in Group I.

In assessing the clinical course of uterine fibroids during pregnancy ensuing we found that only the women in Group II was an increase in the number (from 3-5 to 7 knots) and / or the size of fibroid nodes (with $d = 13-15$ mm to $d = 38$ mm) (tab. 4). Do uterine fibroids during pregnancy increase was due to an increase in progesterone levels (endogenous and exogenous), this study can not be answered unequivocally. This requires additional definition progesterone receptivity of the fibroid nodes.

To estimate integrity of the scar after myomectomy using ultrasound presented great difficulties. During III trimester of pregnancy only 3% of women in the Group II at US examination in the anterior wall of the myometrium determined dashes of hyperechogenicity, local thin-

Complications in the I trimester of pregnancy

*** - $p < 0,001$

Complications in the II trimester of pregnancy

*** - $p < 0,001$

Complications in the III trimester of pregnancy

* - $p < 0,05$; ** - $p < 0,01$

Therefore, in the presence of protocol operations with reference to the small

In caesarean section the thinning of the myometrium in the supposed myomectomy was visualized in 15% of women in the Group I and 20% of women of the Group II, and the localization of deformation myometrium scar on the back

In assessing the duration of labor in women in the Group I (n = 35) and the Group II (n = 12) significant differences were found: 8.6 (7-11) and 8.8 hours (8-11) hours, respectively. A similar assessment was in calculating the duration of cesarean section in women in the Group I (n = 115) - 71.4 (45-120) min. and the Group II women (n = 138) - 69 (50-100) min.

In the study of the flow of complicated childbirth it deserves attention is the fact that only 2 women the Group II-threatening uterine rupture was diagnosed in a timely manner. According to complications such as weakness or discoordination labor, both Groups were comparable.

In assessing blood loss during delivery notes that massive blood loss of more than 20 ml / kg was only 2% in women of the Group II, which was caused by an abnormality of the placenta attachment (placenta percreta) (tab. 6). In other cases, blood loss in the number and urgency of women in both Groups were comparable. The cause of bleeding in the Group II 5% of women had PONRP, 10% - placenta previa, 11% - placental abnormalities. In other observations causes uterine bleeding were hypotension, and a combination of factors.

Conclusion. Uterine fibroids in reproductive period remains relevant for obstetricians and gynecologists. There are still many unresolved issues in the choice of anti-recurrence therapy of the uterine fibroid, quick access when myomectomy, the need to improve endoscopic extracorporeal knots, perfection of the qualification surgical team especially for women planning pregnancy. Obvious need to preserve women's reproductive health.

prevention of gynecological pathology, disciplined attitude to women prescribed therapy

To date, it remains relevant problem of effective recovery of reproductive function, of preconception preparation, prevention of complications of gestation in women with uterine fibroid and infertility associated with it. Obvious need to improve the system of measures aimed at improving the outcomes of pregnancy and childbirth for mother and fetus in women with uterine fibroid.

References

1. Adamyan L.V., Kozachenko A.V., Z.V.Revazova. Novye podhody k medikamentoznomu lecheniyu simptomnoy miomymatki (obzorliteratury) [New approaches to medical treatment of symptomatic uterine fibroids (review)] Problemy reprodukcii [Problems of reproduction], 2013, N 3, p. 21-23.
2. Zacepin A.V., Novikov V.A, Vasi-na I.B. Sravnenie ehffektivnosti farmakologicheskikh metodov antirecidivnogo lecheniya miomy matki posle konservativnoy miomehktomii [Comparison of the effectiveness of pharmacological anti-recurrent treatment of fibroid after conservative myomectomy] Kuban Research Medical Vestnik, 2012, №2 (131), P.88 – 92.
3. Ishchenko A.I., V.I. Lanchinsky, A.V. Murashko. Kesarevo sechenie I miomehktomiya [Caesarean section and myomectomy] Gynecology, 2012, N 4, P.39 - 43.
4. Krasnopol'skiy V.I., Logutova L.S., Zarochentseva N.V [et al.]. Prekonceptionnaya podgotovka zhenshchin s nevnashivaniem beremennosti I hronicheskim ehndometritom (uchebnoeposobie) [Preconception preparation of women with miscarriage and chronic endometritis (Tutorial)]. SPb., 2014, 31 p.
5. Kulakov E.D, Manukhina I.B., Savelevoj G.M. Ginekologiya: nacional'noe rukovodstvo [Gynecology: national leadership]. M.: GEOTAR-Media, 2009, 1072 p.
6. Adamyan L.V., Andreeva E.A., Artymuk N.V. [et al.]. Mioma matki: diagnostika, lechenie i reabilitaciya. Klinicheskije rekomendaci i povedeniyu bol'nyh. [Uterine fibroids: diagnosis, treatment and rehabilitation. Clinical guidelines on

Table 4				
Dynamics of growth of of myoma nodes in pregnancy				
Complications of pregnancy	Preconception treatment t (n=150)		No preconception treatment (n=150)	
	%	n	%	n
Increasing the number of uterine fibroids	18	12	30	20
Secondary changes of myoma nodes (clinically)	8	5	16	11
Secondary changes of myoma nodes (according to US only)	7	5	10	7

** - p<0,01

Table 5				
Methods of delivery				
Method of delivery	Preconception treatment t (n=150)		No preconception treatment (n=150)	
	n	%	n	%
Vaginal	35	23	12	8* t=2.88
Cesarean section	115	77	138	92
Myomectomy during cesarean section	89	59	95	63

** - p<0,01

the management of patients]. M., 2014, 100 p.

7. Buyanova S.N., Logutova L.S., Shchukin N.A. [et al.]. Miomehktomiya vne I vo vremya beremennosti: pokazaniya, osobennosti hirurgicheskoy taktiki I anestezi, predoperacionnaya podgotovka I reabilitaciya [Myomectomy before and during pregnancy: indications, especially surgical treatment and anesthesia, pre-operative preparation and rehabilitation]. Russian Vestnik of obstetrician-gynecologist, 2013, N 2, P.95-100.
8. Tikhomirov A.L. Novye vozmozhnosti patogeneticheskoy terapii miomy matki [New features of pathogenetic therapy of uterine fibroids]. Gynecology, 2013, N 3, P. 67-70.
9. Bialystok L., Poole N., Greaves L. Preconception care. Canadian Family Physician, 2013. Vol 59: 1037-1039.
10. Chandranipapongse W., Koren G. Preconception counseling for preventable risks. Canadian Family Physician, 2013. Vol 59: 237-239.
11. Mavrellos D. et al. The natural history of fibroids. Ultrasound ObstetGynecol 2010; 35: 238–242.

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Table 6				
Blood loss at delivery				
The volume of blood loss ml/kg body weight	Preconception treatment t (n=150)		No preconception treatment (n=150)	
	n	%	n	%
5	7	5	9	6
5 – 8	40	27	32	21
8 – 10	47	31	44	30
10 – 15	54	36	60	40
15 – 20	2	1	2	1
Более 20	0	0	3	2

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SURGICAL TREATMENT OF LUNG AND LIVER ECHINOCOCCOSIS

ABSTRACT

The article reports the analysis of the results of examination and treatment of patients with lung and liver echinococcosis. According to the analysis, in most cases we observed lung damage with a significant lack of hydatid cysts in the liver, which is not complying with the all-Russian statistics as a whole. Patients were forwarded to our department from different out- and in-patient facilities. Based on the data of instrumental and laboratory studies, all patients underwent echinococectomy combined with antiparasitic therapy.

Keywords: echinococcosis, surgery, diagnosis of echinococcosis, echinococectomy.

The causative agent of hydatidosis is the tapeworm *Echinococcus granulosus*, which parasitizes in carnivores. According to modern classification, echinococcus refers to the Scolecida lower worms supertype, the Plathelminthes flatworms type, the Cestoda tapeworms class, the Cyclophyllidea order, the Taeniata suborder, the Taeniidae family, the *Echinococcus* species and the *Echinococcus granulosus* genus.

The ultimate owners of *E. granulosus* are representatives of the canines: dogs, jackals, wolves, dingoes, foxes, coyotes, hyenas, etc., in intestine of which the mature tapeworms parasite by length of 3.4-6.2mm, by width of 0.47-0.98 mm, consisting of a head (scolex) with four bothriums and a double crown of hooklets (38-40 ones), a neck and 3-4 segments. The last one, a mature segment, has a queen containing 400-800 eggs round or oval in shape by diameter of 0.030-0.036 mm. Inside the egg there is a thick-covered hexacanth and an embryo with six hooklets. Mature segments depart with excrement, some creep out actively. The segments departed with excrement are mobile and are able to spread out in a radius of 20-30 cm, disseminating the environment with hexacanth [4]. The intermediate hosts of the parasite are men and livestock. At that, a man can be regarded as a peculiar biological deadlock in the development of the parasite [1].

In humans, the typically affected organs are liver - in 60% of cases, lungs - in 30% of cases and other ones - in 10% of cases [1, 4]. The main source of human invasion is the dog. Human infection occurs through the alimentary way, contaminated water and poor personal hygiene. *Echinococcus* embryo develops to a parent cyst (larvotsista), whose wall consists of an outer and an inner germinal cuticular

membranes. The bubble filled with liquid in which evaded scolexes and brood capsules freely fluidize - the so-called hydatid sand. The outside cyst is surrounded by a dense connective fibrous capsule, carrying a protective function, preventing the parasite from mechanical damage and impact factors of the host immune defense. According to recent reports, there is indirect evidence that increase in the number of stray dogs in settlements, their high prevalence with echinococcosis, the intensity and extent of eggs excretion at sexually mature worms, hexacanth stability in the external environment are major factors in the spread of vermination and morbidity. This causes the issue of the echinococcosis urgency for practical public health.

MATERIAL AND METHODS

We analyzed 107 patients with echinococcosis from 2003 to the present day, being treated in the Republic's Hospital № 1 - NCM, Department of Surgery № 1 and № 2. Of them, there were 60 women and 47 men. Patients were from 16 to 82 years of age. 104 patients were in the working age. It is believed that the incidence of echinococcosis occurs in people from rural areas, with a particular occupation (hunting, fell dressing). In this regard, the analysis was carried out depending on the place of residence and occupation (Diagram 1).

From the given diagram it is seen that urban residents are dominating in the group studied including 36 cases from Yakutsk and 16 patients from Olekminsk.

According to ethnic composition, the distribution is as follows: Yakuts - 55, Russians-32, Evenkis - 11, Yukagirs, Chukchi, Germans, Chinese - by 1 case, Tajiks - 2, Uzbeks - 3.

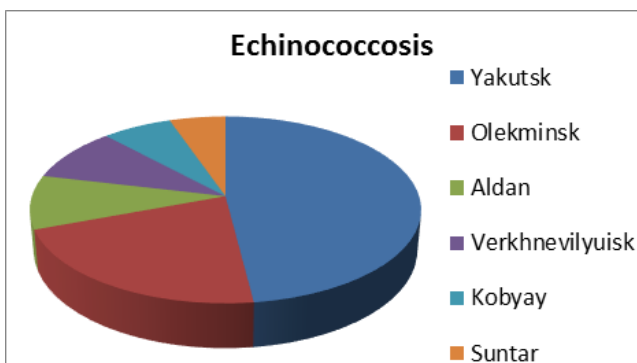
By occupation office employees prevail - 59 cases, while there were only 13 hunters or persons associated with fell dressing activities, working men make up 17, unemployed - 18 ones. Thus, the majority of vermination reported in patients is not connected with the profession related to processing of furs and hunting.

The patients had been directed to the NCM from the different hospitals and primary hospital care units. Diagnosis was mainly conducted at the community-based clinics, during medical examinations, examinations for other reasons (76.7% of cases). At the same time 81.3% of the cases revealed the cyst localizing in the lungs without liver disease.

In 23.3% echinococcosis went with various symptoms such as jaundice (20.6%) and abscess formation (2.7%)

By hydatid cyst localization the patients distribution was as follows (Table 1):

As can be seen from Table 1, in 69.1% of cases the cyst localized in the lungs, in 26.1% of cases in the liver. According to



Distribution of patients with echinococcosis residence

the literature, based on the pathogenesis of echinococcus growth in the intermediate host, the cyst develops when the hexacanth gets to the liver from the gastrointestinal tract through the portal system. Therefore, the most of hydatid lesions localize specifically in the liver. Given the massive invasion and weakening of the liver, many hexacanth get through a small circle of blood circulation into the lungs, through a large circle - into the brain, bones, etc. According to our data, on the other hand, 69.1% have a primary asymptomatic lesion of the lungs with a sound lack of hydatid cysts in the liver, which is generally contrary to the pathogenesis of the disease commonly known. At the same time, it should be emphasized that the hydatid disease refers to understudied ones, and, in our opinion, not all of the pathogenic mechanisms of the disease are explored.

Methods of testing at the hospital link is quite standard and included laboratory tests, ultrasound, X-ray examination in different projections, CT, MRT, linked immunosorbent assay for echinococcus.

The blood eosinophilia was observed in only 23% of cases, which corresponds to other authors' data. In our opinion, this may be due to the fact that the initial localization in the lungs is caused by the airborne penetration of the parasite, and thus there is no sensitization. Under biochemical studies, abnormalities in the form of increased transaminases and bilirubinemia were recorded in 23.3% of cases. Specific reaction (linked immunosorbent assay) were informative in more than 74% of cases.

In 4.2% of hydatid infestations more careful differential diagnosis was required with liver tumors. The examination included MRT, selective angiography. Thus, in most cases adequate diagnostic approach presents no particular difficulties.

RESULTS AND DISCUSSION

The study found out that of 107 patients were treated, 104 ones were of working age (97.2%). At the same time most of the studied lived in the city, which changes the postulate that the hydatid disease is of rural residents. It should be noted that the ethnic composition data, the occupation (prevalence of office employees) show that at the present time, the spread of echinococcus lesions are more extensive and the invasion occurs in the absence of direct contact with wild animals when hunting or fur processing.

Classical picture of echinococcus infection occurs through the alimentary way, with the release of hexacanth under activity of digestive juices. Therefore, it was thought that the lung damage, and a rare invasion occurs only after passing the liver barrier and respectively heavy defeats arise combined with dissemination to all organs. According to our data, the lung lesions are by an order of magnitude (69.1%) greater and at that in most cases are asymptomatic, and the focal area is detected during medical examinations or examinations for other reasons. Therefore, apparently, there is an aerogenous way of infestation. Eggs from the parasite are inhaled with dust and under the influence of airway mucus secretion they begin to lose their coat and start developing [2, 3, 5]. It can be assumed that invasion through the respiratory tract is influenced by many factors such as weakening of the protective properties of the bronchial mucosa when smoking and under various embodiments of inflammatory diseases. According to our data, 94% of invasions into lung tissue are connected with smoking. But at the same time, there are no reliable statistics on the issue in connection with which a detailed study is necessary of the pathogenesis of echinococcus aerogenous invasion.

Table 1

Surgical treatment methods applied for the treatment of patients about echinococcosis of lungs

Localization	Пациенты (107)
Lungs	74 (69,1%)
Liver	28 (26,1%)
Associated lesions (lung, liver, spleen)	5 (4,7 %)

All patients were surgically treated in various intervals in combination with antiparasitic therapy. The data on the held surgical procedures in the thorax is shown in Table № 2.

As seen from the table, most of the surgery was performed with removal of hydatid liquid. Even with a single cyst in 56 observations, an open echinococectomy was provided. Cyst cavity treatment was carried out by the usual method. The closed echinococectomy was performed only in one case. 12 patients underwent hardware resection of 1 or more segments.

Surgical procedures performed in the abdominal cavity were as follows (Table № 3).

As can be seen from the table, attention is drawn to a high percentage (over 36%) of laparoscopic Echinococectomy in the amount of atypical liver resection. Hemihepatectomy was held in 3 cases under multiple lesions of the liver and spleen. Open echinococectomy was performed in 18 cases. At the same time it should be noted that 4 patients were diagnosed with multiple cysts, and in 4 cases with combined echinococcosis of lungs and liver surgery was performed in 2 steps after the removal of cysts from the chest.

In 5 cases of combined echinococcosis and at 9 patients with multiple lesions of the liver or lungs the complexed multi-stage treatment was conducted. The technique involves the removal of the largest and the most important hy-

Table 2

Surgical treatment methods applied for the treatment of patients about echinococcosis of lungs

Type of surgery	Unit cyst on one	Multiple hydatid cysts on one easy	Multiple hydatid cysts of both lungs	Multiple hydatid cysts of lung and liver
Resection of lung segment	7	-	-	-
Open echinococectomy	54	4	1	2
Closed echinococectomy	1	-	-	-
Resection of more than one segment of the lung	1	3	1	-

Table 3

Methods of operations carried out on the liver echinococcosis

Type of surgery	Unit cyst on one segment of the liver	Multiple hydatid liver cysts	Multiple hydatid cysts of the liver, spleen	Multiple hydatid cysts of lung and liver
Laparoscopic liver resection atypical	12	-	-	-
Hemihepatectomy	-	2	1	-
Closed echinococcectomy with laparotomy	2	-	-	-
Open echinococcectomy with laparotomy	10	3	1	4

datid cysts with further therapy by the "Albendazole" medicine using the usual scheme.

The postoperative course in 103 (96.2%) patients was uneventful, 1 case was complicated with abscess formation, in 3 cases in the early postoperative period bleeding developed, requiring the repeated surgical intervention. No fatal cases were observed.

Thus, the study revealed that well-known and generally accepted pathogenetic mechanisms of echinococcosis do not disclose all aspects of the problem and there are indirect signs of atypical ways of parasite infection, which in our opinion makes the problem very relevant to in-depth study. However, I would like to note the lack of consensus in the surgical treatment of this disease, which ultimately affects the outcome. Apparently, the reluctance of surgeons to make the closed echinococcectomy is associated with the danger of cyst discontinuity under isolation and outpouring of the hydatid fluid. According to the literature, the closed echinococcectomy is held 3-4 times less than the removal of the cyst with the evacuation of the liquid containing scolexes, which is quite understandable under the surgical intervention by a thoracotomy access. On the contrary, when removing the cysts by the thoraco-

scopic procedure, the majority of surgical procedures is carried out with atypical hardware resection by the closed method, with a more favorable outcome. Therefore, there is need for development and implementation of the thoracoscopic surgery in the surgical treatment of peripherally located hydatid cysts of the lungs.

REFERENCES

1. Vetshev P.S. Musayev G.K. Ekhinokokkoz: sovremennyy vzglyad na sostoyaniye problemy [Echinococcosis: modern view on the state of the problem] Annaly khirurgicheskoy gepatologii, 2006, V. 11, № 1, P. 111-117.
2. Geller I.Y. Ekhinokokkoz (Mediko-ekologicheskiye aspekty i puti likvidatsii invazii) [Echinococcosis (Medical and ecological aspects and ways to eliminate infestations)], M.: Meditsina, 1989, P. 259.
3. Ibadildin A.S. Kidirmagambetov I.L. Zhetpisbayeva N.K. i dr. Rezul'taty lecheniya ekhinokokkoza pecheni i legkikh [Results of treatment of echinococcosis of the liver and the lungs], Vestnik Kazhskhskogo Natsional'nogo meditsinskogo universiteta, 2016, № 1, P. 362-364.
4. Polyakov N.V. Romikh V.V. Safarov R.V. Polyakov V.Y. Odnokamernyy (gidatidnyy) ekhinokokkoz [Single chamber

(hydatid) echinococcosis], Issledovaniya i praktika v meditsine, 2015, V. 2, № 1, P. 27-35.

5. Cheremisinov O.V. Meditsinskaya vizualizatsiya [Medical imaging], 2004, N 4, P.90-96.

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STUDYING OF MORPHOLOGICAL CHANGES OF SOFT TISSUES AT EXPERIMENTAL SUPERFICIAL PHLEGMON

ABSTRACT

Results of a preclinical trial on studying of influence of the standard complex therapy and complex therapy with use of a local irrigation of a wound sodium hypochlorite on the course of superficial experimental phlegmons are presented in article. During the research assessment of a morphological picture of a postoperative wound for 3, 7 and 10 days is made. At a combination of complex therapy to a local irrigation of a postoperative wound sodium hypochlorite solution pathomorphologic signs of an acute purulent inflammation became less expressed, with formation of a proliferative infiltrate in an interstition of a hypodermic musculature and faster retrogress of inflammatory process.

Keywords: pyoinflammatory diseases, perimaxillary phlegmon, superficial phlegmon, ontogenous infection, sodium hypochlorite, experimental phlegmon.

INTRODUCTION

The problem of treatment of pyoinflammatory diseases belongs to number of leaders in maxillofacial surgery [6,8,12]. The reason of development of a purulent infection and its generalization in a wound still remain completely obscure that in turn, indicates relevance of research of new methodical approaches to treatment and agents for local impact on pyoinflammatory processes, including a ontogenous parentage [4,7,9,11].

Essential disadvantage of many works on a problem of clinical use of various antiseptics is rather narrow circle of the studied indicators that doesn't allow to present distinctly features of complex reaction of soft tissues in zones with pyoinflammatory diseases [3,5,10].

The research objective consisted in studying of morphological changes of soft tissues at experimental superficial phlegmon.

MATERIAL AND METHODS

The preclinical trial is conducted on 12 rabbits males of breed the Chinchilla weighing 2,5-3,0 kg. which contained in standard conditions of a vivarium, ate equally that met the standard rules and standards of the contents of experimental animals in Russia. Surgical actions were carried out in two steps under local and an intravenous anesthesia with keeping of the rules and requirements imposed to the equipment, tools, an asepsis and antiseptics according to current "Rules of performing works with use of experimental animals" (the order of the Ministry of Health No. 755 of August 12, 1977).

At the first stage of an experiment under a local anesthesia modeling of widespread perimaxillary phlegmon at labora-

tory animals by the standard technique was made [1,3]. After increase of clinical signs of a disease, that is at the second stage under intravenous anesthesia carried out opening and drainage of perimaxillary phlegmon with performing the standard complex therapy [2,3,9].

Depending on the carried-out treatment of animals divided into 2 groups. the 1st control group was made by 6 animals receiving complex therapy. the 2nd experienced group - 6 animals, combined complex therapy with a wound irrigation solution of sodium hypochlorite (NaClO_3). Solution of sodium hypochlorite was received by means of the device "Espero-1" (Russia).

For a histological research which was conducted on for 3, 7, 10 days took fragments of tissues in the field of edges of the experimental wound formed after opening of phlegmon, in each observation investigated 4 fragments of tissues which surely contained the zones of actually purulent wound surrounding it sites of the intact skin, hypodermic fat and a muscle. On the bio products deleted the hair remains of an animal, and then fixed them in solution of neutral Formalinum within 48 hours. The subsequent conducting of macrodrugs was carried out by the standard technique [1,9] and then filled in them in paraffin. On a microtome made sections 5-8 microns thick of paraffinic blocks, prepared drugs which painted a hematoxylin eosine. Applied a staining according to Van-Gizona to a research of collagenic fibers, and applied Chic reaction to assessment of neutral mucopolysaccharide. Statistical processing was made with use of a software package of Statistica for Windows v. 7.0.

Results and discussion

Results of a morphological research of soft tissues at animals of control group in a zone of formation of phlegmon and adjacent to the fusion center for the 3rd days after performing complex therapy of superficial phlegmon showed that in a false skin, a derma and a hypodermic hypoderma the pathomorphologic changes characteristic of purulent inflammatory and destructive process remained. In a false skin taped hyperkeratosis signs, and also an edema of acanthaceous of cells of a layer and an proliferation of basal cells. In own connective tissue plate and around appendages of a skin the edematous, destructive and inflammatory phenomena remained: vacuolation and leukocytic infiltration of intercellular substance. Fibrous structures were in a condition of disorganization in the form of homogenization, a mucoid and fibrinoid swelling. In deep layers of a derma of a skin the diffuse leukocytic infiltration, an edema and a destruction of structural elements of a connecting tissue (Pic. 1) was taped. For the 7th days of observation in a hypoderma hypodermic and masseters the plethora of vessels, an edema and a loosening an interstition, conservation of a diffuse intermuscular leukocytic infiltration with the centers of vacuolation and a necrosis of tissues (Pic. 2) became perceptible.

At the same time, the diffuse leukocytic infiltration extended both towards a connecting tissue of a derma, and towards a hypodermic musculature. Thus is defined that complex therapy rendered antiinflammatory effect only on superficial fabric structures in the field of an experimental wound at superficial phlegmon

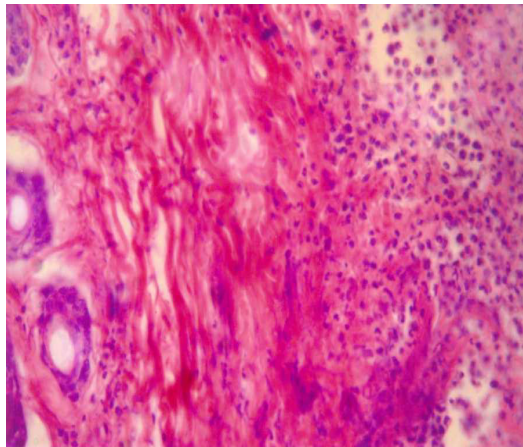
which consist for the 10th days of a research in decrease of activity of inflammatory and destructive changes in the soft tissues adjacent to the center of their fusion.

In deep layers of a derma of a skin, and also in a hypodermic musculation for the 10th days of experience the diffuse inflammatory phenomena (Pic. 3) remained.

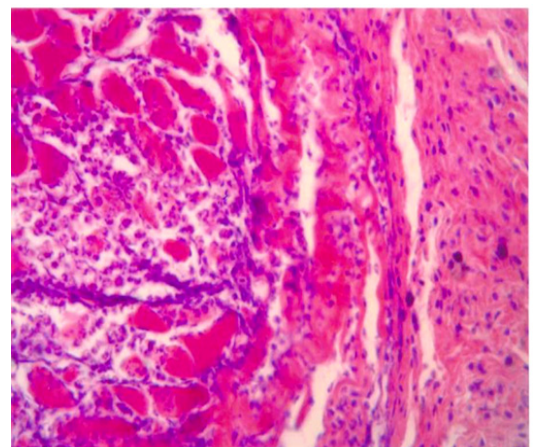
Complex therapy in combination with processing of wounds of NaClO_3 at superficial phlegmons of head skin of animals (the main group of a research) showed that, in comparison with control, inflammatory and destructive changes in the tissues adjoining on an experimental wound from initial terms of a research were expressed to a lesser extent. At the same time for the 3rd days of an experiment, in blankets of a false skin the small focal hyperkeratosis, inspissation of inside layers and rising of activity of cells of a basal layer became perceptible. In a basal membrane and in own connective tissue plate of a skin degree of the edematous and destructive phenomena is slightly lower, than in control group. The inflammatory and destructive changes developing around skin appendages were also more reduced, than in control group, and the leukocytic infiltration in tissues was not defined. In deep layers of a derma for the 3rd days (Pic. 4) only the small edema and a loosening of fibrous structures without the expressed inflammatory infiltration became perceptible.

For the 7th days of an experiment of this group in tissues on the course of vessels and an interstition of a hypoderma a moderate proliferation of lympho-histiocytic cells was taped (Pic. 5.), what testified to efficiency of topical administration of solution of sodium hypochlorite, against the background of the standard complex therapy.

For the 10th day of an experiment in the main group signs of an acute purulent inflammation were less expressed, than in control group of animals, the changes characteristic of the third (proliferative) stage of inflammatory process with formation of a proliferative infiltrate



Pic. 1. Inflammatory and destructive changes in a derma and a hypoderma at superficial phlegmon. Control group, 3 day. Hematoxylin-eosine. Ad.: Oc. 10, ob. 40.



Pic. 2. A plethora of vessels, an edema and a loosening an interstition in a hypoderma, hypodermic and masseters. Control group, 7th days. Hematoxylin-eosine. Ad.: Oc. 10, ob. 40.

in an interstition of a hypodermic musculation (Pic. 6) became perceptible.

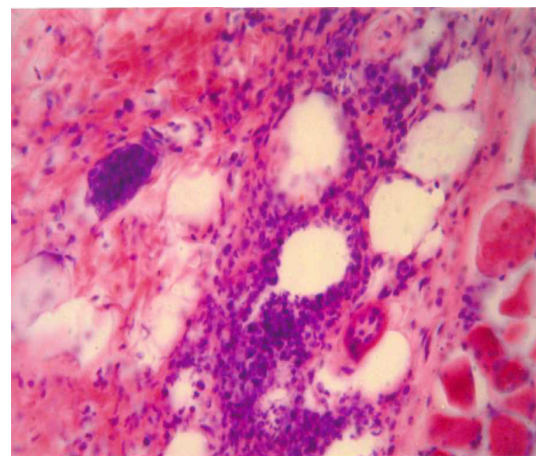
CONCLUSION

The morphological research showed that the standard traditional complex local therapy of purulent diseases of soft tissues, at superficial phlegmon renders insufficient antiinflammatory efficiency and favorably influences only the soft structures located near an experimental wound that is demonstrated by decrease of activity of inflammatory and destructive changes in them. In deep layers of a derma and in a hypodermic musculation to the experience extremity signs of alterative and exudative phases of an inflammation still remain.

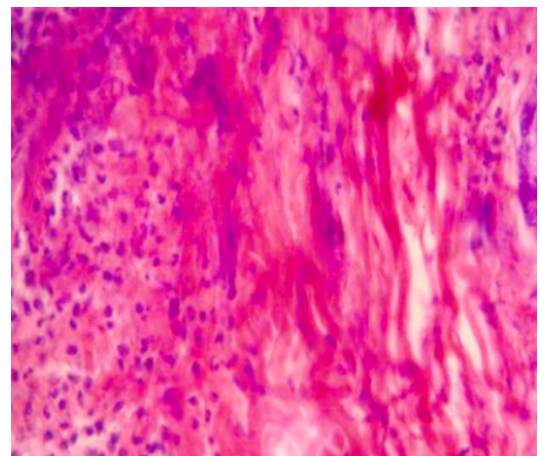
Use of complex local therapy in combination with processing of an experimental purulent wound solution of sodium hypochlorite led to noticeable depression in tissues of the inflammatory and destructive phenomenon. When using sodium hypochlorite in a derma and in deep hypodermic tissues against the background of an insignificant diffuse infiltration leucocytes and histiocytic to cells, noted proliferative processes for 7-10 days that testifies to larger efficiency of the carried-out therapy.

REFERENCES

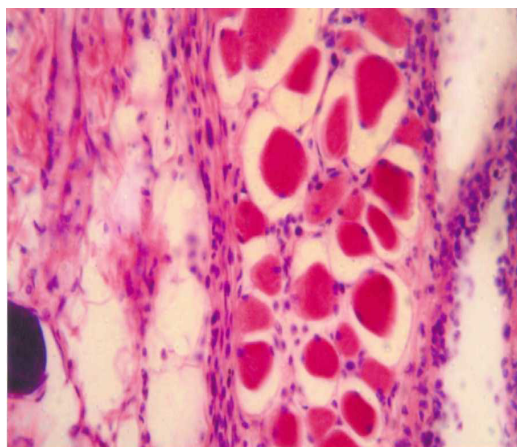
Balin V.N. Experimental and clinical justification of complex use of low-frequency ultrasound,



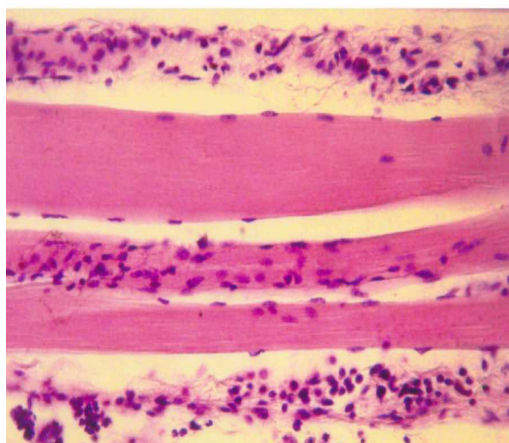
Pic. 3. A diffuse leukocytic infiltration in a hypoderma and a hypodermic musculation. Control group, 10th days. Hematoxylin-eosine. Ad.: Oc. 10, ob. 40.



Pic. 4. Edema and loosening of fibrous structures of a derma, moderate degree of inflammatory signs. Main group, the 3rd days. Hematoxylin-eosine. Ad.: Oc. 10, ob. 40.



Pic. 5. Conservation of moderate degree of inflammatory signs in a derma and a hypodermis of a skin. Main group, 7th days. Hematoxylin-eosine. Ad.: Oc. 10, ob. 40.



Pic. 6. A small inflammatory infiltration in an interstitium of a hypodermic musculature. Main group, 10th days. Hematoxylin eosine.

radiation helium - the neon laser and a hyperbaric oxygenation in purulent surgery of maxillofacial area: avtoref. dis. d-ra med. nauk / V.N. Balin. – SPb. – 1988. – 28 p.

Dubinin Y.A. Complex treatment of a purulent wound Avtoref. dis.... kand. med. nauk – 1999. – №3. – P. 54-57. – Krasnodar.1997. – 22 p.

Dynzhinova T.V. Possibilities of correction of system inflammatory reaction at treatment of sepsis at patients with pyoinflammatory diseases of soft fabrics. Avtoref. dis. ... kand. med. nauk – M. – 2007. – 22 p.

Problems and the perspective directions of the korrektsiimediatory answer at sepsis. / P.I. Mironov, V.A. Rudnov // Anesteziol. i reanimatol. – 1999. – №3. – P. 54 – 57.

Muzykin, M.I. Periostitis of jaws and their treatment / M.I. Muzykin, A.K. Iordanishvili, G.A. Ryzhak // SPb.: Chelovek, 2015. – 112 p.

Okovity S.V. Improvement of complex treatment of a sharp odontogenic periostitis at people of the senior age groups / S.V. Okovity, M.I. Muzykin, A. K. Iordanishvili // Stomatologiya. – 2012. – T. 91, № 6. – P. 63 – 66.

Robustova T. G. Odontogenous inflammatory processes. – M: Medicina. 2006. – 661 p.

Urazayeva A.E. Diagnostics and complex treatment of phlegmons of maxillofacial area taking into account toxicity of blue blood. Avtoref. dis. ... kand. med. nauk. – Alma-Ata. – 2001. – 22 p.

Glass C.A. Transient osmotic absorption of fluid in microvessels exposed to low concentrations of dimethyl sulfoxide / C.A. Glass, R.M. Perrin, T.M. Pocock // Microcirculation. – 2006. – № 13 (1). – P. 29 – 40.

Krautsevich L. Clinical aspects, diagnosis and treatment of the phlegmons of maxillofacial area and deep neck infections / L. Krautsevich, O. Khorow // Otolaryngol. – 2008. – Vol. 62. – P. 545 – 548.

Seppänen L. Analysis of systemic and local odontogenic infection complications requiring hospital care / L. Seppänen [et al.] // J. Infect. – 2008. – № 57. – P. 116 – 122.

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METHODS OF DIAGNOSIS AND TREATMENT

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USE OF PHARMACOGENETIC ANALYSIS AT PATIENTS WITH ACUTE CORONARY SYNDROME ASSOCIATED WITH IN-STENT RESTENOSIS

ABSTRACT

We studied the influence of CYP2C19 gene polymorphism on the development of in-stent restenosis after transdermal coronary intervention in patients with acute coronary syndrome. The obtained data have revealed a gene almost in the half of patients with restenosis in coronary artery, it being responsible for the reduction of clopidogrel metabolism.

Keywords: restenosis, clopidogrel, pharmacogenetics, acute coronary syndrome.

INTRODUCTION

Acute coronary syndrome (ACS) is the term characterizing any group of clinical signs or symptoms, allowing suspecting acute myocardial infarction (AMI) or unstable angina (UA) [3].

For the purpose of visualization and treatment of coronary artery atherosclerosis (CA) a method of transdermal coronary intervention (TCI) with the use of stents associated with active antiaggregant, antithrombotic and lipid-lowering therapies [1] is conducted.

At present the inhibitor P2Y₁₂ of clopidogrel receptor is considered one of most common antiaggregants. Research results by CAPRIE (Clopidogrel versus Aspirin in Patients at Risk of Ischemic Events), CURE (Clopidogrel in Unstable angina Recurrent Events), CREDO (Clopidogrel for the Reduction of Events During Observation) have brought to wide application of clopidogrel when treating atherosclerosis [9,10,12]. However, for most patients treated with antithrombotic preparations ischemic complications have been noted. Due to such manifestations some research works on genetic factors associated with clopidogrel metabolism is being carried out at present among them cytochrome CYP2C19 allele variants being the most important [15,6,11,2]. For patients carrying allele variants CYP2C19*2 and CYP2C19*3 slight antiaggregant effect of clopidogrel has been noted due to dyspoiesis of its active metabolite in a liver that causes genetically determined resistance to the given preparation [7,13]. And the patients with ACS as a group of high cardiovascular risk are of great concern in the course of studying the resistance to clopidogrel.

Aim. To analyse effect of polymorphism of CYP2C19 gene in the development of in-stent restenosis after coronary

artery angioplasty at patients with acute coronary syndrome.

MATERIALS AND METHODS

The research was carried out on the basis of urgent cardiology department with a group of intensive therapy of the regional vascular Centre of Republican hospital №2-Centre of emergency medical care for the period 2013 and 2015. Patients' eligibility for the research was carried out after signing of their informed consent. The research report was approved by the local Ethical committee. 35 cases were included in the research of coronary artery in-stent restenosis (ISR) at patients with acute coronary syndrome. The given diagnosis was stated on the basis of clinic, typical changes of electrocardiogram, dynamics of myocardium necrosis markers (troponin I) of the research according to recommendations of the All-Russia national society of cardiologists about diagnostics and treatment of patients with acute myocardium infarction with ST segment rise on ECG (ARNSC, 2007), national recommendations about treatment of acute coronary syndrome without resistant ST segment rise on electrocardiogram (ARNSC, 2006). All the patients had a pharmacogenetic survey, blood genetic analysis on polymorphism of gene CYP2C19*2 and CYP2C19*3 by allele-specific polymerase chain reaction (PCR). Initial dose calculation of clopidogrel was conducted by means of the program PharmSuite. DNA extraction was carried out with 0.2 ml of blood using a DNA extraction kit GeneJET Whole Blood Genomic DNA Purification Mini Kit (Thermo Scientific, USA). Amplification of gene polymorphisms CYP2C19 * 2 and * 3 SYP2C19 performed using TaqMan kits (Applied Biosystems, USA) in a system of detection of PCR products in real time.

The patients were divided into 3 groups based on results of the pharmacogenetic survey in cooperation with Teaching and research laboratory 'Genome medicine' of Medical institute in the Northeast federal university.

Group 1 - gene CYP2C19*1 carriers, n - 19, including 15 men and 4 women. Middle age is 57,8 ±12,7 years;

Group 2 - gene CYP2C19*2 carriers, n - 12, men-9 and women-3. Middle age has made 66,7±7,6 years;

Group 3 - gene CYP2C19*3 carriers, n - 4, male patients only. Middle age - 60±6,6 years.

When admitted to the department of Emergency Cardiology all the patients underwent the antiaggregant therapy in a loading dose: aspirin 250-325 mg and clopidogrel 600 mg.

The analysis of laboratory data included lipid profile indices. Due to higher risk of cardiovascular complications, high parameters were considered as follows: TC ≥ 4,0 mmol/l, LDL-C ≥ 1,8 mmol/l, HDL-C ≥ 1,0 mmol/l at men and 1,2 mmol/l at women, TG ≥ 1,7 mmol/l (recommendations of the Russian cardiologic society (RCS 2012), National society on Atherosclerosis (NSA) and Russian society of cardiosomatic rehabilitation and secondary prophylaxis (RosCSR). Body mass index (BMI) was estimated on Kettle II index calculated as followed: weight (kg) / growth (m²). Normal BMI within 18,5-24,9 kg/m²; 25-29,9 kg/m² - overweight (pre-obese); ≥ 30 kg/m² obesity (RCS, 2012).

Coronary angiography was conducted by the standard technique on 'INNOVA 3100'. At visual analysis of the coronary angiography main coronary arteries (left coronary artery trunk, anterior interventricular artery, circumflex artery, diagonal artery, right coronary artery, and obtuse

marginal branch) were studied. A type of coronary blood supply to the heart and the number of diseased arteries was estimated as well, and a function of previously implanted stent (DES stent – with drug-induced covering, BMS stent – bare metal) was defined. In-stent restenosis was classified based on extension and localization restenosis area in relation to stent (R.Mehran and coauthors, 1999): I type - local (length less than 10 mm); II - diffuse (length more than 10 mm); III - proliferative (beyond the stent, length more than 10 mm); IV type – stent occlusion.

The restenosis angiographic criterion was characterized by lumen reduction in a zone of previously implanted stent on 50 % and less that demanded repeated revascularization. The ACS standard treatment including stenting of infarct-connected coronary artery was performed.

All patients after the primary stenting were recommended to take two-componental disaggregant therapies (acetylsalicylic acid, clopidogrel or ticagrelor) and IHD basic therapy (β -adrenoblokatory, ACE inhibitors, statins).

Procedures of the statistical analysis were carried out by means of statistical package SPSS-19. Results are presented in the form of MyoSd, where M - average value, SD - standard deviation, CI - 95 % (confidence interval). Check for normal distribution of the studied quantity indicators in two surveyed groups was conducted by Kolmogorov-Smirnov's test. Variable distribution differed from the normal one, as a consequence it was presented in the form of median and interquartile ranges (25 and 75 percentiles). The authenticity of the average quantitative differences between two groups were checked by means of the nonparametric Mann-Whitney test, the qualitative indicators were checked by means of the contingency table based on the confidence analysis of χ^2 -Pearson criterion for independent samples. Authentic differences were noted when $p < 0,05$.

RESULTS AND DISCUSSION

In I group examined (patients with normal genotype CYP2C19*1) the coronary artery in-stent restenosis was manifested clinically on the average in 18,7 (3,7; 21,3) months. In II group, who were slow gene carriers (CYP2C19*2), manifestations were revealed on the average in 16,8 (1,25; 19,3) months. In III group of patients with genotype CYP2C19*3 repeated cardiovascular events were noted in 5,5 (2,0; 9,5) months that corre-

sponded to the research results of other authors to identify the causes of coronary artery in-stent restenosis [2, 4]. Despite early manifestation of the disease after the previous coronary intervention in III group, no authentic differences in temporal indicators of in-stent restenosis depending on genotype were revealed ($p < 0,05$).

In table 1 average indices of lipid profile at the surveyed are presented. The analysis has revealed high indicators TC and LDL-C. According to Iliodromitis E. [14] dyslipidemia as well as absence of cholesterol lowering preparations increase risk stent restenosis. TC average level at I group patients has made 4,2 mmol/l [3,2; 5,0], at II group the indicator of total cholesterol has appeared a bit higher as compared with I group - 4,6 mmol/l [3,7; 5,4]. In III group the TC average index is significantly higher than at I group patients - 5,4 mmol/l [4,6; 6,1], $p \text{ I - III } < 0,05$. The LDL-C average value in III group has appeared higher in comparison with other groups' parameters - 3,7 mmol/l (2,8; 4,5), but authentic differences are not obtained. The HDL-C and TC in all groups were within the values recommended by RCS, with exception of HDL-C slightly lower parameters in II group (tab. 1). The atherogenicity index (AI) has been higher at the gene carriers CYP2C19*2 and CYP2C19*3 and has made 3,7 in comparison with the indices in the I group - 2,5.

The analysis of the coronary angiography data has revealed differences in frequency of coronary artery in-stent restenosis at the patients investigated (fig. 1). The greatest percent of damage is revealed in anterior descending artery (ADA), on the second place is in the right coronary artery (RCA), then in the circumflex artery.

Of the total number of the patients

who had PCI with stenting CA (n=35), in I group BMS stents had been implanted at 2 patients earlier, DES stents had been at 9 patients (tab. 2). In II group investigated, of the patients with genotype responsible for resistance to clopidogrel (CYP2C19*2), BMS stents had been installed at 4 persons (33,3 %), DES stents at 3 people (25 %), unknown - 5 people (41,7 %), of the patients with genotype CYP2C19*3 3 people (75 %) had BMS stents, 1 person had DES stent (25 %). The highest percent of BMS stents were noted in III group.

The analysis of the remote results after stenting has revealed high frequency of two restenosis types in all groups: proliferative and occlusive damages. At the same time, stent occlusion (IV type) is significantly often noted in group CYP2C19*3. Lumen loss in stent > 90 % at PC is much higher in groups with genotypes CYP2C19*2 GA (83,3 %) and CYP2C19*3 AA (75 %).

The patients with smaller diameter of revascularized vessel are considered to have the greater risk of an adverse outcome after coronary stenting [5]. In our research we have also obtained the similar data (fig. 2). The average index of coronary artery diameter in the investigated groups was not bigger than 3,5 mm. So in I group the CA average diameter has been only 2,6 mm, it probably causing restenosis development. In II group of patients the similar indicator was equal to 2,98 mm, in III group - 3,17 mm. Significant distinctions are noted between I and II groups, $p < 0,05$.

In our work we have analyzed ACS clinical diagnoses among the surveyed. We have found out that the patients with no gene on resistance to clopidogrel had a small proportion of unstable angina (Figure 3).

To all patients with in-stent restenosis

Table 1

Average indices of lipid profile at patients with CA in-stent restenosis

Index	I group, gene carriers CYP2C19*1, n - 19	II group, gene carriers CYP2C19*2, n - 12	III group, gene carriers CYP2C19*3, n - 4	P I-II	P I-III	P II-III
Total cholesterine, mmol/l	4,2 [3,2;5,0]	4,6 [3,7;5,4]	5,4 [4,6;6,1]	>0,05	<0,05	>0,05
Low density lipoproteins, mmol/l	2,7 [1,9;3,1]	2,8 [2,2;3,4]	3,7 [2,8;4,5]	>0,05	>0,05	>0,05
High density lipoproteins, mmol/l	1,3 [1,0;1,6]	0,9 [0,7;1,2]	1,3 [0,8;1,7]	>0,05	>0,05	>0,05
Triglycerides	1,1 [0,86;1,3]	1,5 [1,2;1,9]	1,0 [0,6;1,4]	<0,05	>0,05	>0,05
Atherogenicity index	2,5 [1,8;3,0]	3,7 [2,5;4,9]	3,7 [2,2;5,1]	<0,05	>0,05	>0,05

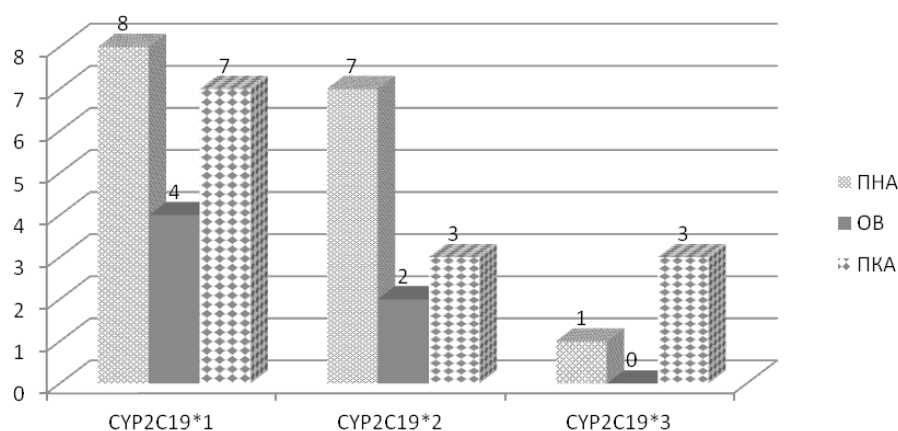


Fig. 1. Stent restenosis localization in coronary artery depending on genotype

Characteristics of Angiographic Indices

Table 2

Indices	I group , gene carriers CYP2C19*1, n - 19		II group , gene carriers CYP2C19*2, n - 12		III group , gene carriers CYP2C19*3, n - 4		P I-II	P I-III	P II-III
	n	%	n	%	N	%			
Character of previously implanted stent:									
BMS	2	10,5	4	33,3	3	75,0	>0,05	<0,01	>0,05
DES	9	47,4	3	25,0	1	25,0	>0,05	>0,05	>0,05
Unknown	8	42,1	5	41,7	-	-	>0,05	-	-
Restenosis Type:									
I	3	15,8	1	8,3	-	-	>0,05	-	-
II	6	31,6	1	8,3	-	-	>0,05	-	-
III	6	31,6	5	41,7	1	25,0	>0,05	>0,05	>0,05
IV	4	21,1	5	41,7	3	75,0	>0,05	<0,05	>0,05
Degree of Contraction:									
Lower than 50%	4	21,1	-	-	1	25,0	-	>0,05	-
50-75%	3	15,8	1	8,3	-	-	>0,05	-	-
75-90%	4	21,1	1	8,3	-	-	>0,05	-	-
Higher than 90%	8	42,1	10	83,3	3	75,0	<0,05	>0,05	>0,05

the antiaggregant Tikagrelor (Brilinta) was appointed in a dose of 180 mg/days to decrease in risk of repeated restenosis.

CONCLUSION

1. Genotypes CYP2C19*2 and CYP2C19*3 were revealed at patients with coronary artery in-stent restenosis in 45.7 % of cases.

2. Lipid metabolism is considered to be one of the unfavorable

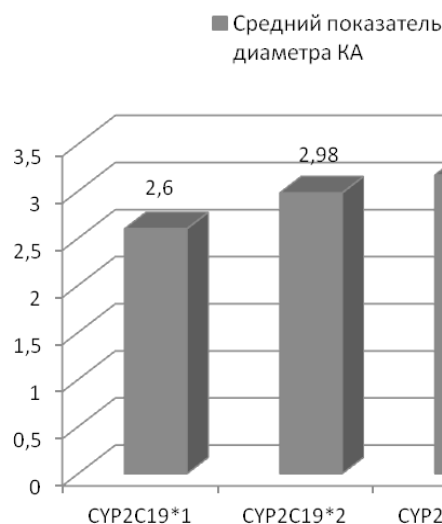


Fig. 2. The average diameter of the coronary artery at patients with in-stent restenosis

factors of the development of in-stent restenosis that demands more careful supervision and treatment of the given categories of patients.

3. The higher prevalence of coronary artery restenosis is noted in ADA, on the second place in RCA and then CA, with a smaller diameter of the vessel (no more than 3,0 mm on the average) and with a higher attack rate of bare metal stent (BMS) that corresponds to the literary data [8,5].

4. According to the above-stated results of our research, all the patients undergone PCI (coronary intervention procedure) by means of stenting are recommended to be tested on thrombocyte aggregation. If no decrease of the aggregation properties against the background of two-componental antiaggregant therapy is noted it is necessary to carry out pharmacogenetic assays due to the high risk of in-stent restenosis.

5. If CYP2C19*2 or CYP2C19*3 are carried by patients, another antiaggregant, for example, prasugrelor or tika-grelor is recommended. When revealing the genotype CYP2C19*1/*1 clopidogrel is appointed in the doses regulated in the instructions for medical use: a loading dose - of 300 mg, further on 75 mg/days [7].

REFERENCES

Sokolov Y. N. Sokolov M. Y. Kostenko L.N. i dr. [et al.] Invazivnaya kardiologiya i koronarnaya bolezni' [Invasive cardiology and coronary illness], Kiev, Morion, 2002, P. 360.

Lomonosov A.A. Grigorova S.Y. Afanasev Y.I. Problema restenoza posle chreskoznyh vnutrikoronarnykh vmeshatel'stv i perspektivy ego profilaktiki s pomoshch'yu genoterapevticheskikh vozdeystviy [The problem of restenosis

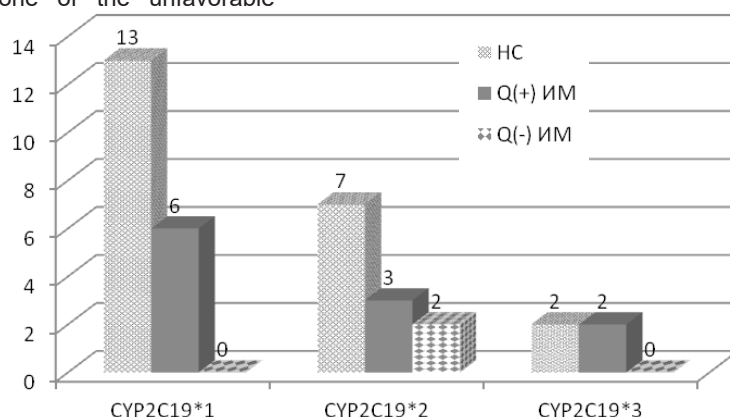


Fig. 3. Vascular complications at patients with in-stent restenosis
UA— unstable angina, Q (+) MI – Q positive myocardial infarction, Q (-) – Q negative myocardial infarction.

after transdermal intracoronary interventions and prospects of its prevention by dint of gene therapy impacts], Nauchnye vedomosti. Seriya Medicina, Farmaciya, [Medicine series. Pharmacy scientific], 2010, № 4, P. 5-10.

Nacional'nye rekomendacii po diagnostike i lecheniyu bol'nyh ostrym infarktom miokarda s pod'emom segmenta ST EHKG [National recommendations on diagnostics and treatment of patients with acute myocardial infarction with ST segment rise on ECG], Pervoe izdanie 2007, Kardiovaskulyarnaya terapiya i profilaktika [First edition 2007. Cardiovascular therapy and prevention], 2007; 6 (8), The appendix 1.

Fadeeva E.A. Kotovshchikova E.F. Efremushkina A.A. Buevich E.I. Syulzhin E.N. Afanaseva A.V. Tarasova A.N. Prediktory razvitiya trombozov i restenozov koronarnykh stentov [Predictors of development of coronary stent thromboses and restenosis], Medicina i obrazovanie v Sibiri [Medicine and education in Siberia], 2014, №2.

Buza V.V. Karpov Y.A. Samko A.N. Prichiny restenozov v stente posle intervencionnogo lecheniya pacientov s ostrym koronarnym sindromom s ehlevaciej segmenta ST [In-stent restenosis causes after intervention treatment of patients with sharp coronary syndrome with ST elevation segment], Kardiologiya [Cardiology], 2009, №1, P. 9-13.

Sulimov V.A. Moroz E.V. Rezistentnost' k antitrombotitskim preparatam (aspirinu, klopido-grelyu) u pacientov, podvergayushchih-sya ehlektivnomu stentirovaniyu koronarnykh arterij [Resistance to antithrombotic preparations (to aspirin, clopidogrel) at patients undergone coronary artery elective stenting], Racional'naya farmakoterapiya v kardiologii [Rational pharmacotherapy in cardiology], 2012, №1, volume 8, P.23.

Sychev D.A. Farmakogeneticheskoe testirovanie: klinicheskaya interpretatsiya rezul'tatov: rekomendacii dlya praktikuyushchih vrachej [Pharmacogenetic testing: clinical interpretation of results. Recommendations for practising doctors], Moscow, 2013, P. 86.

Recommendations of the American board of cardiologists, the American association of heart and the Society of cardiovascular angiography and interventions. Transdermal coronary interventions. Journal of the American College of Cardiology 2006; 47. -121.

A randomised, blinded, trial of clopidogrel versus aspirin in patients at risk of ischaemic events (CAPRIE). CAPRIE Steering Committee. Lancet. - 1996; - 348(9038): 1329-1339.

Benefits and risks of the combination of clopidogrel and aspirin in patients undergoing surgical revascularization for non-ST-elevation acute coronary syndrome: the Clopidogrel in Unstable angina to prevent Recurrent ischemic Events (CURE) Trial/ Fox K.A., Mehta S.R., Peters R. et al. // Circulation - 2004; - 110(10):1202-8.

Clopidogrel resistance is associated with increased risk of recurrent atherothrombotic events in patients with acute myocardial infarction/ Matetzky S., Shenkman B., Guetta V., Shechter M., Bienart R., Goldenberg I., Novikov I., Pres H., Savion N., Varon D., Hod H. // Circulation. - 2004; - 109: 3171 – 3175.

Early and sustained dual oral antiplatelet therapy following percutaneous coronary intervention: a randomized controlled trial/ Steinhubl S.R., Berger P.B., Mann J.T. 3rd et al. //JAMA. - 2002; - 288(19):2411-20.

High on-treatment platelet reactivity and P2Y12 antagonist in clinical trials/ Trenk D., Kristensen S.D., Hochholzer W., Neumann F.-J. // Thromb. Haemost. - 2013; - 109 (2): 1–11.

Increased C reactive protein and cardiac enzyme levels after coronary stent implantation. Is there protection by remote ischaemic preconditioning?/ Iliodromitis E.K., Kyrzopoulos S., Paraskevaidis I.A., Kolocassides K.G., Adamopoulos S., Karavolias G., Kremastinos D.T.// Heart. 2006; - 92(12): 1821–1826.

The relation of dosing to clopidogrel

responsiveness and the incidence of high post-treatment platelet aggregation in patients undergoing coronary stenting/ Gurbel P.A., Bliden K.P., Hayes K.M., Tantry U.S. // J Am Coll Cardiol.- 2005; - 45:1392-6.

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ISOLATION OF PRIMARY SKIN FIBROBLASTS FROM SKIN BIOPSY

Abstract

During the last decade, methods involving the use of cell therapy are being actively introduced in clinical practice in different fields of medicine. Patient-derived cells can be used for study of certain diseases associated with change in cellular phenotypes. Also they can be used for study of molecular mechanisms of a disease and subsequent drug screening approaches. Fibroblasts are of special interest for regenerative medicine. The global experience in treatment of skin lesions have demonstrated that fibroblasts applied to wounded area promote faster healing and epithelialization. Today, autologous and allogeneic fibroblasts are more often used in treatment of different skin traumas and defects along with various surgical materials. In this study we describe the method of isolation, maintaining and storage of human primary skin fibroblasts. The described method is fast (takes 30-40 min), simple and reproducible.

Keywords: primary skin fibroblasts, skin therapy.

INTRODUCTION

Cell technologies are actively developing in a modern world and for the last decade have reached a significant success especially in treatment of severe states that demand tissue regeneration. Cell therapy can be used in treatment of trophic ulcers of different etiology, large scale burns, including chemical and radiation burns, symptomatic treatment of hereditary diseases, tendon reconstruction and cosmetic surgery.

Because of the high potential in repair processes, fibroblasts based cell therapy stands out from other cell based therapies. Isolation and culturing of skin fibroblasts is very promising, efficient and cost-effective technique in modern regenerative medicine. Because of lack of the immune response and impossibility of transmission of the infection, the use of autologous skin fibroblasts is more preferable.

Fibroblast are the heterogeneous population of cells, which include cells on different stages of differentiation, starting from multipotent mesenchymal stem cells and ending with fully differentiated fibroblasts [1]. The main function of fibroblasts is synthesis and organization of the extracellular matrix [9], by means of synthesis and destruction of collagen and elastin proteins [2]. Fibroblasts have a huge biosynthetic potential. A single mature fibroblast cell can produce up to 3.5 million collagen macromolecules per day [4]. Fibroblasts also produce different growth factors, cytokines, glycosaminoglycans, proelastin, nidogen, laminin and other important components of the extracellular matrix [1]. Fibroblasts are still capable to

produce ECM components even after the transplantation [5], therefore creating appropriate environment for functioning and proliferation of other cells.

Today both autologous and allogeneic fibroblasts are used for healing of skin defects. However, the therapy with the use of autologous cells demonstrate longer clinical effect with no inflammatory response and risks of infection [7]. Allogeneic fibroblasts can be used in emergency situations. They provide fast closure and healing of a wound, however their lifespan is limited [8].

There are different methods that are successfully used for the isolation of fibroblasts from skin biopsy these methods usually include mechanical or enzymatic treatment of biopsy material. There are also methods that combine both treatments [3].

The goal of this study was to approve the method of skin fibroblasts isolation, culturing and their long-term storage in the conditions of liquid nitrogen.

MATERIALS AND METHODS

Fibroblasts were isolated from skin samples obtained with the use of 4 mm disposable biopsy punch. Biopsy site was locally anesthetized by 2% lidocaine solution. For establishing of stable culture of skin fibroblasts we have used the method that have been described elsewhere [10]. Briefly, after the biopsy the sample was immediately placed into transportation medium containing DMEM supplemented with 10 % FBS and 1× antibiotic-antimycotic solution. In the laboratory skin biopsy was placed into a Petri dish containing small amount of the transportation medium, and then was divided with

a scalpel into 12-18 smaller pieces of the same size. 700 microliters of culture medium containing high glucose DMEM containing glutamine and pyruvate supplemented with penicillin streptomycin mixture and 10% FBS (Gibco, Life Technologies), were added into each well of gelatinized 6-well plate. Two or three skin pieces were placed in the distance of 5 mm from each other in each well. Subsequently the plate was placed in CO₂ incubator at 37°C and 5% CO₂. The culture medium was replaced as needed, usually every 4-5 days during the first 15 days of incubation.

The first keratinocytes emerged at day 5-7 of incubation, while fibroblasts started to appear at day 14-19. Cells were passaged after the formation of monolayer (day 25-30). All subsequent passages were performed every 3-4 days. The culture medium was changed every 2-3 days. The morphology of cells was monitored with the use of Leica inverted microscope. 0.25% trypsin solution (Gibco, Life Technologies) was routinely used for cell detachment. After reaching the confluent state, the cell culture was regularly split in a ratio of 1:3. Cell freezing have been performed in Nunc cryovials in a freezing medium supplemented with 10% DMSO. Cells prepared for freezing were placed into insulated polystyrene box and put in -86°Bozo I.Ya. Deev R.V., Pinaev G.P. «Fibroblast» - specializirovannaya kletka ili funktsional'noe sostoyanie kletok mezenhimnogo proiskhozhdeniya? ["Fibroblast" - a specialized cell or the functional state of mesenchymal origin cells?] Citologiya [Cytology]. 2010, №2, V.52, P. 99-109.

Zhukova O.V. Potekaev N.N. Sten'ko A.G. Burdina A.A. Patogenez i gistomorfologicheskie osobennosti rubcovykh izmenenij kozhi [Pathogenesis and histomorphological features of scar skin changes] *Klinicheskaya dermatologiya i venerologiya* [Clinical Dermatology and Venereology]. 2009, №3, P. 4-9.

Makeev O.G. Ulybin A.I. Zubanov P.S. Malishevskaya E.G. Otchet ot trekhletnih klinicheskikh ispytaniykh autologichnykh dermal'nykh fibroblastov dlya korrektsii defektov kozhi [Report about a three-year clinical trial of autologous dermal fibroblasts for the correction of skin defects] *Vestnik Ural'skoj medicinskoj akademicheskoy nauki* [Herald of Ural Medical Academic Science]. 2008, №4, p. 63-70.

Mironova S.P. Omel'yanenko N.P. Sluckij L.I. Soedinitel'naya tkan' (gistofiziologiya i biokhimiya) [Connective tissue (histophysiology and biochemistry)]. Moscow: Izvestiya, 2009, V. 1, P. 69-70.

Sarkisov D.S. Alekseev A.A. Teoreticheskie i prakticheskie aspekty ispol'zovaniya kul'tivirovannykh fibroblastov pri vosstanovlenii celostnosti kozhnogo pokrova [Theoretical and practical aspects of the use of cultured fibroblasts in restoring the integrity of the skin] *Vestn. RAMN* [RAMS Herald]. 1994, №7, p. 6-11.

Danlybaeva G.A. Amanzholov R.A. Kumasheva V.T. Ogaj V.B. Mukantaev K.N. Tekhnologiya polucheniya i kul'tivirovaniya allogennykh i autologichnykh fibroblastov cheloveka dlya zamestitel'noj kletочноj terapii [The technology of obtaining and culturing of allogeneic and autologous human fibroblasts for cell replacement therapy] *Biotekhnologiya. Teoriya i praktika* [Biotechnology. Theory and practice]. 2011, №2, p. 77-81.

Autologous full-thickness skin substitute for healing chronic wounds/ S. Gibbs, H.M. van den Hoogenband, G. Kirtschig, C.D. Richters, S.W. Spiekstra, M. Breetveld, R.J. Scheperand E.M. de Boer// *British Journal of Dermatology*. – 2006. – 155 (2). – C. 267-274.

Clinical study with allogeneic cultured dermal substitutes for chronic leg ulcers/ M. Yonezawa, H. Tanizaki, N. Inoguchi, M. Ishi-

da, M. Katoh, T. Tachibana, Y. Miyachi, K. Kubo, Y. Kuroyanagi. // *International Journal of Dermatology*. – 2007. – 46. – p. 36-42.

Human skin stem cells and the ageing process / Christos C. Zouboulis, James Adjaye, Hirohiko Akamatsu, Gerd Moe-Behrens, Catherin Niemann// *Experimental Gerontology*. – 2008. - №43. – p. 986-997.

Skin punch biopsy explant culture for derivation of primary human fibroblasts. / Vangipuram M., Ting D., Kim S., Diaz R., Schüle B// *J Vis Exp* – 2013. - №7. – p. 3779-3791.

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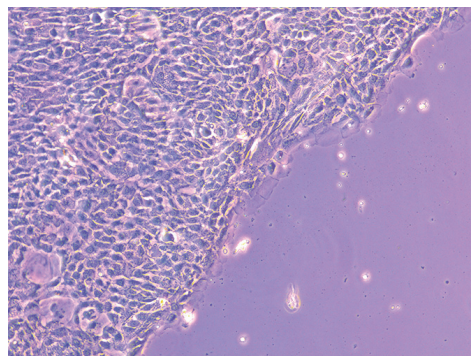


Figure 1. Keratinocytes outgrowth in primary culture of human skin fibroblasts at day 7 of culturing. Phase contrast, 100×.

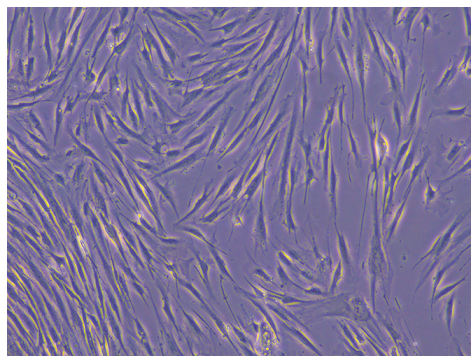


Figure 3. Heterogeneous population of primary human skin fibroblasts at day 25 of culturing. Phase contrast, 100×.

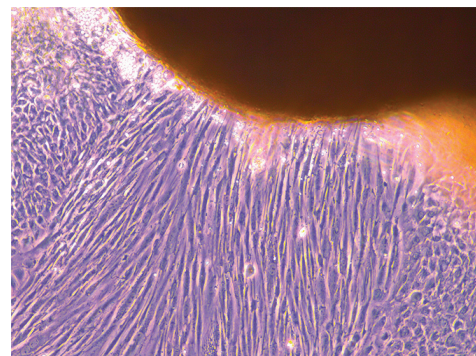


Figure 2. Heterogeneous population of keratinocytes and fibroblasts in primary culture at day 19 of culturing. The edge of skin biopsy can be observed. Phase contrast, 100×.

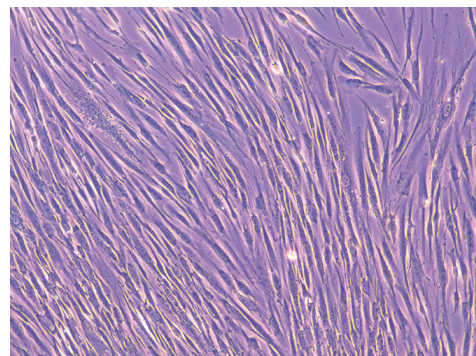


Figure 4. The monolayer of fibroblasts formed by day 28.

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INFLUENCE OF ANTIOXIDANT THERAPY ON THE COURSE OF ADHESIONS IN THE ABDOMINAL CAVITY UNDER THE EXPERIMENTAL CONDITIONS

ABSTRACT

In the present work results of influence of antioxidants (emoxypin and mexydol) on formation of adhesions in an abdominal cavity at experimental animals in comparative aspect after modelling of adhesive illness are presented. It is established that in the groups received specified preparations authentic decrease of formation of adhesions is marked with optimization of antioxidant system. The quantity of remezotelized cells on deserosaled sites of peritoneum in comparison with control group increases.

Keywords: adhesive process, antioxidants, laboratory animals.

In spite of progress of modern medicine, peritoneal adhesions remain one of the unsolved and actual problems of the abdominal surgery at present time. The frequency of the disease, the difficulty of timely recognition, lack of clear criteria of treatment policy and unfavorable outcomes make the problem of adhesions syndrome relevant [3, 4, 7]. Over the past few decades varieties of preventive measures from the formation of adhesions in the abdominal cavity were offered. However, until now there are no fairly effective means for prevention of adhesions in the postoperative period in modern medicine [5, 6, 8].

In recent times, studiers refer to abnormality in pro- and antioxidant balance of the body in the study of the reasons of development of various diseases, including inflammatory conditions [2].

The **aim** of the research is to determine the potency of drug influence having antioxidant properties: emoxypine and mexidol in comparison, used for prevention and development of adhesion in the abdominal cavity of the laboratory animals after the modeling of the peritoneal adhesions experimentally.

MATERIALS AND STUDY METHODS

The research study was carried out on 60 white non-inbred mature rats with ini-

tial body weight 230-250 gms, kept under standard vivarium conditions.

The rats were divided into 4 groups of 15 rats in each group for determination the potency of drug influence having antioxidant and antihypoxic properties (emoxypine and Mexidol) at course of adhesion in the abdominal cavity after modeling the process of peritoneal adhesions.

Group 1 – the intact group (n = 15). The laboratory animals of this group were not subjected to adhesions and no drugs were administered to them. The lipid – peroxidation and antioxidant defense measurements of the rats of this group were investigated for comparative assessment with the laboratory animals of other groups.

The other rats were included into the second, third and fourth groups. They experienced the modeling of the peritoneal adhesions. The midline laparotomy was performed under ether anesthesia in the conditions of experimental operating room. Then the removal of the serous membrane of the visceral peritoneum of the terminal segment of the small intestine situated 2 cm above the ileocecal angle, was performed with the help of gauze turunda up to the slight hyperemia and the capillary hemorrhage occurred over the whole circle of the intestine within 2 cm round. Further, the laparotomy wound

was sutured with the sterile non-absorbable capronic ligatures. All the laboratory animals in pre- and postoperative period were in the vivarium in equal conditions. The laboratory animals were devitalized by etherization's overdosage in 14 days after modeling of the peritoneal adhesions. After mortification the blood for research was taken by decapitation and the visual estimate of the adhesive process in the abdominal cavity was carried out.

Group 2 – the control group (n = 15) was used for comparative assessment of the postoperative therapy effectiveness with groups 3, 4. The laboratory animals were subjected to the modeling of the peritoneal adhesions of the peritoneum. After that during 7 days of the postoperative period the laboratory animals were administered abdominally as a single dose 2 ml of sterile physiological saline (NaCl 0, 89%).

In the third group (n = 15) the rats, after being modeled, were administered Mexidol (60mg/kg) abdominally as a single dose during 7 days of postoperative period.

The fourth group (n = 15) was composed by the rats, modeled to peritoneal adhesions. They were administered emoxypine (60mg/kg) abdominally as a single dose during 7 days of the postoperative period.

In 14 days the laboratory animals after

being modeled to peritoneal adhesions were devitalized by etherization overdosage. On prosection of the abdominal cavity the intensity of the adhesive process was studied macroscopically (pic.1) according to the scoring system [9]: 0 – general lack of commissurae; 1 score – one commissura between the abdominal cavity organs or between the organs and the abdomen's wall; 2 scores – two commissurae between the abdominal cavity organs or between the organs and the abdomen's wall; 3 scores – more than two commissurae or the adhesive intestine loops, not connected to the abdomen's wall; 4 scores – abdominal cavity organs are directly connected by commissurae with the abdomen's wall despite the quantity of the commissurae.

The condition of the anti-oxidation system and the intensity of the lipid-peroxidation reaction were measured in the blood according to the quantitative content of alpha-tocopherol (vit.E) in the blood serum of the laboratory animals under R.Zh.Kiselevich, C.S.I.Skvarko's method. The activity level of lipid-peroxidation process taking into account the quantity of diene conjugates in the blood was determined by I.D. Stalnaya's method (1972). The concentration of hydroperoxide of lipids was determined by L. A.Romanova, I.D. Stalnaya's method (1977) in E.A. Borodin's modification with co-authors (1992).

The segments of the visceral peritoneum of the intestine, earlier prone to the removal of the serous membrane, were taken out and fixed in 10% solution of formalin. Then the histodiagnosis was carried out with blocking in the wax and coloring in hematoxylin and in eosin.

The morphologic picture was supplied by the morphometric investigations which included the complex of criteria proposed by Poroykiy S.V. and co-authors (2010), permitting to give the objective characteristics in absolute numbers [5].

The statistical processing of the results was carried out according to Student t-test with the use of the software Statistica 6.1.

RESEARCH RESULTS AND DISCUSSION

The results of macroscopical evaluation showed the decrease of the quantity of intra-abdominal commissurae in the laboratory animals which had been administered the named drugs in comparison with the control group (pic.1). However, the most advantageous prophylactic effect to the development of intra-abdominal commissurae was the use of Mexidol (pic.2). There were certain significant differences ($p < 0,05$) between the data of the control group and experimental groups.

Table 1 demonstrates that the control group of laboratory animals (group 2) has

the highest level of adhesion in the abdominal cavity ($3,53 \pm 0,5$) in comparison with the laboratory animals which had been administered abdominally emoxypin ($2,6 \pm 0,50$) and Mexidol ($1,8 \pm 0,41$) at significant difference ($p < 0,001$).

It was revealed that adhesive commissurae are mainly situated in the part of removal of serous membrane of the visceral peritoneum, forming predominantly viscerovisceral commissurae with the loops of the nearby intestines.

As it follows from the findings, significant decrease of the adhesions' intensity in the abdominal cavity is observed in the groups of laboratory animals which had been administered antioxidants after modeling of the peritoneal adhesions. Though the least level of the adhesive process at the macroscopical evaluation was marked in the groups of laboratory animals who had been administered Mexidol in the dosage 60mg/kg at the significant differences ($p < 0,001$).

For studying the changes in the system of lipid-peroxidation and the state of anti-oxidant activity after peritoneal adhesions modeling in the postoperative period, the content of lipid-peroxidation system's constituents (diene conjugates – DC, hydroperoxide of lipids – HL) and antioxidant activity components (α -tocopherol and ceruloplasmin) were investigated on the 14th day in all the four groups of animals ($n = 60$).

Comparative characteristics of all the groups is observed in Table 3.

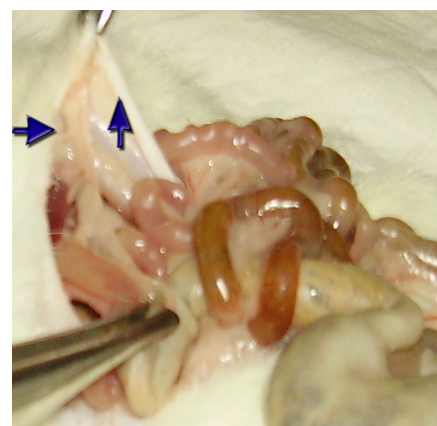
Table 3.

At determining the state of the anti-oxidant activity and the intensity of the lipid-peroxidation reactions on the 14th day of the experiment the highest level of lipid-peroxidation products ($p < 0,001$) was observed in the blood serum of the control group of the laboratory animals in comparison with other groups: diene conjugates ($82,06 \pm 10,40$ nM/ml), hydroperoxide of lipids ($35,40 \pm 5,12$ nM/ml). At that antioxidant activity, α -tocopherol ($43,32 \pm 5,05$ mcg/ml) and ceruloplasmin ($30,58 \pm 2,59$ mcg/ml) levels were significantly lower than in other groups ($p < 0,001$).

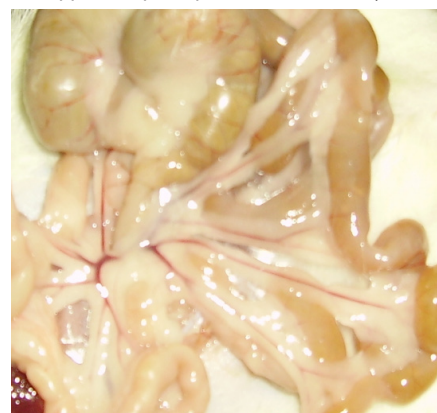
Highly mentioned changes of lipid-peroxidation and anti-oxidant activity proved the intensity of freely proceeding radical reactions and the decrease of the potential of the antioxidant defense of the laboratory animals of the control group in the comparative aspect with other groups of animals.

In the 4th group of rats, which were administered emoxypine 3% abdominally (60mg/kg), the content of lipid-peroxidation products during the postoperative period was significantly less $p < 0,001$ than in the 2nd group of laboratory animals (control group): diene conjugates ($51,39 \pm 2,36$ nM/ml), hydroperoxide of lipids ($23,63 \pm 1,13$ nM/ml).

At estimating the anti-oxidant activity it



Pic. 1. Intraperitoneal commissurae of the animal from the control group (arrows show the appeared postoperative adhesions).



Pic. 2. Intraperitoneal commissurae of the laboratory animal from the group which got Mexidol (insignificant deformity of the intestine in the area of the removal of serous membrane is seen, 14 days after peritoneal adhesions modeling)

Table 1

Characteristics of adhesions in different experimental groups

Scores	Experimental groups of animals		
	Group 2	Group 3	Group 4
0 score (abs.)			
1 score (abs.)		3	
2 scores (abs.)		12	6
3 scores (abs.)	7		9
4 scores (abs.)	8		
Average (M ± m)	3,53±0,5	1,8±0,4	2,6±0,5
$p_1 < 0,001$; $p_2 < 0,001$; $p_3 < 0,001$			

Notes: p_1 – significance of differences between the first and the second groups, p_2 – significance of differences between the first and the third groups, p_3 – significance of differences between the second and the third group. Was marked the increase of the alpha-tocopherol level ($59,20 \pm 3,37$ mcg/ml) and ceruloplasmin ($36,56 \pm 1,44$ mcg/ml) in the blood serum in comparison with the 2nd (control) group ($p < 0,001$). It implied

the decrease of activity of freely radical oxidation and the optimization of antioxidant activity after peritoneal adhesions' modeling on the background of emoxypine administration.

In the group of the laboratory animals which were abdominally administered Mexidol 5% in a dose 60mg/kg, the statistical significant ($p < 0,001$) decrease (in comparison with the animals of the control group) of intensity of free radical oxidation was also investigated, DC ($50,94 \pm 7,40$ nM/ml), HP ($21,63 \pm 1,82$ nM/ml) approximating to the figures of the 1st group of animals (intact): DC ($52,03 \pm 4,40$ nM/ml) and HP ($20,63 \pm 1,84$ nM/ml). At comparing the lipid-peroxidant products with the figures of the third experimental group (emoxypine), the significant decrease was marked ($p < 0,005$) HP ($21,63 \pm 1,82$ nM/ml).

At estimating the antioxidant activity in the 3rd group (Mexidol) the highest increase of the quantitative content of alpha-tocopherol ($65,16 \pm 4,60$ mcg/ml) and ceruloplasmin ($37,20 \pm 1,43$ mcg/ml) was observed. At that, alpha-tocopherol level was significantly higher than the same figure of the 1st (intact) and the 4th (emoxypine) groups ($p < 0,001$).

Analyzing the obtained results of the condition of antioxidant defense, it's clearly seen that in all experimental groups in relation to the control group, the lipid-peroxidation level decreases, and the quantitative content of vit.E and ceruloplasmin increases. That indicates the optimization of the antioxidant defense at animals given antioxidant drugs.

At histologic examination in the medicines, the dynamics of morphological changes of the defect of the serosal sheet was evaluated. The morphological pattern was supplied by the morphometric research, which included the complex of criteria proposed by Poroyskiy S.V. and co-authors. These criteria permit to give the objective characteristics in absolute numbers. The results are performed in the table 4.

The animals of the second group (control) had $10 \pm 1,60$ kl/mm mesothelial cells at the area of the visceral peritoneum subjected to the removal of the serous membrane. Its quantity was accurately less ($p < 0,001$) than in other experimental groups of animals.

The thickness of the peritoneum amounted up to $60,86 \pm 3,27$ μ m, obtaining the largest value in comparative aspect ($p < 0,001$) and accompanied by the apparent lymphohystiocytic infiltration.

The above listed changes indicate to more intensive inflammatory process and overdevelopment of the fibrosis of the connective-tissue basis of the abdominal membrane in the postoperative period at the areas of the peritoneum subjected to the removal of the serous membrane in the laboratory animals of this group.

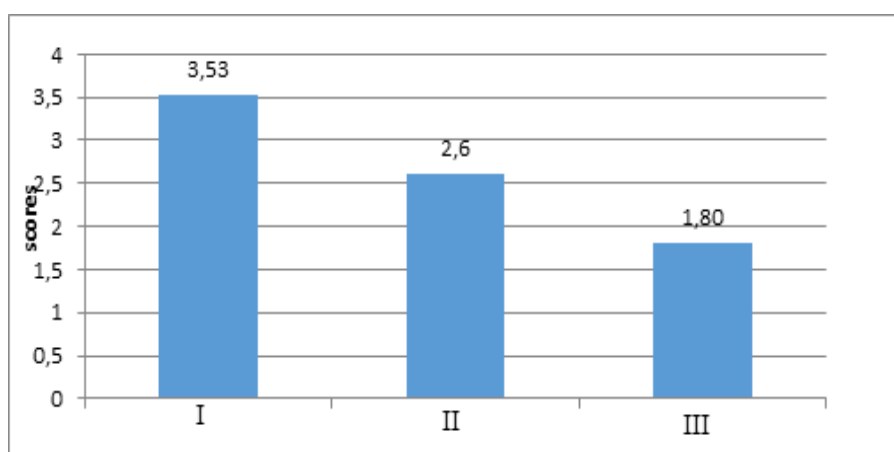


Fig. 3. The results of the macroscopical evaluation (in accordance to the grading scale) of the level of adhesive process strength in the abdominal cavity of the control group (I) at the background use of emoxypine (II), Mexidol (III).

Table 2

Lipid-peroxidation and antioxidant activity characteristics of different experimental groups

Scores (M \pm m)	Experimental groups of animals (n = 15 in each group)			
	1 st (intact)	2 st (control)	3 st (Mexidol)	4 st (emoxypine)
Diene Conjugates (DC) nM/ml	52,03 \pm 4,40	82,06 \pm 10,40	50,94 \pm 7,40	51,39 \pm 2,36
Hydroperoxides (HP) nM/ml	20,63 \pm 1,84	35,41 \pm 5,12	21,63 \pm 1,82	23,63 \pm 1,13
Ceruloplasmin mcg/100 ml	40,66 \pm 3,57	30,58 \pm 2,59	37,20 \pm 1,43	36,56 \pm 1,44
Vitamin E mcg/ml	51,04 \pm 4,17	43,32 \pm 5,05	65,16 \pm 4,60	59,20 \pm 3,37
	p ₁ < 0,001 p ₂ = 0,62 p ₃ = 0,64 p ₄ < 0,001 p ₅ < 0,001 p ₆ = 0,83	p _{1,1} < 0,001 p _{1,2} < 0,001 p _{1,3} = 0,13 p _{1,4} < 0,001 p _{1,5} < 0,001 p _{1,6} < 0,005	p _{2,1} < 0,001 p _{2,2} < 0,001 p _{2,3} < 0,005 p _{2,4} < 0,001 p _{2,5} < 0,001 p _{2,6} = 0,21	p _{3,1} < 0,001 p _{3,2} < 0,001 p _{3,3} < 0,001 p _{3,4} < 0,001 p _{3,5} < 0,001 p _{3,6} < 0,001

Примечание. Достоверность различий уровня ДК между группами: p₁ – 4-й и 1-й, p₂ – 4-й и 2-й, p₃ – 4-й и 3-й, p₄ – 1-й и 2-й, p₅ – 1-й и 3-й, p₆ – 2-й и 3-й; уровня HP: p_{1,1} – между 4-й и 1-й, p_{1,2} – 4-й и 2-й, p_{1,3} – 4-й и 3-й, p_{1,4} – 1-й и 2-й, p_{1,5} – 1-й и 3-й, p_{1,6} – 2-й и 3-й; уровня церулоплазмينا: p_{2,1} – между 4-й и 1-й, p_{2,2} – 4-й и 2-й, p_{2,3} – 4-й и 3-й, p_{2,4} – 1-й и 2-й, p_{2,5} – 1-й и 3-й, p_{2,6} – 2-й и 3-й; уровня витамина Е: p_{3,1} – между 1-й и 2-й, p_{3,2} – 1-й и 3-й, p_{3,3} – 1-й и 4-й, p_{3,4} – 2-й и 3-й, p_{3,5} – 2-й и 4-й, p_{3,6} – 3-й и 4-й.

Table 3

The rates of morphometry of the visceral peritoneum of the small bowel at experimental animals

Scores (M \pm m)	Experimental groups of rats (n = 15 in each group)		
	2 st (control)	3 st (Mexidol)	4 st (emoxypine)
Thickness of the peritoneum (μ m)	60,86 \pm 3,27	48,86 \pm 1,74	51,36 \pm 4,10
Number of density of mesotheliocytes (1 kl/mm)	10 \pm 1,60	18,86 \pm 2,50	13,86 \pm 1,95
Average diameter of the mesotheliocytes' cores (μ m)	7,40 \pm 0,55	8,94 \pm 0,36	8,07 \pm 0,56
The rate of the shape of the surface	1,64 \pm 0,19	1,32 \pm 0,18	1,46 \pm 0,16
p ₁ < 0,001 p ₂ = 0,001 p ₃ = 0,05	p _{1,1} < 0,002 p _{1,2} = 0,001 p _{1,3} = 0,001	p _{3,1} < 0,011 p _{3,2} < 0,001 p _{3,3} < 0,039	p _{2,1} < 0,002 p _{2,2} < 0,001 p _{2,3} < 0,001

Примечание. Достоверность различий уровня толщины брюшины между группами: p₁ – 2-й и 3-й, p₂ – 2-й и 4-й, p₃ – 3-й и 4-й; p_{1,1} – 2-й и 3-й, p_{1,2} – 2-й и 4-й, p_{1,3} – 3-й и 4-й; p_{2,1} – 2-й и 3-й, p_{2,2} – 2-й и 4-й, p_{2,3} – 3-й и 4-й; p_{3,1} – 2-й и 3-й, p_{3,2} – 2-й и 4-й, p_{3,3} – 3-й и 4-й.

The average diameter of the mesotheliocytes' cores was $7,40 \pm 0,55 \mu\text{m}$ that statistically was less ($p < 0,05$) than in animals of other groups. This fact pointed out to the hypoactivity of the metabolic processes in the mesothelial cells.

The rate of the shape of the surface at rats of the 1st group was $1,64 \pm 0,19$ and it was higher in comparison with other groups of animals ($p < 0,05$). It is the characteristic of the more intensively proceeding inflammatory process, leading to the deformation of the peritoneum after modeling of the peritoneal adhesions.

The laboratory animals of the 4th group which were abdominally administered emoxypine 3% after being modeled to the peritoneal adhesions had the density of mesotheliocytes equal to $13,86 \pm 1,95 \text{ kl/mm}$, at the areas of the peritoneum subjected to the removal of the serous membrane. It was 27,5% more ($p = 0,000002$) than in the 2nd group (control).

The thickness of the peritoneum was $51,36 \pm 4,10 \mu\text{m}$, that was 15,6% less in comparison with the 2nd (control) group ($p < 0,001$). Besides, the decrease of lymphogranulecytic infiltration in comparative aspect with the animals of the 2nd group was observed.

The average diameter of the mesotheliocytes' cores was $8,07 \pm 0,56 \mu\text{m}$, 13% higher than in the 2nd group of animals (control) ($p < 0,05$).

The animals of the 2nd group had the rate of the surface shape 11% less in comparison with the 1st group and composed $1,46 \pm 0,16 \mu\text{m}$ ($p < 0,05$).

Pic.5

The laboratory animals of the 3rd group, which got Mexidol 5% abdominally, had the density of mesothelial cells in the areas with removed serous membrane at an average $18,86 \pm 2,50 \text{ kl/mm}$. It exceeded 46,9 % ($p < 0,001$) the rates of the 2nd group (control) and 26,5% the rates of the 4th group (emoxypine) of animals ($p = 0,001$).

The thickness of the area of the peritoneum with the removed serous membrane induced $48,86 \pm 1,74 \mu\text{m}$ that 24,5% is less than in the 1st group ($p < 0,001$) and 5,1% less than in the 4th group (emoxypine) of animals ($p < 0,05$).

The average diameter of the mesotheliocytes was $8,9 \pm 0,4 \mu\text{m}$, 16,8 % higher than the animals of the 1st group ($p < 0,001$) and 9,7% larger than the rates of the 2nd group with the 2nd group ($p < 0,001$).

The rates of the shape of surface was $1,32 \pm 0,2$ and 9,6% less than the results of the 2nd group ($p < 0,05$) and 19,5% less than the results of the 1st group ($p < 0,001$).

The resulting data point to the higher reparative potential of the mesotheliocytes, characterized by the rising of the cores' diameter and the density of the

cells at the areas with the removed serous membrane within the animals of the 3rd group.

An additional point is that the least observed thickness and deformation on the damaged areas of the abdominal membrane of the animals of the 3rd group may be regarded as the evidence of the low intensively proceeding inflammatory reactions in the areas of the peritoneum subjected to the removal of the serous membrane in the postoperative period.

Pic. 6.

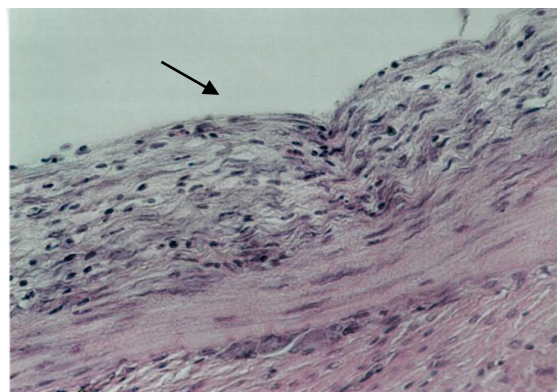
Analyzing the obtained morphometric results, it's evident that the most propitious picture is observed at laboratory animals which got Mexidol abdominally.

CONCLUSIONS

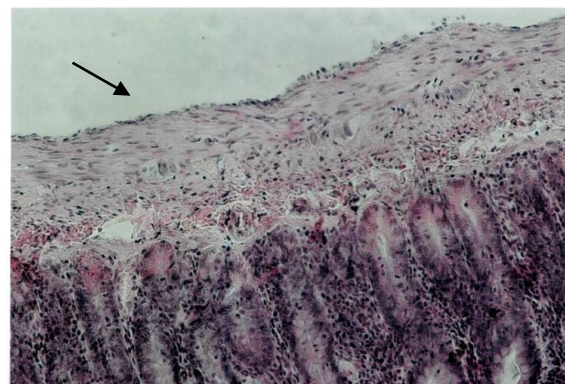
The administration of the studied antioxidants by the laboratory animals in accordance to our data significantly decreases the appearance of the adhesions in the peritoneum in early operative period.

The abdominal administration of the Mexidol in a dose of 60 mg/kg in comparative aspect mainly conduces the regeneration of the mesothelial cells, optimization of the rates of the antioxidant system and the significant decrease of adhesions' degree.

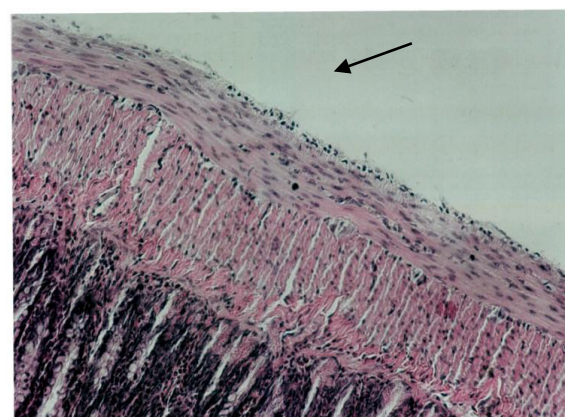
Thus, we demonstrated experimentally the way of excessive adhesion's prevention in the abdominal cavity. In the comparative aspect, it was elucidated that mainly Mexidol 5% (60mg/kg) at abdominal administration conduces the decrease of adhesion level, the decrease of the inflammatory processes, the fall of lipid – peroxidation activity. Antioxidants possess antianginal, anticoagulation, membrane – stabilizing and immunostimulatory activities in varying degrees. Despite the absence of the unified theory of peritoneal adhesions' development, it can be supposed that antioxidative therapy influences one of the main parts of adhesion. It's the perspective way in the combination therapy and precaution of the peritoneal adhesions.



Pic. 4. Regeneration of the area of the rat's peritoneum subjected to the removal of the serous membrane. The control group. The distorted area of the peritoneum is pointed by the arrow. Hematoxylin and eosin stain. Enlargement: 400.



Pic. 5. Regeneration of the area of the rat's peritoneum subjected to the removal of the serous membrane. Emoxypine was administered. Soft areas of the abdominal membrane's deformation are denoted. The stratum of the mesothelial cells is demonstrated by the arrow. Hematoxylin and eosin stain. Enlargement: 100.



Pic. 6. Regeneration of the area of rat's peritoneum subjected to the removal of the serous membrane. Mexidol was administered. The stratum of the mesothelial cells is demonstrated by the arrow. Hematoxylin and eosin staining. Enlargement: 400.

REFERENCES

- Zhuravlev A.I., Zubkova S.M.
Antioxidants. Antioksidanty.
Svobodnoradikal'naja patologija [Free-radical pathology]. Moscow: MIKO-PRINT, 2008, 272 p.

Starokon' P.M. Monitoring klinicheskogo techeniya spaechnoj bolezni brjushnoj polosti v poliklinike [Monitoring of clinical progression of peritoneal adhesions of abdominal cavity in polyclinics]. *Bjul. Volgogr. nauch. centra RAMN*. [Bulletin of Volgograd scientific Centre of Russian Academy of Medical Sciences], 2008, №4, p.35–37.

Sysolyatin A.A., Tseluyko S.S., Badasyan A.N., Platinin M.L., Sergeevich A.A., Shtarberg M.A., Batalova T.A. Sposob predotvrashheniya razvitiya spaechnoj bolezni u laboratornyh zhivotnyh v jeksperimente [The method of prevention of peritoneal adhesions at laboratory animals in experiment]. Patent № 2347569 Ros. Federacii: MKI {7} A61K 31/4412, A61K 31/355 / [pat. 2347569 of Russian Federation: MKI {7} A61K 31/4412, A61K 31/355 /patent holder State Educational Institute of Higher Professional Education Amur State Medical Academy. № 2007142120/14]. *Bulletin*. № 6, 27.02.2009,

Totikov V.Z., Kalitsova M.V., Amrilaeva V.M. Lechebno-dagnosticheskaja programma pri ostroj spaechnoj obturacii tonkokishechnoj neprohodivosti [Diagnostic and treatment programme at acute adhesive obturative small intestinal

obstruction]. *Hirurgija*. [Surgery], 2006, №2, p.38–43.

Hodos G.V. and others. Laparoskopicheskie tehnologii v lechenii ostroj spaechnoj kishechnoj neprohodivosti [Laparoscopic technologies in treatment of acute adhesive intestinal obstruction]. *Endoscopic surgery* [Jendoskopicheskaja hirurgija], 2006, №4, p. 36–43.

Chekmazov I.A. Spaechnaja bolezni brjushiny [Adhesive disease of the peritoneum]. Moscow: Geotar-Media, 2008, 160 p.

Vorobyev A.A., Beburishvili E.E., Pisareva E.E. Profilaktika spaechnoj bolezni brjushnoj polosti (obzor zarubezhnoj literatury [Preventive measures against peritoneal adhesions of the abdominal cavity (reference of foreign literature)]. *Hirurgija* [Surgery], 1998, №3, p. 65–67.

Poroyskiy S.V., Vorobyev A.A., Poroyskaya A.V., Maksimova I.A. Vlijanie operacionnogo stressa na morfologicheskiju organizaciju funkcional'no razlichnyh otdelov brjushiny v dinamike posleoperacionnogo perioda [The influence of surgical stress on the morphological organization of various functional departments of the peritoneum in the postoperative course]. *Bjulleten' Volgogradskogo nauchnogo*

centra RAMN [Bulletin of Volgograd scientific Centre of Russian Academy of Medical Sciences], 2010, №2, p. 26–30

Nair S.K., Bhat I.K. Role of proteolytic enzymes in the prevention of post-operative intraperitoneal adhesion, *Arch. Surg.* 1974, Vol.108, №10, p.849–853.

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TRAUMATIC NEUROPATHY OF THE SECOND BRANCH OF THE TRIGEMINAL NERVE

ABSTRACT

This research describes the etiology, possible pathogenesis, symptoms and treatment of neuritis of the second branch of the trigeminal nerve which resulted from traumatic damage or postoperative period. To some extent it is bound to the fact that during the last period there are patients with inflammation of the second branch of trigeminal nerve after maxillary sinusotomy, periostitis operation and teethpreserving operations of the upper jaw, especially in the anterior area. At the same time, there are cases of injury of peripheral nerves of the second branch of trigeminal nerve at endodontic treatment of caries complications due to deduction of filling material for the tooth apex in bone tissues and genyantrum. As a rule, the neuritis of the second branch of trigeminal nerve is followed by pain, numbness, paresthesia and sensitivity disorder in the upper lip, lower eyelid, upper cheek part, teeth of the upper jaw, Highmore's sinus, lateral area of the face, etc. Sometimes patients with postoperative or posttraumatic neuropathy of the second branch of trigeminal nerve are taken for simulators or patients with unhealthy state of mind as a clinical picture is rather poor. The desquamation of mucosa epithelium, friability and gingiva bleeding, etc. that indicated trophic frustration in innervation zone take place in the long neuropathy course among some patients.

Authors suggested a complex treatment of this pathology. At the same time the standard treatment of neuritis begins with elimination of the cause of illness: stopping of local inflammatory process, removal of filling material from periapical area, etc. Meanwhile, at this pathology the main thing was weakening or the complete elimination influence of the scar tissue shrouding the nervous trunk (compression, trophy disorder, etc.). Glucocorticosteroid drugs were injected into tissues around the scar on the transitory fold of the upper jaw and also medicinal electrophoresis was done on the scar area. Non- narcotic analgetics were administered for pains. According to indications patients received antihistamine medicines, tranquilizers, neuroleptics, antidepressants, etc additionally. At the same time it was established that the earlier treatment of young scars began, the more successful was therapy of postoperative neuritis.

The research results have testified its effectiveness.

Keywords: neuritis of the second branch of trigeminal nerve, etiology, pathogenesis, symptoms, treatment.

INTRODUCTION

According to ICD-10 the neuritis of trigeminal nerve heads a group of diseases of this pair of craniocerebral nerves. The neuritis of trigeminal nerve is a disease of inflammatory character which af-

fects branches of trigeminal nerve. It is shown by the severe paroxysmal pain in innervation zones and considerably reduces quality of life of the patient.

There are not so many causes of inflammation of trigeminal nerve. Often

the neuritis of trigeminal nerve appears as a result of the postponed infectious diseases (meningitis, tuberculosis, flu, syphilis, herpetic infection), frost, trauma, toxic influence, and also can be provoked by inflammatory diseases of teeth

and gums, various processes in sinuses (Highmore's sinus, frontal sinus) [1, 3, 6].

Meanwhile in recent years there are patients with inflammation of the second branch of trigeminal nerve after maxillary sinusotomy, periostitis opening and teeth-preserving operations on the upper jaw, especially in the frontal area. Besides, cases of injury of peripheral nerves of the second branch of trigeminal nerve by filling material which passed through the root channel and removed for the tooth apex in bone tissues and genyantrum [2, 4] became frequent. As a result of such injuries, the main, but alveolar branches of trigeminal nerve are more often to be affected. The inflammation of the second branch of trigeminal nerve there are some pathological symptoms (pain, numbness, paresthesias and sensitivity disorder) in the upper lip, lower eyelid, upper cheek area, teeth of the upper jaw, Highmore's sinus, sites of lateral area of the face, etc.

In our opinion, the main mechanism of development of neuropathy of frontal, middle and back branches of maxillary nerve is formation of the cicatricial block in the postoperative and posttraumatic period (a compression of nervous tissues by scar). Feature of this pathology is that the clinical picture is shown not at once but only 6 - 12 months later after operation or trauma. In this regard the patient or the doctor cannot always establish a cause [5].

Purpose of the study: based on the evaluation of complex treatment of second branch of the trigeminal nerve traumatic neuropathy to develop recommendations to improve its treatment.

MATERIALS AND METHODS

We've observed 22 patients with the diagnosis postoperative neuritis of the second branch of trigeminal nerve for 10 years in dental clinic of Chita medical academy. The age of patients varied from 39 to 57 years old. Most of them were females (81.8%). The affection depended on the place of operation or endodontic treatment, injuring, etc.

CLINICAL PICTURE

Most of patients complained of the constant, periodically amplifying, painful thermalgias, numbness zones or paresthesia of the respective areas of skin of the upper lip, cheek, infraorbital area, sidewall of nose, teeth, gums, face skin. The anamnesis of disease established that 10 patients underwent radical maxillary sinusotomy in the intra oral way, 4 – earlier were treated concerning a subnasal fracture of the upper jaw, 5 – made peristomy in the frontal teeth; and 3 – after a resection of the roots apex of the upper premolar teeth. Almost all patients noted the above described complaints in 4-6 months after the trauma and medical procedures of mucosa of alveolar process of the upper jaw of the relevant side.

From the case history it was revealed that the accompanying chronic pathology could not become the cause of the disease or affect the course of neuropathy.

Clinical picture of postoperative or posttraumatic neuropathy of the second branch of trigeminal nerve was rather poor. In this regard such patients are taken sometimes for simulators or for persons with unhealthy mentality. We noted the following clinical symptoms of local examination. The palpation in infraorbital nerve area was poorly morbid, decrease in sensitivity of skin was noted. In the oral cavity there is the postoperative scar which is localized in the upper alveolar process of the upper jaw. Patients have the desquamation of mucosaepithelium, friability and gingiva bleeding, etc. that indicated trophic frustration in innervation zone during the long course of neuropathy. Additional research techniques (radiological, elektroodontometry, etc.) were little informative.

TREATMENT

Treatment of neuritis depends on the cause of illness: stopping of local inflammatory process, removal of filling material from periapical area, etc. However at this pathology the main thing was weakening or the complete elimination influence of the cicatricial tissue shrouding a nervous trunk (compression, trophic disorder, etc.). 10–40 mg/ml of Kenalog or Diprosan was injected into tissues around the scar on the transitory fold of the upper jaw for this purpose. Depending on effectiveness of influence of medicine the quantity of injections could reach 5 times. Besides, 10 sessions of electrophoresis of 5000 units of heparin were administered to area of the scar, 10-15 sessions of phonophoresis with Contractubex ointment or 3000 IU gel of Longidaza. Non-narcotic analgetics to removal of pains (Aspirinum 0,25-0,5 g 3-4 times a day, Analginum 0,5 2-3 times a day, Sedalginum 1 tablet 3 times a day, Ibuprofenum 0,2 g in the morning before meal and 3 times a day after meal, etc.). Additionally patients received antihistamine medicines, tranquilizers, neuroleptics, antidepressants, etc. according to indications.

Decrease or the complete removal of pains, restitution of sensitivity of skin, mucosa and teeth of the upper jaw was the main efficiency factor of complex treatment. Meanwhile it should be noted, the neuritis caused by "young" scars (3-9 months) almost completely underwent an involution under the influence of corticosteroids and physiotherapeutic therapy. In this place there was the weak hazy and little sinking down scar. Other patients had under the influence of corticosteroids and immunotherapy regress of "aged" scars reached 60-75%.

We give a clinical example for the il-

lustration.

The patient K., 56 years old consulted to Chita medical academy clinic with complaints to the pains in right infraorbital area, irradiation of the teeth of the upper jaw, lip, nose wing intensifying at meal, washing and speaking. The anamnesis found out that the patient was operated about 5 years ago by radical maxillary sinusotomy intra oral access» for chronic odontogenous right antritis. These complaints appeared one year ago. He consulted neuropathologist who diagnosed neuralgia of 2 branch of trigeminal nerve and administered anticonvulsant therapy by Finlepsin. The improvement did not occur after the carried-out treatment. The objective examination has revealed that the face configuration didn't change, palpation of exit point of right infraorbital nerve was little painful, and at the left – painless. Trigger points were not found. The mouth opens well. The painful thick fixed 5 cm scar was determined by the transitory fold of alveolar process of the upper jaw in the right area. The mucosa around it was slightly edematous, the teeth percussion of upper jaw in the right – painless. The X-ray of maxillary sinus cavity didn't show any bone changes. The diagnosis was postoperative neuropathy of the second branch of trigeminal nerve in the right. 10 injections of 2% Lidocaine were prescribed as infraorbital anesthesia in the right. The patient felt minor improvement after the course of blocks, but complaints renewed after 1 month. Therefore patient was injected 3 injections of 40 mg of Kenalog in the scar zone on the upper jaw with the interval of 3 weeks and a course of vitamin therapy. The scar became weaker, painless and mobile after these procedures. At the same time the patient noted almost complete cessation of pains. The patient's pain was absent during control examination in 6 months and the palpation of postoperative scar was painless.

CONCLUSION

The therapy of postoperative neuritis of the second branch of trigeminal nerve at all variety of treatment methods demands individual approach taking into account disease duration. Our experience demonstrated that the most efficient is the complex treatment consisting of pathogenetically reasonable methods. Besides, the obtained data once again confirmed the fact that the earlier treatment of young scars begins, the more successful is the therapy of postoperative neuritis.

REFERENCES

1. Bezrukov V.M. Robustova T.G. Rukovodstvo po hirurgicheskoi stomatologii i chelustno-litsevoi hirurgii [Guide to the surgical odontology and maxillofacial surgery]. Moscow: Medicina, 2002, V.1,

p.776.

2. Kulakov A. Robustova T.G. Nerobeev A. Hirurgicheskaya stomatologiya i chelustno-licevaya hirurgiya: Nacionalnoe rukovodstvo [The surgical odontology and maxillofacial surgery: national manual]. Moscow: Geotar-Media, 2010, p.928.

3. Ruzin G.P. Buryh M.P. Osnovy tehnologii operacii v hirurgicheskoi stomatologii i chelustno-licevoy hirurgii [Bases of operation technology in surgical odontology and maxillofacial surgery]. Moscow: Geotar-Media, 2000, p.292.

4. Timofeev A.A. Osnovy chelustno-licevoy hirurgii [Fundamentals of maxillofacial surgery]. Moscow: MIA, 2007, p.237.

5. Troshin V.D. Zhulyev E.N. Bolevyie sindromy v praktike stomatologa: Rukovodstvo dlya studentov i vrachei [Pain syndromes in practice of the dentist: the manual for students and doctors]. N.Novgorod: NGMA, 2002, p.222.

6. Hirurgicheskaya stomatologiya [Surgical dentistry.] Pod red. V.V. Afanasieva [The editor V. V. Afanasiev]. Moscow: Geotar-MEDIA, 2015, p.880.

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ARCTIC MEDICINE

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MONITORING OF THE SWIMMERS' BODY TEMPERATURE DURING A SWIM ACROSS THE BERING STRAIT

ABSTRACT

The authors reported data on temperature changes in the stomach and on the wrists of the two swimmers during swim across the Bering Strait in conditions of extremely low water temperature (3°C to 6°C), as well as in the preliminary swim across the river Lena in more favorable conditions. The continuous measurement of the body of the swimmers' temperature was done using a thermologger iBDL DS1922L, which, having a small size and a non-volatile memory can be placed directly inside of the object. The minimum temperature in the stomachs of swimmers during swim across the Bering Strait was fixed at 27°C . Measurement of body temperature in extreme environmental conditions can help to study the limit of an organism and to fight with the effects of hypothermia.

Keywords: human body temperature, thermologgers, hypothermia.

The study of a human body reaction, when exposed to low temperatures, is important for the development of medicine in the field of determining the limit abilities of the body. Conduction of such research is accompanied by difficulties of either a purely technical nature or dangers posed by low temperatures to the body of unprepared person. The sensors with sufficient compactness, accuracy and independence are necessary to continuously monitor the temperature of different parts of the body.

The abilities of the trained athletes which are accustomed to extreme cold conditions present particular interest. In nineteen eighty seventh, the American athlete Lynn Cox set a record, swimming for 2 hours and 6 minutes in water of 6 degrees Celsius and covering four thousand one hundred sixty meters of the Bering Strait. Her record was beaten by our fellow countrymen: a unique event was held in August twenty fourteen -

swim across the Bering Strait from Little Diomed Island (US) to Ratmanov Island (Russian Federation) (Fig.1). The participants, extreme swimmers Prokopchuk Gregory (from Yakutsk, Russia) and Alexander Brylin (from Blagoveshchensk, Russia) swam almost 5.5 kilometers in water with the temperature of 3 to 6 degrees Celsius for 2 hours.

The route of the swim from the island of Big Diomed to Little Diomed.

The swimmers' body temperature was monitored throughout the swim. The iBDL temperature loggers were chosen as the main tool. iBDL stands for iButton Data Loggers and represents a family of recorders (loggers), commercially produced by the American company Maxim Semiconductors. They are designed to monitor the temperature and humidity. iBDL is a miniature device, which is completely self-contained and secure single-channel electronic recorder. Each device comprises a semiconductor temperature

sensor, a real time clock, a non-volatile memory, a microprocessor and a lithium power supply in a MicroCAN sealed steel casing weighing 3.3 g with a diameter of 17 mm (Fig.2). iBDL recorders have an IP56 degree of protection against moisture and dust. This allows the use of these devices in a variety of environments without additional insulation. Due

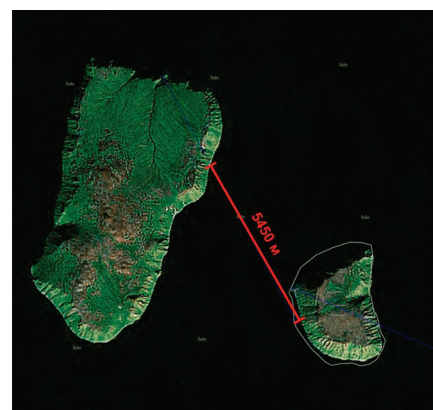


Fig.1. The route of the swim

to the small size one of the sensors can easily be placed in the human stomach by swallowing. The second sensor was attached to the wrist by a conventional medical adhesive. Prior to the start of an experiment the sensors are programmed by the operator. The frequency and the starting time of the registration are set. During our observations sensors were set to register data every 10 minutes. The recorded temperature readings are read from memory with the help of a special device that connects to a computer via USB socket and transmits the data to the computer.

The preliminary testing of the monitoring methodology was held earlier the same year in July during the swim across the Lena River (Fig.3). The water temperature was about 20 degrees Celsius and this swim lasted for about 4 hours. At the start of a swim, the logger, placed in a swimmer's stomach, registered higher than normal temperature (39.23°C). Higher temperature of a trained body just before the swim is a characteristic feature of an extreme swimmer. Consequently, this effect was also observed in the swim across the Bering Strait.

The swim from the Ratmanov Island to Little Diomed Island began on the first of August, 2014 at about 2:20 p.m. and ended at about 4:30 p.m. The water temperature was from 3 to 6 degrees Celsius. Swimmers covered the distance using different strokes, Gregory swam freestyle and was in water for 1 hour and 57 minutes, Alexander swam breaststroke and was in water for 2 hours and 17 minutes. The process of the swim was recorded on video.

At the start of the swim loggers, placed in the swimmers' stomachs, registered the temperature of about 39°C. During the swim temperature in the stomachs gradually dropped to a value of about 27° C. After the finish it took about 8 hours before the normal body temperature was restored. The sensors, which were attached to the wrists of the swimmers, registered the temperature of about 10°C.

Experts say that the overall body chill to such temperatures (20°C - 28°C) is considered as a severe hypothermia and can result with a heart failure. **Thus we have recorded unique abilities of prepared and trained human body.**

REFERENCES

Spravochnik prakticheskogo vracha [Directory of Practitioners] Pod redakciej A. I. Vorob'eva [Ed. by A.I. Vorobyev]. Moscow: Exmo, 2011.

Spravochnik vracha skoroj i neotlozhnoj medicinskoj pomoshhi [Guide of the doctor of emergency medical care] Pod redakciej prof. M.V. Grineva i d-ra med. nauk I. N. Ershovoj [Ed. by prof. M.V. Grinyov and MD I.N. Ershova]. St. Petersburg.: Politehnica, 2000.

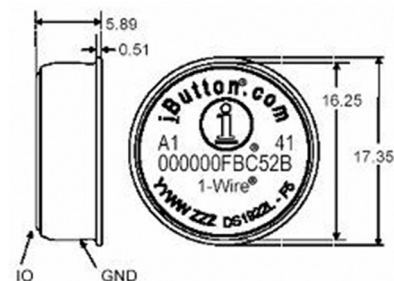


Fig.2. Temperature logger

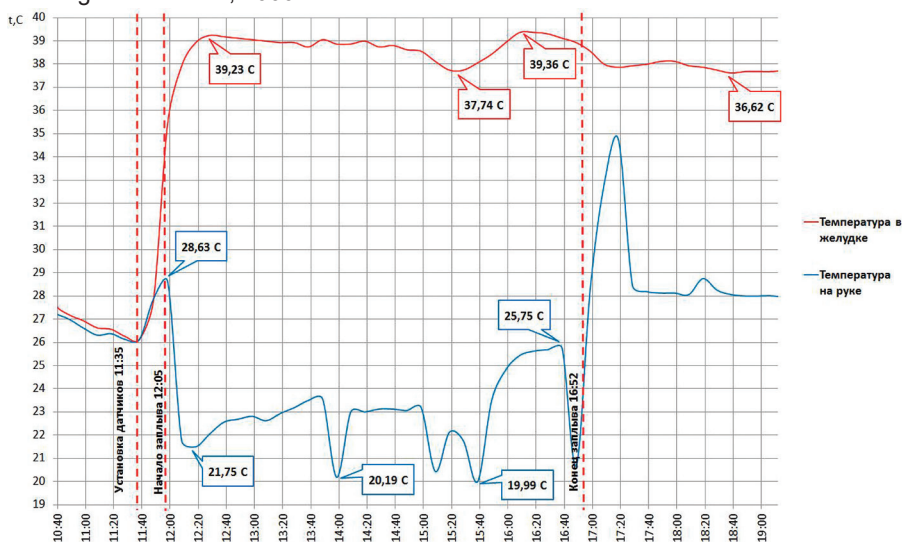


Fig.3. The swimmer's body temperature changes during the swim across the Lena River

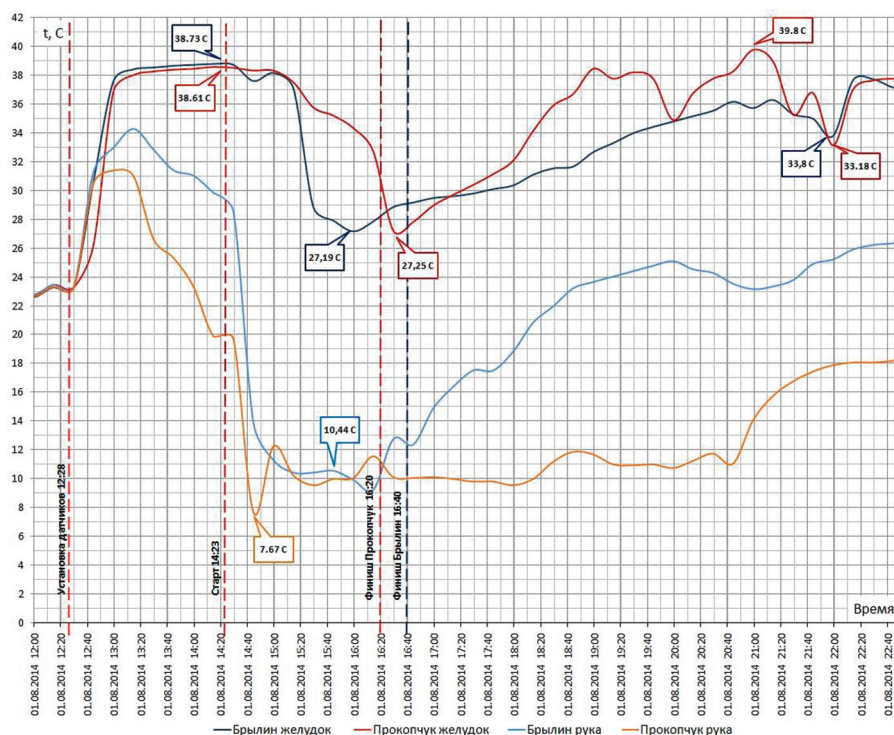


Fig.4. The swimmer's body temperature changes during the swim across the Bering Strait

NTL «Elin» iBDL concept [electronic resource] URL: http://www.elin.ru/ibdl/?topic=ibdl_elin (reference date of 25.03.2013).

Temperature and Humidity Data Log [electronic resource] URL: <http://www.maximintegrated.com/products/ibutton/data-logging/> apply date 25.03.2013)

Ispytanie holodom [Cold Test]. Mosko-

vsky Komsomolets. 24.03.2006.

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R.Z. Alekseev, N. A. Struchkov, K. R. Nifontov, A. S. Andreyev CHANGE OF THE GENERAL CLINICAL PARAMETERS AND INDICATORS OF CARDIOVASCULAR SYSTEM AT A HYPOTHERMIA OF DOGS

ABSTRACT

The article describes some clinical data on influence of low temperatures on organism of dogs in an experiment.

Keywords: temperature, dogs, hypothermia.

Relevance. The phenomenon of an anabiosis it is widespread in wildlife. Usually it is taken for such condition of an organism at which vital processes are so slowed down that there are no implications of life as an anabiosis. When favorable conditions occur normal intensity of vital processes is restored. The big contribution to development of ideas of an anabiosis was made by the Russian physicist and the biologist experimenter Porfiry Ivanovich Bakhmetyev. At the beginning of the 20th century, investigating the hibernation phenomenon at animals under natural conditions, he found out that in an organism these animals have a sharp depression of vital activity of all organs. They as if plunge into a condition of the «slowed-down» life - an anabiosis. P. I. Bakhmetyev reduced the body temperature of bats to - 9 degrees, and then resuscitated them.

The foundation for studying of a deep hypothermia at mammals was started by the researches conducted mainly on small animals (groundhogs, gophers, hamsters, rats). The obtained data allowed to be find an opportunity to artificially reduce the body temperature of these animals to 0 — 5 ° and even lower, and then in 1 — 2 hours to try to obtain restoration of all vital signs of an

organism by only one heating .

Studying of a deep hypothermia at mammals in the Republic of Sakha (Yakutia) were carried out by Akhremenko A. K., Anufriyev A. I. who carried out mainly on fine animals (groundhogs, gophers) [2, 3].

The hypothermia has strongly entered medicine. For the last 15 — 20 years in many countries researches conduct experiments on a large scale and the works confirming thoughts of a possibility of use of cooling in the medical purposes are published. The prominent surgeons of many countries use this method as an agent, warning operational shock or as strong anesthetic. With use of a hypothermia it has become possible to perform difficult endocardial operations when the condition of the patient doesn't allow to apply a usual narcosis or when operation is so long and difficult that, despite a narcosis, in connection with strong exaltation of a nervous system at the patient shock can occur. In these conditions an important role is played by inherent hypothermia factors, namely: dropping of metabolic processes, retardation of respiration and cordial activity, dropping of sensitivity of an organism [1, 4, 5, 6, 7].

It is known that strong cooling is a trauma for an organism. In the conditions

of low temperatures in Yakutia the question of the general hypothermia remains urgent as the lethality remains high.

In medicine the hypothermia and a problem of resuscitation of an organism remains open. For the last 15 — 20 years in many countries researchers conducted on a large scale and the works confirm thoughts of a possibility of resuscitation of an organism [1] were published.

In modern conditions of development of the Arctic the problem of a frigorism and hypothermia of an organism gains applied character.

Purposes and tasks: Studying of the general clinical parameters and indicators of cardiovascular system at a cold trauma of dogs in the conditions of low temperatures of Yakutia.

At the same time the following tasks are set:

1. To tap pattern of fall of temperature of a body, rectal and muscular temperatures.

2. To establish changes of indicators of an ECG at an artificial hypothermia of dogs.

3. To acquire methods of resuscitation of an organism at a hypothermia.

Original materials of a research.

Work was performed from 2015 to 2017 on the basis of faculty of veterinary

medicine of Yakut State Agricultural Academy in cooperation with Yakut Scientific Centre.

Experiment was carried on clinically healthy dogs that were picked up for the principle of analogs. Before experimental work of dogs were dewormed with Ivermekt in a dose of 0,2 ml on 10 kg of weight of an animal and given vaccines against plague carnivorous and a rabies. Animals were kept in the open-air cage, the ration of animals consisted of the admixed forage, feeding happened 2 times a day (in the morning and in the evening), walking was carried out 2 times a day.

The experiment was made under a neuroleptanalgeziya (a neuroleptic – Rometar of 0,2% and an analgetic – Zoletil 100). Animals were placed on the street at ambient temperature – 40 °C. Permission of the bioethical commission is available.

All-clinical parameters were investigated by the standard methods. Separately investigated rectal and muscular temperature by Alekseev R. Z. technique. An ECG carried out by means of the device Poly-range. For prevention of a blood coagulation entered anticoagulant a heparin.

To show dynamics of fading of vital signs of an animal, we will provide the short description of experience of February 10, 2016. Before experiences the sensor was orally entered, the dog weighing 11,6 kilograms before experience had a pulse of 68 beats per minute, respiration — 36 in a minute, temperature in a rectum — 33 degrees, muscular temperature of a femur – 30,7 degrees, external dermal temperature – 15 degrees..

13 hours of the 00th minute. Under a neuroleptanalgezia (a neuroleptic – Rometar of 0,2% and an analgetic – Zoletil 100). In the right jugular vein established an intravascular catheter, through it the heparin — drug, anticlotting is entered (further the catheter serves for administration of drugs.

13 hours 15 minutes. Pulse was 39 beats per minute, respiration — 33 in a minute, temperature in a rectum — 32,1 degrees, muscular temperature of a femur – 31,1 degrees. The animal under a neuroleptanalgeziya was taken out.

13 hours of the 46th minute. Pulse

was 69 beats per minute, respiration — 20 in a minute, temperature in a rectum — 28,6 degrees, muscular temperature of a femur – 27,2 degrees. Along with reduce of respiration there was a gradual retardation of atrioventricular carrying out and corresponding retardation of a rhythm of heart- a bradycardia.

14 hours 00 minutes. The dog reacts to external stimuli, zoleti was added. Pulse was 59 beats per minute, respiration — 10 in a minute, temperature in a rectum — 27,1 degrees, muscular temperature of a femur – 20,4 degrees.

14 hours 17 minutes. Pulse was 62 beats per minute - there was single or group premature ventricular contraction which then turned into fibrillation of ventricles, respiration — 5, temperature in a rectum — 25,1 degrees, muscular temperature of a femur – 20,9 degrees.

14 hours 30 minutes. A heartbeat stopping, instead of respiration separate infrequent convulsive inspirations, temperature in a rectum — 24,7 degrees, muscular temperature of a femur – the 20th degree appeared. External dermal temperature – 6 degrees.

15 hours 15 minutes. Pulse was 0 beats per minute, respiration - No, temperature in a rectum — 23 degrees, muscular temperature of a femur – the 17th degree, external dermal temperature – minus 1 degree.

15 hours 26 minutes. Beginning of reanimation actions.

At experience No. 1 it was carried out: intraperitoneally through self-made pipes (polyvinylchloride) carried out water with the temperature of +40 °C, a direct and indirect cardiac massage, administration of adrenaline through in advance established catheter and it is endocardiac. The artificial respiration which was made by means of a respiratory bag of Ambu blowing air into lungs through an endotracheal catheter is at the same time begun.

Experiment No. 2 was made: perfusion of a blood the blood hemodialysis device with use of a defibrillator, administration of adrenaline. Arterial forcing of a blood in the right femoral artery and through the right femoral vein a blood back in the device is made. Temperature of the forced blood makes 37° degrees. The artificial respiration is at the same time begun. It is made by means of a respiratory bag of

Ambu blowing air into lungs.

As a result of our experiments it is possible to establish that pattern of depression of temperatures- rectal and muscular- depends on ambient temperature. At influence of low temperatures there is gradual retardation of atrioventricular carrying out and corresponding retardation of a rhythm of heart- a bradycardia. Experiences with animals gave the chance to establish a series of the factors complicating process of restoration of vital functions of an organism. The long cooling of animals, an imperfect narcosis leading to more frequent development of fibrillation of ventricles; the acute cardiomegaly supporting flaccid, difficult to remove fibrillation of ventricles new technical searches of resuscitation are necessary.

Pilot studies on a problem of resuscitation continue. The given experimental materials show that in the field of resuscitation there are still huge and complex challenges of further studying of this problem. The idea of a possibility of resuscitation of an organism after a dream in the freeze develops and, undoubtedly, will play a considerable role in fight for life and health of the person.

References

1. Ahremenko A.K. Anufriev A.I. Solomonov N.G. Zimnyaya spyachka pri temperature nizhe nulya [Hibernation at a temperature below zero] Sibirskiy ekologicheskiy zhurnal [the Siberian ecological magazine]. 1998, № 3-4, p. 347-352.
2. Alekseev R. Z. Nikulina G.N. Vrachebnaya pomoshch pri otmorozheniyah v doreaktivnom periode i obschem ohlazhdenii organizma [Medical assistance at freezing injuries in the pre-reactive period and the general cooling of an organism] Informatsionnoe pismo [the Information letter]. Yakutsk, 2004.
3. Anufriev A.I. Mehanizmy zimney spyachki i holodoustoychivosti zimospyaschih belichih Yakutii [Mechanisms of hibernation and cold resistance of Yakutia winter sleep squirrel] Nauka i obrazovanie [Science and education]. 2015, №1, p. 109-118.
4. Meshalkin E. N. Vereschagin I. P. Okklyuzii v usloviyah neglubokoy gipotermicheskoy zaschity [Occlusions in the conditions of superficial hypothermal

protection] Nauka [Science]. Novosibirsk, 1985, p.197.

6. Negovski V.A. Soboleva V. I. Gurvich N. L. Kiseleva K. S. Glubokaya gipotermiya kak sposob udlineniya srokov klinicheskoy smerti [Deep hypothermia as way of elongation of terms of clinical death] Byulleten eksperimentalnoy biologii i meditsiny [Bulletin of experimental biology and medicine]. 1963, V.56, №11, p.39-43.

7. Dietrichs E. S. Negative inotropic effects of epinephrine in the presence of increased β -adrenoceptor sensitivity during hypothermia in a rat model / E.S. Dietrichs //Cryobiology. – 2015. – V. 70. – №. 1. – P. 9 - 16.

7. Tveita A. A. Myocardial gene expression profiling of rewarming shock in a rodent model of accidental hypothermia / A.A. Tveita, E.S. Dietrichs, T. Tveita // Cryobiology. – 2012. – V. 64. – №. 3. – P. 201-210.

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SCIENTIFIC REVIEWS AND LECTURES

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MEDICAL AND BIOLOGICAL ASPECTS OF SOLAR-BIOSPHERIC INTERACTION AND HEALTH OF PEOPLE IN THE NORTH

ABSTRACT

The article presents a review of the literature on the effects on human of space and helio-geophysical factors.

Keywords: health, people, North, adaptation, cosmic factors.

Climate and geography conditions have influenced and continue to make a huge impact on human life style. Favorable conditions of moderately damp seaside climate of subtropics became a cradle of humankind and stimulated the civilization development.

People gradually perceived the protection means against the effects of environmental factors and cultivated new territories.

Simultaneously with a peaceful movement of people to free territories, there was a migration of completely ethnic groups in association with military actions, invasions, and the invaders' settlement among the subdued people and their partial assimilation. Both the people who had to leave the settled places because of their lands conquest and the conquerors adapted to new environment conditions, learnt to survive in these conditions and became natives at last.

Keeping features of their ancient ancestors, they acquired certain new

properties, partially due to mixed marriages with the native population, partially because of long-term evolutionary adaptive processes.

A considerable portion of the published scientific literature devoted to current research of human adaptation to the living conditions in Sakha Republic (Yakutia) belongs to our group of the authors (1-5, 9-11).

According to A.D.Slonim (6, 7, 8) the examined children can be divided into all the three groups of the adaptive phenomena: those experiencing individual adaptation, those experiencing hereditary fixation of adaptive processes, and those who are at the stage of population adaptation.

One should note that while the migrants of the first generation are at the initial stage of the adaptation to natural factors of the North, the schoolchildren of the contemporary population adjust to social conditions of their inhabitation.

The features of life activity in different national and social groups, geographical

conditions of inhabitation, character of environment, soils, water resources, minerals and ecological setting of the studied regions have been found significant.

At present there can be no doubt in A.L.Chizhevsky's (5) statement that we live in "the atmosphere of the Sun". The last decades coinciding with a rapid development of astronautics and with the considerably increasing range of methods to investigate the solar system achieved a definite success in studying the laws of solar activity, climate, and weather. The following items are considered relevant from the medical and biological points of view: discovering the sector structure of the interplanetary magnetic field, creating the concept on solar wind and its interaction with magnetosphere of the Earth, organizing a space system of meteorological information (13, 14, 15, 16, 17).

Considering space influence upon people (and biosphere as well) first of all it is necessary to specify such well known

factors as gravitational attraction of the Sun, the Earth and the Moon, rotation of the Earth round its axis (numerous daily rhythms) and round the Sun (changing of seasons). Space can affect in a more mediated way but not less important is the influence on human life by weather factors – atmospheric pressure, air temperature and humidity, without mentioning particularly dangerous phenomena, like hurricane, flood, drought, etc. So-called “delicate” influence of space at a high biological level is even more complicated (and consequently more dangerous). It becomes possible due to various radiations of electromagnetic fields of extraterrestrial origin (18, 19).

Solar wind gets here through cusps (craters), currents of high energy particles after solar flares causing “rustling” geomagnetic storms rush to these places, and the atmosphere here is the most accessible for the penetration of space particles.

The dark oval indicates mean rates of November time amplitudes of horizontal component in nanoteslas from 18 to 19 o'clock according to the world time. To be more concrete, this is exactly the projection of a cusp (crater) which is the weakest spot of the Earth for the penetration of high energy particles to the surface of our planet. The bigger the size of the amplitude of horizontal component is, the higher geomagnetic activity is stimulated, i.e. “the magnetic storm” becomes greater (16, 18, 25).

The mean rates of the amplitude of horizontal component during the period of increased geomagnetic activity (18-19 o'clock of the world time) in November in the areas studied by us in Sakha Republic (Yakutia) are ranging widely. So, the amplitude is 25-60 nanoteslas in Olyokminsk, Aldan and Neryungri, 60-100 nanoteslas in Nyurb, Viluisk, Sangara, 100-150 nanoteslas in Zhigansk, Batagay, Honu and Zyryanka, and from 150 to 225 nanoteslas in the regions of Syskylakha, Tiksi and Chokurdakha that is characteristic of a geomagnetic storm. It should be noted that these indicators are ranging within just 0-25 nanoteslas in Moscow and Saint Petersburg.

There is no possibility to give a detailed description of all heliogeophysics processes occurring in the near space and influencing the Earth biosphere and the health of people here, therefore we refer the reader to Fig. 1 and 2 where we have tried to summarize the data reported by other authors about the influence of space and heliogeophysical factors

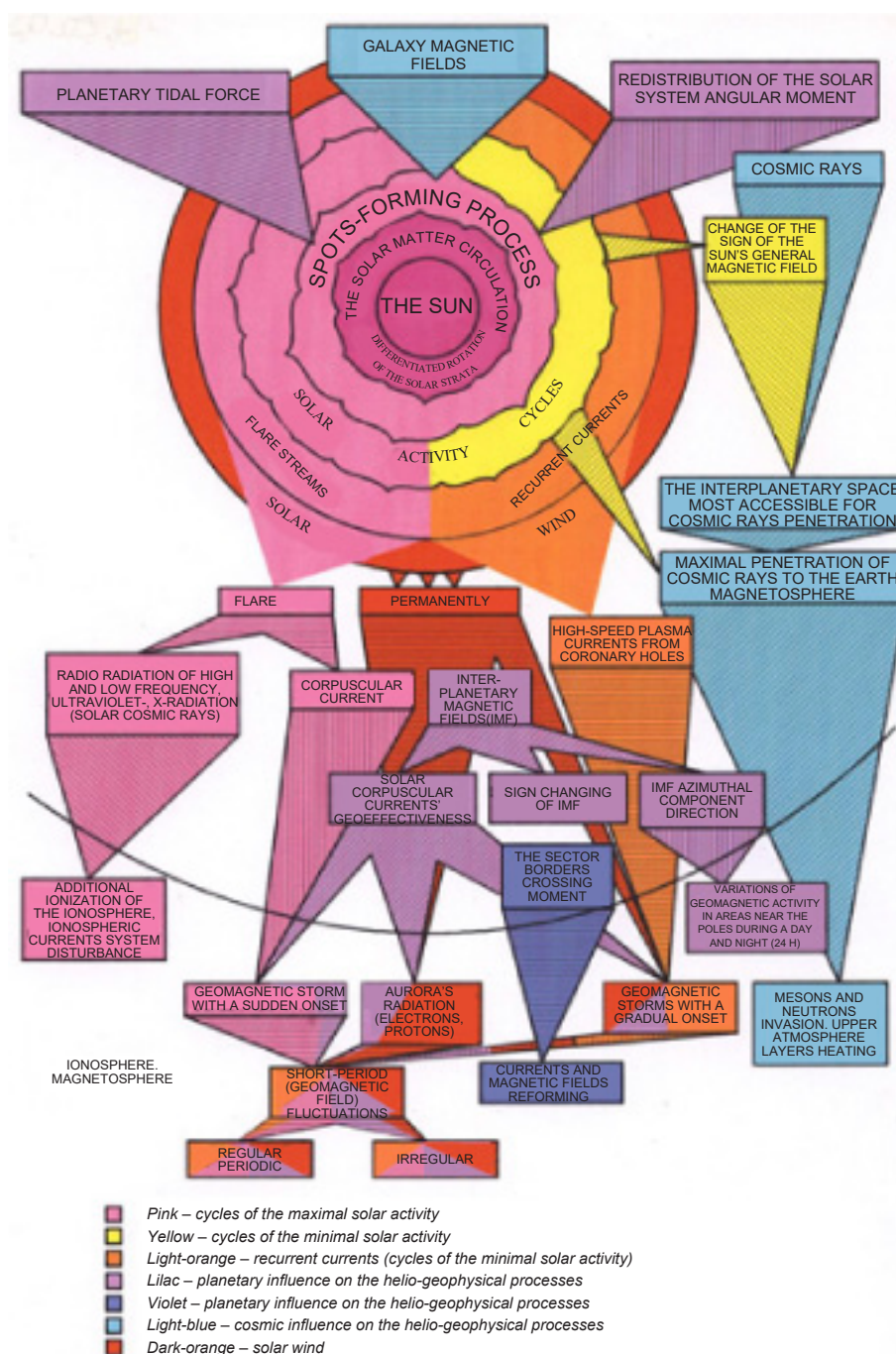


Figure 1. Interaction of cosmic and helio-geophysical factors and their influence on the near-earth space up to the borders of the ionosphere.

on the Earth biosphere. We realize that the presented scheme is rather approximate, besides, it absolutely does not demonstrate gravitational changes that are very essential for all living beings, however it allows presenting visually a complex of natural factors in their complicated interaction (16, 17, 18, 19, 20).

Let us try to divide Figure 1 into the left and right parts in our mind. Then in the left half of the figure we will find processes taking place in the Sun and the magnetosphere characteristic of the

Sun's active period and accompanied by multiple chromosphere flares and enhanced thermonuclear reaction. In contrast, the right figure part will show processes specific to the quiet Sun years, whereas the center depicts permanent processes constantly going on in the Sun. It should be noted that the lower the Sun activity is, the more accessible the Earth magnetosphere becomes for distant cosmic rays, and opposite to this, the stronger sun storms are, the less man and the biosphere are affected by the deep space. The following literature

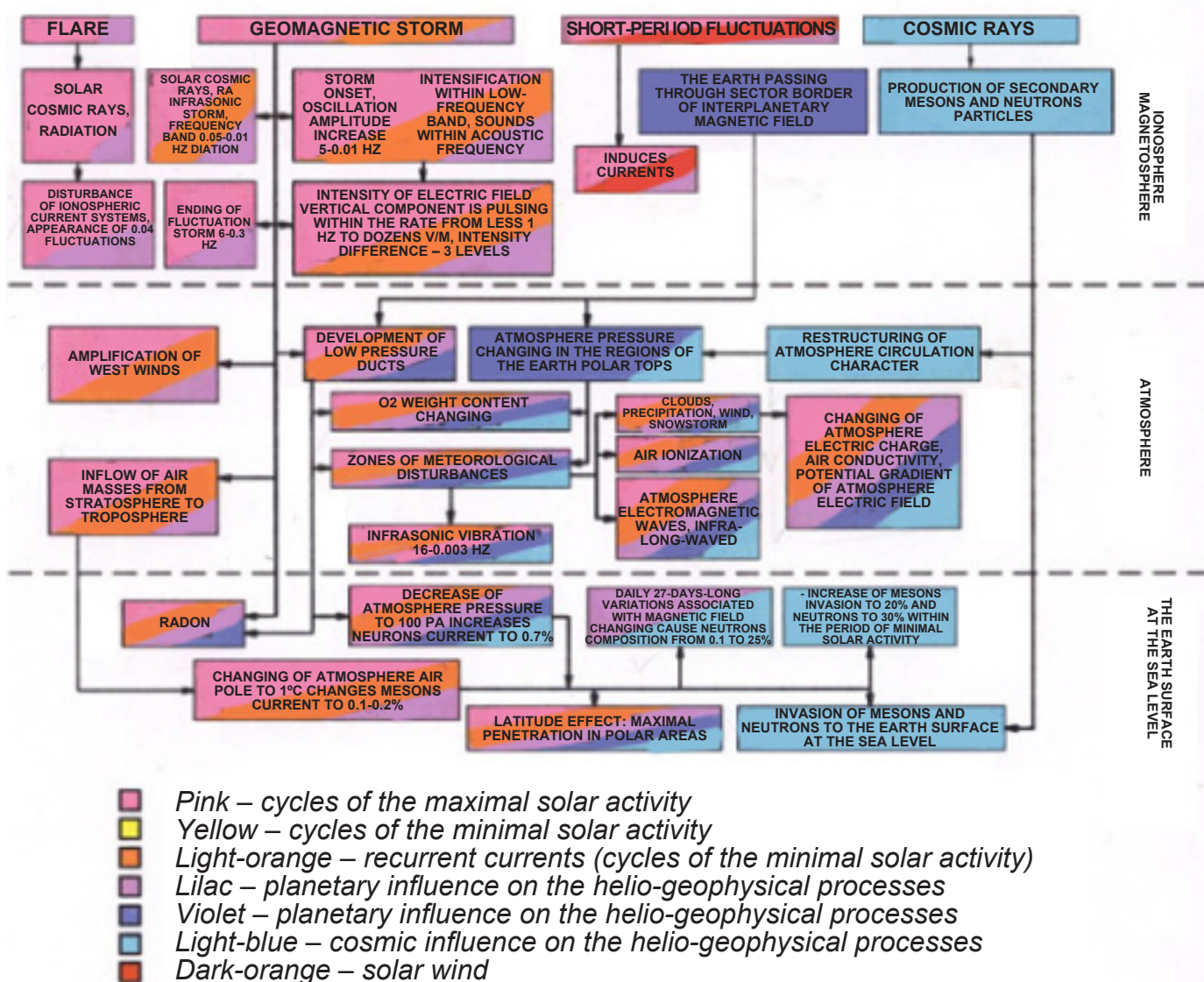


Figure 2. Influence of cosmic and helio-geophysical factors on the biosphere within the range from the ionosphere to the Earth surface

sources give detailed descriptions of all these processes (20, 21, 22, 23, 24, 25).

As one can see it on the figure, cosmic processes constantly interact with each other, they are dependent on one another and interdependent. The Sun processes flow is influenced by the planets tide-generating force, galaxy magnetic fields, angular momentum redistribution of the solar system, change of the sense of the interplanetary magnetic field, etc. (17, 18, 19).

However, the main fact for us is that all these processes turn out to be associated with processes taking place in the Earth biosphere (Fig. 2). Their action is intricately interlaced with each other, adding to or leveling one another.

We can note it here that all the cosmic and helio-geophysical processes accompanying geomagnetic storms – they are: a powerful corpuscular stream,

oscillation at different frequencies including infra-sound, sound, radio frequency and biologically significant frequencies (1–50 Hz), intensity of the electric field vertical component, polar aurora etc. – all these factors affect human body dozens and hundreds times more in the polar regions of the Earth than in the midland or at the equator. Thus, it is in the regions we are considering that the negative influence of the helio-geomagnetic factors is the most intensive.

Intensity of the interplanetary magnetic field and cyclicity of the solar activity are closely connected with the effect of another factor on the biosphere, that of the cosmic rays. The cosmic rays have witnessed some stormy ancient processes which went on in the deep space a long time ago, in the same way they cause some processes,

not less stormy ones, here, on the Earth. The cosmic rays, or secondary particles formed by their interaction with the atmospheric matter penetrate everywhere. It is only the deepest earth interior that is protected from their influence. The capacity of neutrons and protons to get into the intimate processes taking place at the molecular level seems unique, so it is not by chance that the living matter evolution, its emergence, ageing, mutation is now being linked with cosmic rays. It is certain that there exists some predetermination in the course of all processes on the Earth by an amount of the Earth radiation with high energy particles filling up the galaxy. In spite of the energy stream brought into the atmosphere by cosmic rays being small, this energy can almost totally be used to reshape the atmosphere circulation mode. According to current views, this

component is associated with generating kinetic energy in the atmosphere and with reforming one type of circulation into another (16, 18, 19, 21, 22, 23).

A number of authors attach a large importance to gravitation fields. V.I.Khasnulin (20) points out that gravitation anomalies are becoming a system-forming factor bringing about changes either in the planet's magnetic sphere or in its atmosphere.

Summing up all the above, we would like to emphasize two main points:

1) contemporary investigations in space and on the earth have determined that the Earth biosphere is a subject to a massive impact of cosmic factors among which there are solar activity (electromagnetic radiation, that is a visible light, ultraviolet light, radio and X-ray radiation etc.) and corpuscular radiation (solar wind, solar cosmic rays from flares), as well as the state of the interplanetary magnetic field, galaxy magnetic fields and galaxy radiation.

2) due to the structure of the Earth geomagnetic field these factors are most marked in the polar regions of the planet.

V.P.Kaznacheyev paid much attention to human adjustment to the Polar regions. His point of view was supported by V.I.Khasnulin (25, 26). Nowadays the study of the influence of the Far North climate on people's health has become even more relevant (27, 28, 29, 30).

REFERENCES

1. Avrusin S.L. Chasnyk V.G. Burtseva T.E. Shepova'nikov V.N. Aktual'nye problemy ehntosa v meditsine [Actual problems of ethnicity in medicine] *Ekologiya cheloveka* [Human ecology], 2010, №10, P.56-59.
2. Shepova'nikov V.N. Burtseva T.E. Tomskij M.I. Chasnyk V.G. Solnechno-biosfernye vzaimodejstviya i zdorov'e cheloveka na Krajnem Severe [Solar-biosphere interactions, and human health in the far North]. *Yakut med. zhurn.* [Yakut medical journal]. Yakutsk, 2010, №1, P. 85-89.
3. Savvina M.S. Dranaeva G.G. Burtseva T.E. Solodkova I.V. Potrebnosti v nergozatratakh i mineral'nykh komponentakh kormyashhih zhenshin razlichnykh ehnticheskikh grupp, prozhivayushhih v Yakutii [Energy and mineral components of lactating women of different ethnic groups living in Yakutia] *Aktual'nye voprosy pediatrii: sb. materialov IV mezhregion. konf. s mezhdunar. uchastiem* [Actual problems of Pediatrics: materials of the IV Conf. with international participation]. Kaliningrad, 2012, P. 122-123.
4. Burtseva T.E. Chasnyk V.G. Aleksandrov V.L. Voprosy optimizatsii setevogo informatsionnogo obespecheniya meditsinskoj pomoshhi detskogo naseleniya Severnykh i Arkticheskikh ulusov Respubliki Sakha (Yakutiya) [Optimization of the network information to care for the child population of the Northern and Arctic uluses Republic of Sakha (Yakutia)] *Yakutskij meditsinskij zhurnal* [Yakut medical journal]. 2005, №4, P. 19-21.
5. Chasnyk V.G. Avrusin S.L. Burtseva T.E. Ob osnovakh formirovaniya populyatsij i nekotorykh antropologicheskikh predposylkakh populyatsionnoj izmenchivosti [The basis for the formation of populations and some anthropological assumptions of population variability] *Yakutskij meditsinskij zhurnal* [Yakut medical journal]. 2009, № 3, P. 19-21.
6. Slonim A.D. O fiziologicheskikh mekhanizмах prirodnykh adaptatsij zhivotnykh i cheloveka [On the physiological mechanisms of natural and structural adaptations of animals and humans]. Moscow: Nauka, 1964, 63 p.
7. Slonim A.D. Adaptatsiya cheloveka i zhivotnykh v ehksperimente i v usloviyakh Severa [Human Adaptation and animals in the experimen-riment and in the North] *Problemy bioklimatologii i klimatofiziologii* [Problems of bioclimatology and climatopathology]. Novosibirsk: USSR Academy of medical Sciences, 1970, 150 p.
8. Slonim A.D. Individual'naya adaptatsiya cheloveka v usloviyakh pustyni [Individual adaptation of man in desert conditions] *Ecological physiology of humans*. Leningrad, 1980, Ch 2, 327 p.
9. Burtseva T.E. Sinel'nikova E.V. Avrusin S.L. Etnicheski i ehkologicheski obuslovlennyye osobennosti formirovaniya kharakteristik sostoyaniya zdorov'ya detskikh populyatsij [Ethnically and environmentally due to the peculiarities of the characteristics of the health status of populations of children] *Zdorov'e detej Severa : materialy mezhregion. nauch.-prakt. konf.* [Health of the children of the North : materials interregion. scientific.-pract. conf.]. Yakutsk, 2008, P. 64-65.
10. Burtseva T.E. Savvina M.S. Dranaeva G.G. O dinamike massy i dliny tela v rannem vozraste u detej razlichnykh ehnticheskikh grupp, prozhivayushhih v Respublike Sakha (Yakutii) [On the dynamics of mass and body length in early age in children of different ethnic groups living in the Republic of Sakha (Yakutia)] *Pediatr.*, 2012, Vol. 3, No. 3, P. 32-36.
11. Burtseva T.E. Savvina M.S. Chasnyk V.G. Fizicheskoe razvitiye detej do 3 let v Respublike Sakha (Yakutiya) [Physical development of children up to 3 years in the Republic of Sakha (Yakutia)]. *Yakut medical journal*, 2012, No. 3, P. 10-14.
12. Chizhevskij A.L. Zemnoe ehkho solnechnykh bur' [Terrestrial echo of solar storms] Moscow: Mysl', 1976. – 367 p.
13. Gnevyshev M.N. Geliogeofizicheskie osnovy solnechno – biologicheskikh svyazej [Heliogeophysical the basics of the sun – biological relationships], Novosibirsk, 1978. – P.15- 24.
14. Mustel' E.H.D. Solnechnaya aktivnost' i troposfera [Solar activity and troposphere] Moscow: Nauka, 1971. – P. 32- 57.
15. Ol' A.I. Zagadki okolozemnogo kosmosa [Mysteries of near-earth space]. – Leningrad: Nauka, 1978. – 187 p.
16. Miroshnichenko L.I. Solnechnaya aktivnost' i Zemlya [Solar activity and the Earth]. – Moscow: Nauka, 1981 – 144p.
17. Atlas Arktiki [Atlas Of The Arctic]. – gl. redaktor A.F. Treshnikov [CH. editor A. F. Treshnikov], Moscow, 1985. – 204 p.
18. Druzhinin, I. P., Sazonov B. I., Jagodina, V. N. Space-to – Earth. Forecasts. – Moscow: Mysl', 1974. – 288 p.
19. Dubrov A.P. Geomagnitnye polya i zhizn' [Geomagnetic field and life]. – L.: Gidrometeoizdat, 1974. – 175 p.
20. Dvali E.R. Elektricheskoe sostoyanie atmosfery i ego svyaz' s meteorologicheskimi faktorami [Electric state of the atmosphere and its relationship with meteorological factors]. – In: *proc. Zach. Nigmi.* – Vol. 21 (27). – 1967. – 83 p.
21. Bells V. P., Shvarts Ya. M. Problemi regularnou observacii elementov v atmosfernom pole [Problems of regular observations of elements of atmospheric electricity]. – Obninsk, 1971. – 32 p.
22. Minkh, A. A., Modern state of the question of the biological action and hygienic significance of ionization of the atmosphere // *atmospheric electricity.* – Leningrad: 1976. – P. 285- 292.
23. Assman D. Chuvstvitel'nost'

cheloveka k pogode [Human Sensitivity to weather]. – L.: Gidrometeoizdat. 1966. – 245 p.

24. Kaznacheev V.P. Sovremennye aspekty adaptatsii [Modern aspects of adaptation]. – Novosibirsk: USSR Academy of medical Sciences, 1980. – 192 p.

25. Khasnulin V.I. Khasnulin P. V. Ehkologicheski obuslovlennyj severnyj stress. [Environmentally conditioned and the stress]// Problems of health and social development of the Arctic zone of Russia. – Moscow: Paulsen, 2011. P.69-83.

26. Khasnulin V.I. Khasnulin P. V. Ehtnopsikhofiziologicheskie mekhanizmy vyzhivaniya korennykh zhitelej Severa v ehkstremal'nykh klimatogeograficheskikh usloviyakh [Ethnopsychophysiological mechanisms of survival of populations in extreme climatic conditions]//Problems of health and social development of the Arctic zone of Russia. – Moscow: Paulsen, 2011. P.254-268.

27. Revich B.A. Klimaticheskie izmeneniya kak faktor riska zdorov'yu naseleniya Rossijskoj Arktiki [Climate change as a risk factor for the health

of the population of the Russian Arctic] //Problems of health and social development of the Arctic zone of Russia. – Moscow: Paulsen, 2011. P.9-69.

28. Unguryanu T.N. Klimaticheskie faktory i zagryaznenie atmosfery vozdukh kak faktory riska zabolevanij neinfekcionnoj prirody [Climatic factors and air pollution as risk factors of noncommunicable diseases]//Problems of health and social development of the Arctic zone of Russia. – Moscow: Paulsen, 2011. P.83-98.

29. Alekseenko V.D., Dyogteva G.N., Simonova N.N. Vliyanie klimatoproizvodstvennykh faktorov na zabolevaemost' vakhtovykh rabotnikov nefte dobyvayushhej otrasli v usloviyakh Zapolyar'ya [The influence of climatic and production-related factors on the incidence of shift workers of the oil industry in conditions of the Arctic]. Problems of health and social development of the Arctic zone of Russia. – Moscow: Paulsen, 2011. P.109-127.

30. Chasnyk V.G., Avrusin S.L., Asaulenko V.I. Metodologiya i rezul'taty profilakticheskikh osmotrov detskogo naseleniya [Methodology and results

of preventive examinations of the child population]//Problems of health and social development of the Arctic zone of Russia. – Moscow: Paulsen, 2011. P.373-391.

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THE RELEVANCE OF STUDYING THE PATHOMORPHOLOGICAL AND MOLECULAR-GENETIC CHARACTERISTICS OF COLORECTAL CANCER IN THE REPUBLIC SAKHA (YAKUTIA)

ABSTRACT

The literature review is based on the analysis of sources, covering pathomorphology of colorectal cancer. Topical issues were highlighted for further study of this problem.

Keywords: neoplasm, colorectal cancer, morphology.

The malignant neoplasms (MN) are one of basic reasons of disability and death rate of the person.

Tumors of a large intestine have considerable specific weight in structure of oncological pathology. The colorectal cancer (CRC) for many years is an urgent problem of modern medicine. It is connected as with growth of cancer cases colon and a rectum, and with difficulties of treatment [4].

Today CRC takes the third place in the world on frequency among all malignant tumors. Annually around the world CRC get sick about 1 million and more than

500 000 people die out [15]. CRR most often occurs at persons in an age group 50 years, regardless of a floor, race and ethnic group are more senior [10]. From them 90% – it the population is aged more senior than 55 years, more than in 80% of cases of CRC comes to light at patients 60 years [14] and noticeable increase in incidence aged after 70-75 years are more senior [5].

According to forecasts, in the next two decades as a result of growth and aging of the population, the absolute number of cases of identification of new growths of a large intestine will increase considerably

both in developed, and in developing countries [15].

In the Russian Federation (RF) the standardized indicators of incidence of CRC increased by 100 000 men's and female population with 30,35 to 31,77, and with 21,54 to 22,88 in 2010 and 2015 respectively. On death rate at men of CRC is in the third place after malignant new growths of a lung and stomach, at women on the second place after a breast cancer [3,9].

In Republic of Sakha (Yakutia) these indicators are lower, but also increased - with 22,13 to 27,92 (at men) and with

17,45 to 21,15 (at women) [3,9]. In Republic of Sakha (Yakutia) prevalence of CRC has the territorial and social features. It is noted high rates of incidence of men and women in the Southern zone of the republic and the large cities since mostly the population not radical and is engaged at harmful industries of the mining industry. The return picture is noted at inhabitants of the Central area where the aboriginal population prevails and the agricultural industry is developed [2].

The important part in studying of carcinogenesis is assigned to risk factors.

In the relation of risk of development of CRC features of food in the conditions of Far North – excessive consumption of animal protein and fats, insufficient intake of micronutrients with antioxidant properties, and also food fibers are important that increases risk of pretumoral and tumoral diseases of a thick gut therefore the question of development of scientifically based methods of dietary prevention is extremely urgent [6].

You should not forget a northern stress (a syndrome of polar tension) about a concept. At residents of Far North increase of indicators of psychoemotional pressure, endocrine frustration, decrease in resistance of cellular and subcellular structures to negative impact of processes of oxidation, violation in system of enzymes and immunity, disorder of metabolism, delay of regenerator and recovery processes are noted that accelerates progressing of diseases, including oncological [8].

Studying of morphology and morphogenesis of tumors extremely important both in theoretical, and in the practical relation. Knowledge of a morphogenesis of MN has the high importance for a comprehension of their pathogenesis [7].

From the histological point of view of MN of a large intestine represent heterogeneous cell population which can be differentiated in various directions. In this regard it was developed and now in oncomorphological practice the International histological classification of tumors of an intestine is standard [12].

At microscopical studying of biopsies and operational material the most common form of CRC is the adenocarcinoma of different degree of a differentiation, meets in 75-80% of observations. On the 2nd place on the frequency of occurrence there is a mucous adenocarcinoma (up to 10-12%). Further go signet-ring cell (to 3-4%) and squamous cell cancer (to 2%). Benign and malignant tumors of the mesenchymal nature meet in a large intestine approximately in 0,5-3%

of all neoplasms. Most often, they are localized in a straight line and a caecum, other departments are affected less often [1].

The pathomorphologic characteristic of CRC in Republic of Sakha (Yakutia) is limited only to data for 1991-2005 in which only the percentage ratio of the most met neoplasms becomes perceptible – adenocarcinomas of different degree of a differentiation made $86,6 \pm 1,4\%$, of them the intermediate-grade adenocarcinoma of $44,8 \pm 2,1\%$ further low-grade ($26,7 \pm 1,8\%$) and high-grade ($10,2 \pm 1,3\%$) of an adenocarcinoma [2].

Early diagnostics of CRC at early stages can't be considered satisfactory as detectability of tumors at initial stages very low. At the time of statement of the oncologic diagnosis at every third patient generalization of tumoral process becomes perceptible [3]. In the 1990s were taped and the characteristic of genes in which defects caused development of oncologic process in a large intestine is given [11,13]. Opening of the last decades in molecular genetics allow to resolve issues of an etiology, early diagnostics of prophylaxis and cancer therapy of a large intestine (a biotherapy which allows to destroy precisely only tumor cells (target therapy)).

Uses of this knowledge allow to study an etiology and a pathogenesis of a carcinogenesis, and also to optimize treatment of patients with this pathology.

In the conditions of Far North aren't found by us in available domestic and foreign literature of data on features of morphology, a morphogenesis and molecular and genetic heterogeneity of MN of a colorectal zone.

Cancer of colon and a rectum has high value in structure of a case rate of MN of the population of the Republic of Sakha (Yakutia), with a high tendency to further height and conservation of age, ethnic and territorial features.

Thus, despite a large number of the publications devoted to screening, treatment of CRC and related complications, the question of studying of the morphological characteristic of tumors taking into account features of external and internal factors of a carcinogenesis remains not distinguished and demanding further scientific research.

References:

1. Barsukov Y.A. Kolorektal'nyj rak [Colorectal cancer]. <http://pror.ru/articles/13.doc>.
2. Zharnikova T.N. Kliniko-epidemiologicheskaya harakteristika i taktika hirurgicheskogo lecheniya kolorektalnogo raka v RS Yakutiya [The

clinical and epidemiological characteristic and tactics of surgical treatment of a colorectal cancer in Republic of Sakha (Yakutia): abstract of the thesis of the candidate of medical sciences]. Yakutsk, 2009, P. 16.

3. Kaprin A.D., Starinskij V.V., Petrova G.V. Zlokachestvennye novoobrazovaniya v Rossii v 2015 godu zabolevaemost i smertnost [Malignant neoplasms in Russia in 2015 (incidence and mortality)]. Moscow: P.A. Herzen Moscow oncology research institute, 2017.

4. Kit O.I. Problema kolorektalnogo raka v nachale XXI veka dostizheniya i perspektivy [Colorectal cancer problem at the beginning of the 21st century: achievements and prospects]. Novosti koloproktologii. 2013, №3, P. 65-71.

5. Kornilov A.V., Pravosudov I.V. Nasledstvennyj nepolipoznyj rak tolstoj kishki sovremennoe sostoyanie problem [Hereditary not polypostural colon cancer: current state of a problem]. Onkologicheskaya koloproktologiya. 2011, №3, P. 7-11.

6. Mazo V.K., Gmoshinskij I.V., Korochanskaya N.V. Znachenie pitaniya v profilaktike kolorektalnogo raka (obzor literatury) [The value of nutrition in the prevention of colorectal cancer (review)]. Rossijskij zhurnal gastroenterologii gepatologii koloproktologii, 2007, №1, P. 60–68.

7. Pozharisskij K.M. Uspekhi ehksperimentalnoj onkologii i problemy izucheniya morfogeneza opuholej [Advances of experimental oncology and the study of the problem of morphogenesis of tumors]. Arhiv patologii, 1975, №4, P. 82–92.

8. Hasnulin V.I., Hasnulin P.V... Sovremennye predstavleniya o mekhanizmah formirovaniya severnogo stressa u cheloveka v vysokih shirotah [Modern ideas of mechanisms of formation of a northern stress at the person in high latitudes]. Ehkologiya cheloveka, 2012, №1, P. 3-11.

9. Chissov V.I., Starinskij V.V., Petrova G.V. Zlokachestvennye novoobrazovaniya v Rossii v 2010 godu zabolevaemost i smertnost [Malignant neoplasms in Russia in 2010 (incidence and mortality)]. Moscow: P.A. Herzen Moscow oncology research institute, 2012.

10. CDC Data & Statistics | Feature. Top 10 Cancers Among Women; 2011. May Internet. (<http://198.246.98.21/Features/dsWomenTop10Cancers/>).

11. Fishel R. The human mutator gene homolog MSH2 and its association with hereditary nonpolyposis colon cancer/ R. Fishel, M.K. Lescoe, M.R.

Rao, N.G. Copeland, N.A. Jenkins, J. Garber [et al.]//Cell. – 1993. – Vol.75, №5. – P.1027-1038.

12. Jass J.R. Histological typing of intestinal tumours. In WHO international histological classification of tumours/ J.R. Jass, L.H. Sobin. 2nd ed. Berlin-New York: Springer-Verlag, 1989.

13. Lynch H.T. Genetics, natural history, tumor spectrum, and pathology of hereditary nonpolyposis colorectal cancer: an updated review/ H.T. Lynch, T.C. Smyrk, P. Watson, S.J.

Lanspa, J.F. Lynch, P.M. Lynch [et al.]// Gastroenterology. – 1993.- Vol.104, №5. – P.1535-49.

14. Mansouri D. Screening for colorectal cancer: What is the impact on the determinants of outcome? Critical Reviews / D. Mansouri, D.C. McMillan, E.M. Crighton [et al.] //Oncology/ Hematology. - 2013.- №85. - P.342–349.

15. Winawer S. Colorectal cancer screening/ S. Winawer, M. Classen, R. Lambert, M. Fried. (<http://www.worldgastroenterology.org/assets/>

[downloads/en/pdf/guidelines/06_colorectal_cancer_screening.pdf](#))

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HEALTHY LIFESTYLE. PREVENTION

Yu.V. Solodovnikova, K. I. Metina, O. B. Sakharova, P. F. Kiku

HYGIENIC ASSESSMENT OF NUTRITION AND PHYSICAL DEVELOPMENT OF STUDENTS (RETROSPECTIVE ANALYSIS)

ABSTRACT

The authors report assessment of dietary intake, physical development and health of students of the Far Eastern state University. The cause-and-effect relationship between physical activity, diet, lifestyle, and the specifics of their training are revealed. It is established that the nutrition of students is unbalanced and deficient in energy value, content of basic nutrients, vitamin and mineral composition. We determined that vitamin and mineral supplements took less than half of girls and boys. The actual energy of the involved in sports students match 4 group work intensity according to the physiological norms. Malnutrition (underweight) among boys, girls, and the low level of physical performance are revealed. The greatest contribution to the status of actual nutrition and physical health of students makes the average monthly income. The influence of this factor is the most pronounced in the group of students with average wealth. The peculiarities of food consumption and physical development can serve as a basis for developing specific recommendations for the prevention of various diseases among students.

Keywords: students, health status, nutrition, physical development.

INTRODUCTION

From year to year in the universities of the country, thousands of students come from different cities, regions and countries, of different ages and with different ways of life. More than half of students at the time of admission already have certain problems in health, and as you know, the end of training these problems only increased [1,5,10].

The deterioration of health in the early stages of admission to higher education significantly entrants who suffer psychologically difficult to transfer, separation from family and friends, meeting new people and establishing communication in the team. In this group of people with such stressful situations arise sleep disturbance, loss of appetite, disturbed completely lifestyle change physical indicators. Unfortunately, higher education institutions are not provided by the program of social adaptation of students to a new life, thanks to which it would be possible to avoid psychological disorders [2,4,6].

The health care system at the state level students at the University has a

number of drawbacks: long queues at the reception at the doctor, rude attitude of some representatives of the medical staff to patients is not observed continuity in the treatment and rehabilitation of patients. Knowing all these shortcomings, the students who have problems with their health, prefer self-medication or even refuse treatment [9].

Students should think about the fact that health depends primarily on their correct attitude to himself. Wrong way of life (bad habits, poor nutrition, not adherence) contributes to the development of chronic diseases. Therefore, we need a systematic work on oneself and the desire to lead healthy lifestyles. In recent years, many studies have recovered physical education as one of the factors that shape health. However, in order to maintain healthy lifestyle, you need to know what it is to have the skills appropriate behavior, to be convinced of the necessity of such behavior.

Objective: To evaluate the actual nutrition, physical development and health of students of the Far Eastern State University.

MATERIAL AND METHODS

In the complex of methods for the study of dietary intake, physical development of students was used. Estimation of daily energy of students; Food and energy value of their food rations carried out by studying the actual nutrition student card [3,8]. To assess the physical development of the students used the regional scale and the results of the regression dynamometer. Determination of the power of students of state, according to the results of anthropometry (index Kettle II). Physical performance of students evaluated by the Harvard step test and a Rufe - Dixon test. Test results are expressed in arbitrary units as a index of the Harvard step test (IGST) and index Rufe - Dixon [7]. The study was conducted in 2007-2010 on the basis of the Far Eastern State University.

RESULTS AND DISCUSSION

The concept of life includes several activities: consumer, labor, social, socio-cultural. Lifestyle - this is how a person interacts with itself and with the environment. used survey data from maps of the actual power of students to study the life-

style of students of FENU. It was found that an increase in the average monthly income and grow food costs ($r = 0,86$ in boys, $r = 0,7$ girls at $p < 0,05$). It is also an inverse relationship between the level of material well-being of students and expenditure on food as a percentage of average monthly income ($r = -0,47$ young men, $r = -0,7$ girls).

According to the survey, every fifth student earns, among them young men in 2 times more than girls (28.4% and 17.6%, respectively). Employed young men have a higher level of average monthly income ($r = 0,43$), the girls of this dependence is not observed ($r = 0,01$). Smoke 23.75% of boys and 18.8% girls.

One of the indicators of a healthy lifestyle - physical activity. As a result, the actual processing power cards students found that the daily energy expenditure of boys on average in FENU higher than that of women ($p < 0.001$) and make up 4986.2 and 3048.4 kcal, respectively. Sport involved in 59, 7% of boys and 38.9% girls.

There is a direct relationship between daily energy of students and the number of students at the institute, exercise regularly. ($R = 0,73$). The links between the presence of the work of the students and the value of their energy consumption have been identified ($r = -0,06$).

On average, young men take food 3.6 times a day, women - 3.1 times. Table uses only half of the students. Due to the heavy workload, 40% of girls and 43% boys dismiss, that the most abundant and nutritious food intake is a late dinner. According to the standards developed by the Institute of Nutrition of the Russian Academy of Medical Sciences, the power mode umstvennogo of mental work persons should include 4 single meal at the same time, dinner no later than 3 hours before bedtime. [3]

Dissatisfied with their diet 70% of girls and 58% boys, due to lack of money and time. It is with malnutrition around 30% of students link their illness.

Mean daily energy consumption at the university from 3250 kcal up boys, girls - 2110 kcal (Table 1). It is very important not just to consume a sufficient amount of nutrients and use of balanced.

Table 1

Consumption of protein students was 52-80% of normal ($p < 0.05$). Consumption of carbohydrates - 40-73% of the recommended.

A balanced diet - it is a certain ratio of proteins, fats and carbohydrates (1: 1: 4),

which ensures maximum absorption and a beneficial effect on the body.

It was revealed that in boys the ratio of proteins fats and carbohydrates is 1: 1.2: 4, and the girls - 1: 1,3: 4,2. The consumption of calcium, phosphorus and magnesium excessively boys ($p < 0,05$), but the girls less than the norm of 10-50%. Based on this ratio revealed consumption of these trace elements: in boys 1: 0.6: 2.2 and 1: 0.6: 2: 1 in girls. Normally, the ratio is 1: 0.5: 1.5. Consumption of iron youths is in the normal range, the girls, the figure is reduced by 21%. Consumption of food with vitamins A, C, PP, B1, B2 are also reduced only in girls.

Consumption of vitamin C significantly reduced FENU students and 32-92% of normal.

Neglect of micro- and macro-elements, or excessive consumption of their negative impact on health, t. To. They supply nutrients cells and tissues.

It is known that the systematic violation of the diet (eating cold food, rare and abundant meals, disordered eating) lead not only to the development of diseases of the digestive system, but in general worsen the state of health and performance. [7]

In this mode, the power is very important reception macro vitamins and minerals, which reduces the possibility of hidden forms of vitamins, macro- and micronutrient deficiency.

For example, vitamin and mineral supplements to take only 42% of girls and 37% boys.

Evaluation of physical development showed that the harmonious development have only 75% of girls and 71% boys, and that 22% of girls and 10% of boys are underweight. It is worth noting that underweight women by almost 2 times more than boys. We can assume that women are more susceptible to social factors, one of which is fashion. In the media and social networks is widespread fashion for thin body, which explains gender features in morphological transformation of youth.

Anthropometry revealed the disharmony of physical development through weight loss in 20% of students (Figure 1).

Picture 1

Note: 1 FR sharply disharmonic due to reduced body weight; 2 FR disharmonious due to reduced body weight; 3- harmonious FR; 4- DF disharmonious due to increased body weight; 5 FR sharply disharmonic due to the increased body weight. Obtained data correlate with the results of calculation Kettle II ($r = 0,6$) Index (Table 2).

During the Harvard step test 63.5% of girls and 71.5% of young men have shown a poor and weak results (Figures 2,3).

Rufe index value above normal were observed in 20% of girls and 15% boys, indicating a low level of efficiency of the cardiovascular system. Every second student muscular strength of arm below the proper values.

The results of evaluation of physical development and health indicate underweight every fifth student and a low level of physical performance in more than half of the surveyed students.

Disharmony in physical development due to reduction in body weight was found in every fifth student.

Low levels of physical performance was detected in 63.5% of girls and 71.5% of boys.

The manual dynamometry set, the muscle strength of women on average 28.9 and 27.6, 48.3 in boys and 45.7 for the right and left hands. Does not meet the standards of performance of 51% of boys and 48% girls, almost every second student has reduced muscle strength hands.

The study may be noted that the actual energy consumption involved in sports FENU students corresponds to 4 labor intensity group.

Every fifth student earns additionally, among these young men is 2 times more than girls. But at the same time compared to the previous academic years, students' expenses for food decreased by an average of 18%.

Thus, the greatest contribution to the health and physical performance of the studied contingent of students makes the level of monthly income. The level of material well-being of students depends on

Table 1

Energy and nutritional value of nutrition of the student population

Sex	Фактическое потребление, г			Energy value, kcal
	Proteins, g	Fats, g	Carbohydrates, g	
Boys	113,5	123,3	401,7	3250,0
Girls	70,8	82,2	259,1	2110,2

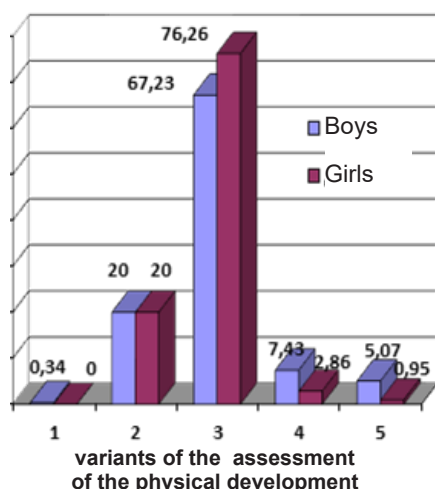


Рис.1. Распределение результатов оценки физического развития изучаемого контингента студентов 2007/08 учебного года (%): 1 – ФР резко дисгармоничное за счет сниженной массы тела; 2 – ФР дисгармоничное за счет сниженной массы тела; 3 – ФР гармоничное; 4 – ФР дисгармоничное за счет повышенной массы тела; 5 – ФР резко дисгармоничное за счет повышенной массы тела

the quality of food and their way of life.

The number of students who use the dining room has increased by 15%. The rest of the group of students believes that not enough time allotted between pairs of food intake during a break between classes. Because of these reasons, students are forced to take a full ration of food in the evening before bedtime. Such failures in the power mode, seriously affect the general well-being of the student. In this regard we have been studied especially food consumption among students. One of the foundations of the physiological process of digestion is the requirement "to eat slowly, without haste," i.e., Food should be well chewed.

In real life, many factors not allow the student to carry out a meal in a relaxed atmosphere. Therefore, students consumption was studied time expended their average food intake. Most students use the "slowly", i.e. an average of 10-20 minutes.

Known especially in food consumption rate can serve as a basis for the development of specific recommendations for the prevention of digestive diseases.

Conclusions. Conducted a retrospective analysis led to the following conclusions:

1. The level of the average monthly income of students of natural science and some humanitarian institutions below the subsistence minimum.

Table 2
Distribution of the surveyed 2 year students of the 2007-2008 school year by the value of the Quetelet II index (%)

Sex	deficiency of body weight <18,5	norm 18,5-24,9	body weight excess 25-29,9	obesity 1 degree 30-34,9
Boys	9,58	77,1	12,15	1,17
Girls	21,84	73,79	3,99	0,38

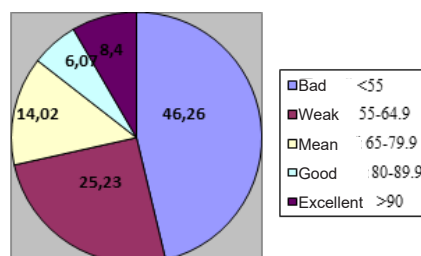


Fig.1. Distribution of the results of the assessment of the physical development of the student population studied in the 2007-2008 academic year (%).

Note: 1- PD is sharply disharmonious due to reduced body weight; 2- PD is disharmonious due to reduced body weight; 3- FR is harmonious; 4- PD is disharmonious due to increased body weight; 5- PD is sharply disharmonious due to increased body weight.

2. Nutrition student unbalanced and deficient in energy value, the content of basic nutrients, vitamins and mineral composition.

3. The actual energy consumption involved in sports students meet 4 labor intensity group according to physiological norms. Boys spend an average of 4010 calories and women 3,075 calories a day.

4. Revealed malnutrition (underweight), 10% of boys and 22% girls and the low level of physical performance in 72% of boys and 65% girls among the surveyed students.

5. The biggest contribution to the state of actual nutrition and physical activity levels of students makes a monthly income. The impact of this factor is most pronounced in the group of students with an average wealth.

REFERENCES

Formation of interest among students of a technical high school for physical training// The successes of modern science. - 2012. - № 5. - C. 101-102.

Hasanova LI. Maulina L.V. Dynamics of the students of Izhevsk state medical academy before and after entering the university in April 2015 release - the scientific aspects of number 4 - 2012 - Samara: publishing house Ilc «aspect», 2012. - V.1-2. - 304 p.

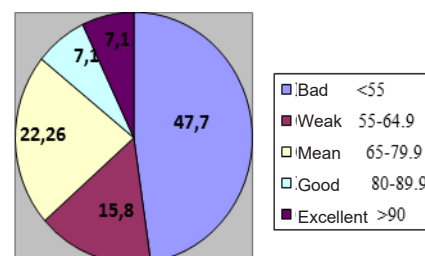


Fig. 2. The results of the HST in the surveyed 2 year students - boys of the 2006-2007 school year (%).

Health students of the Far East and siberia: the social-hygienic and organizational and economic problems. Vladivostok: Far Eastern federal university publishing house, 2016. - 206 p.

Korolev A.A. Food hygiene / A.A. Korolev, Moscow: Academy, 2014. 528s.

Measurement and evaluation of physical health technology "Health navigator" // Bulletin of regenerative medicine. - 2009. - №4 (32). - p. 83-87.

Medic V.A. Osipov A.M. University students: lifestyle and health. M.: Logos, 2003. - 200 p.

Mikhailov S.V. Sadretdinova I. Fedoseeva YA. Health of students - social value of the state // Modern scientific research and innovation. - № 4. - 2015.

Novak E.S. Health of students as a social problem // Bulletin of the Volga. 2001. 7. Series vol. 1. p.125-132.

Tutelian V.A. Baturin A.K. Norms physiological needs in nutrients and energy for different age and professional groups of the Russian Federation. Mr 2.3.1.2432-08 mzfmr 2008. 41c.

Ushakov Y.V. Health of students and the factors of its formation // Bulletin of the university of Nizhniy Novgorod. - 2007. - № 4. - p.197-202.

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POINT OF VIEW

A. K. Iordanishvili, V. A. Guk

PERIODONTAL DISEASE IN THE PILOTS OF CIVIL AVIATION

ABSTRACT

During clinical inspection of 117 men, aged from 25 up to 55 years, which are aircrew of civil aviation of the Russian Federation, the frequency of occurrence and feature of clinical course of parodontitis is studied. It is established that with a satisfactory individual hygiene of an oral cavity, the frequency of occurrence of gingivitis, periodontitis and parodontosis by the aircrew is respectively, 47,5%, 29,2% and 2,5%. 26,7% of pilots needed dental treatment, but the USP index about 56,3% corresponded the normal stomatologic treatment of an aircrew. It is emphasized that during planned profound surveys or medical and flight examination of an aircrew of civil aviation, it is necessary to make a prophylaxes of early loss of natural teeth, to tap the persons having clinical signs of diseases of parodont by studying the parodontal status and refer them to the prevention facilities for performing specialized treatment.

Keywords: diseases of parodont, gingivitis, periodontitis, parodontosis, aircrew, civil aviation, bruxism, hygiene of oral cavity.

INTRODUCTION

Dental health of the pilots is given insufficient attention, as the diseases of the teeth, periodontal and oral mucosa usually do not lead to the unsuitable for flight work condition of the body of the pilot [1, 3]. More often the loss of natural teeth, and also chronic inflammatory processes of maxillufacial localization, conducts to professional uselessness of flying composition of civil aviation [4, 10]. In literature, there is single information about stomatological pathology at flying composition, including to the civil aviation [2, 11]. At the same time, in the domestic and foreign literature there is no information on the incidence and features of the clinical course of periodontal diseases, which are often accompanied by a chronic inflammatory or dystrophic process in the peri-toothed tissues, often leading to premature loss of natural teeth [8], and often accompanied by bruxism leading to the emergence of a generalized form of increased abrasion of teeth, which significantly complicates the elimination of defects in the dentition with dentures, including in flight, since the availability of removable dentures is usually a contraindication to performing flight activities [6, 8].

Research aim - to study the features

of clinical flow of diseases of parodontium at flying composition of civil aviation of Russia.

Material and research methods

A stomatological inspection is conducted 117 men in age from 25 55 to, being flying composition of civil aviation (except a helicopter aviation) of Russian Federation. Duration of professional activity of pilots was 15 from 4 to, the clock of raid made from 1125 to 5125. Frequency of met and needs patients in treatment and prosthodontics was estimated in percents. For the estimation of individual hygiene of cavity of mouth used the index of Y.A. Fedorova - V.V. Volodkinoi, for the objective estimation of the state of fabrics parodontium determined the iodic number of Svrakova and used the complex periodontitis index of P.A. Leiyasa [13]. The level of stomatological help was estimated on the index of YSP in percents [4].

The digital material got as a result of research treats on PC with the use of the specialized package for a statistical analysis - "Statistica for Windows v. 6.0". Distinctions between the compared groups were considered reliable at $p \leq 0,05$. Cases, when values of probability of index of "p" were in a range from 0,05 to 0,10 - considered as a "presence of ten-

dency".

RESULTS AND DISCUSSION

The analysis of stomatological health showed that an individual hygiene of cavity of mouth flying composition had by satisfactory, value of index of individual hygiene of cavity of mouth on Y.A. Fedorova - V.V. Volodkinoi made $1,89 \pm 0,12$ un.. Frequency of gingivitis at flying composition met of 47,5%, and needs in the removal of sedimentations of odontolith - 54,2%. The degenerative defeats of parodontium fabrics were diagnosed for 2,5% pilots, and needs in treatment of periodontitis made among them 29,2% (pic.1). Thus a value of iodic number of Svrakova was $2,07 \pm 0,19$ c.u. and a value of index of KPI was $3,2 \pm 0,21$ c. u. (pic.2), that testified to the middle degree to weight of flow for them to inflammatory pathology of parodontium.

In a prosthodontics needed 26,7% pilots (pic. 3), here the value of level stomatological help was made (index of YSP) by 56,3%, that corresponded satisfactory I will drop providing of stomatological help to flying composition of civil aviation.

Conclusion. The diseases of parodontium at flying composition of civil aviation meet often enough (in 79,2% cases), among that the forms of periodontitis

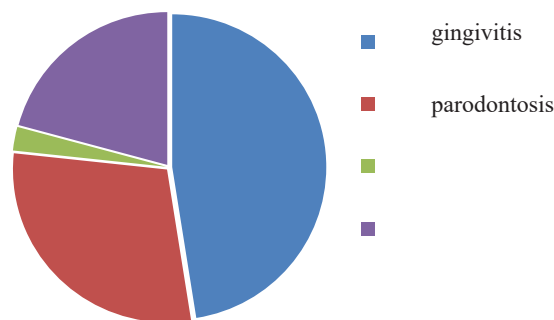


Fig. 1. Frequency of occurrence of periodontal diseases in the flight crew of civil aviation of the Russian Federation

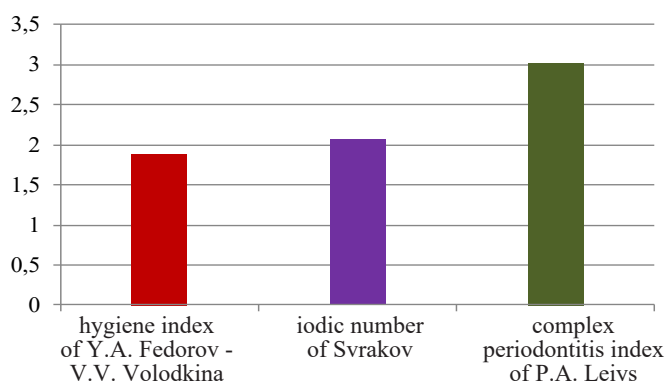


Fig. 2. Average indices of oral hygiene in the flight crew of civil aviation of the Russian Federation, cu

(29,5%), gingivitis (47,5%), rarer - degenerative pathology of fabrics of paradontium (2,5% cases) come to light more often. During deep examinations or medical - flying examination of flying composition of civil aviation it is necessary to expose pilots having clinical signs of diseases of paradontium, and to direct them in medical and preventive establishments for clarification of diagnosis and degree of weight of flow of this pathology, and also realization of the specialized treatment. dentists, during realization of deep examinations or medical-flying examination of flying composition of civil aviation, it is expedient to conduct the deep study of paradontium status. It, at the minimum expenses of time, efficiency of exposure for the pilots of diseases of paradontium will allow substantially to promote, and also in good time to conduct medical and preventive events for the prophylaxis of early loss of natural teeth because of inflammatory or degenerative pathology of fabrics, because 26,7% pilots on the real moment need stomatological orthopaedic treatment in connection with the partial loss of teeth.

REFERENCES

- Abramov D. V. Dental structural materials: a pathophysiological rationale for the optimal use in dental implantation and prosthetics. / D. V. Abramov, A. K., Iordanishvili – SPb.: Nordmedizd, 2011. – 162 p.
- Babich V. V. The organization of diagnosis and treatment of diseases of the temporomandibular joint taking into account adaptive capacity of the organism. / V. V. Babich, A. K., Iordanishvili, M. A. Okunev, N. Udaltsov. – SPb.: Nordmedizd, 2016. – 77. p.
- Iordanishvili A. K. Dental disease in aircrew / A. K. Iordanishvili. – SPb.: Rivi-
era, 1996. – 76 p.
- Iordanishvili A. K. Morphological and functional evaluation of the masticatory apparatus have different categories of flight personnel (clinical-experimental study): author. dis. ... d – RA med. Sciences / A. K. Iordanishvili. – SPb.: Publishing house MMA im. S. M. Kirov, 1998. – 38 p.
- Iordanishvili A. K. Surgical treatment of periodontitis and cysts of the jaw / A. K. Iordanishvili. – SPb.: Nordmedizd, 1996. – 218 p.
- Iordanishvili A. K. Clinical orthopedic dentistry / A. K. Iordanishvili. – M.: Medpress-inform, 2007. – 248 p.
- Iordanishvili A. K. Age-related changes of the masticatory-vocal apparatus / A. K. Iordanishvili. – SPb., Chelovek 2015. – 140 p.
- Iordanishvili, A. K. Treatment of periodontitis in elderly and senile age. / Iordanishvili, A. K., S. V. Soldatov, G. A. Ryzhak, L. N. Soldatova – SPb.: Nordmedizd, 2011. – 128 p.
- Iordanishvili, A. K. Dental health of the nation and the ways of its conservation / A. K. Iordanishvili // Periodontics. – 2015. – № 1 (74). – P. 78-80.
- Kostur B. K. Age indications for the choice of the complex of methods of research of function of the masticatory apparatus / B. K. Kostur. – L.: Medicine, 1978. – 32 p.
- Muzykin, M. I. Periostitis of the jaws and their treatment / I. M. Musakin, A. K., Iordanishvili, G. A. Ryzhak. – SPb.: Chelovek, 2015. – 112 p.
- Orekhova L. Y. The Role of the doctor-periodontist in the diagnosis of somatic disease / L. Y. Orekhov, M. V. Osipov // Periodontics. 2010. – № 4 (57). – Pp. 20-23.
- Orekhova L. Y. Metabolic aspects of the pathogenesis of inflammatory perio-

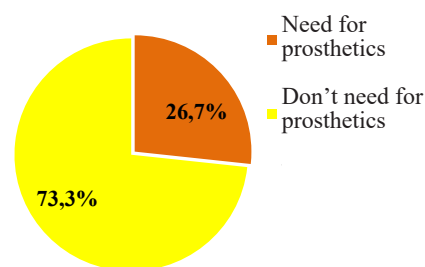


Fig. 3. The need for prosthetics of the flight crew of Russian civil aviation,%

dontal diseases in patients with diabetes mellitus / L. Y. Orekhova // Periodontics. – 2012. – № 3 (64). – S. 7-11.

Tytyk S. J. Dental health in chronic inflammatory bowel diseases. / S. Y. Tutuk, A. K., Iordanishvili – SPb.: Nordmedizd, in 2016. – 144 p.

Filippova E. V. diseases of the mucous membranes of the oral cavity in elderly and senile age / E. V. Filippova, A. K., Iordanishvili, D. A. Liebig // Periodontics. – 2013. – № 1 (66). – P. 60-63.

Farman, A.G. The basics of maxillofacial cone beam computed tomography / A.G. Farman, W.C. Scarfe // Seminars in Orthodontics. – 2009. – Vol. 15, № 1. – P. 2–13.

Yan F. Glicosaminoglycans in gingival crevicular fluid of patients with periodontal class II furcation involvement before and after guided tissue regeneration. A pilot study / F. Yan, R. Marshall, P.M. Bartold // J. Periodontol. – 2000. – Vol. 71. – P. 1-7.

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CLINICAL CASE

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POSSIBLE CAUSES OF RARE DISEASES IN RELATIVELY SMALL ETHNIC GROUPS. QUESTIONS OF MIXED PATHOLOGY AND DIFFERENTIAL DIAGNOSIS

ABSTRACT

The presented clinical case is probable case of the Creutzfeldt-Jakob Disease (CJD) from the region of distribution of the Vilyui encephalomyelitis (VEM) in Yakutia. The disease occurs in the form of rapidly progressive, fatal meningo-encephalitis, with positive identification of oligo bands of IgG in the cerebrospinal fluid and meningeal symptoms, but with CJD characteristic MRI neuroimage changes. Such cases, even being single and possibly not related to prion diseases, should cause the attention of the scientific and medical community and require thorough investigation and further study.

Keywords: Vilyui encephalomyelitis (VEM); Creutzfeldt-Jakob Disease (CJD); epidemic process; torpid encephalopathy; prion encephalopathy; slow infection; clinical polymorphism.

INTRODUCTION

On the territory of the Republic of Sakha (Yakutia) has particularly high levels of morbidity and mortality from neurodegenerative diseases (1,4,6,12). This group of diseases include: Epilepsy, Parkinson's disease, Multiple Sclerosis (MS), Amyotrophic Lateral Sclerosis (ALS), Spinocerebellar Ataxia (SCA), Myotonic Dystrophy (MD), Charcot-Marie-Toots (SMT), Hereditary Spastic Paraplegia (SP), and other more rare diseases, as Vilyui encephalomyelitis (VEM), which was more widespread for three decades ago (Fig. 1).

Noteworthy that VEM spreading in areas with above-mentioned diseases, had and has, as a rule, the late diagnostics due to clinical similarities of its chronic neurodegenerative stage with a stationary current.

Often in the 1950s-1970s a multi-year duration of a relatively benign stage of such encephalopathy with normotensive hydrocephalus (11) was completed with the accession of af the terrible syndrome of amyotrophic lateral syndrome (ALS), Parkinson Disease syndrome with marked rigidity, spasticity like Strumpell disease.

In some settlements, conspicuous VEM foci, was observed the occurrence of polymorphic

typical and atypical clinical forms of the disease in contact with each other non-family members on occasion for over 10 years. Thus, in the village of S., located near the Vilyuy district (where historically were first reported VEM cas-

es), there was a case of chronic VEM with typical clinical manifestations of cerebral forms of ALS with duration for the 13th years. Such cases still cause a lot of questions, because in most cases the syndrome ALS of the VEM is markedly different from the disease ALS. Despite all the advances in ALS genetics, etiology approximately of the 60% of cases remains unknown. It is assumed that the ALS in the Yakut population is caused by a single genetic variant (7). How does this "pure ALS" case had appeared in the surrounding of the five other confirmed VEM cases in this rural epidemic remains a mystery.

On the basis of numerous discussions in specially created commissions diagnostic VEM criteria were again revised in 1996 and finalized in 2000 year (2). Constant attention to the improvement of diagnostic criteria was important because over the past 60 years the VEM clinical features has changed (tab.1). The acute form of the disease accounted for the majority of patients in the 1950-ies (4,9,10) and in many cases leading to death within several weeks to several months, but over time more and more patients overcome an acute phase. In the 1960s and 1970s, half of newly registered patients

developed subacute forms, and in the 1980s and 1990s, almost all registered patients overcome acute and subacute phase and passed in chronic. Long-term clinical-epidemiological observations suggest that simultaneous mosaic morbidity by the practically not registered latent and primary chronic, acute, subacute, secondary chronic forms and slow fatal VEM infection defines special character of an undulipodia epidemic VEM process (1,3). It is difficult to exclude the spread of VEM infection as it is like under the herpes simplex virus (HSV) infection, despite significant clinical, morphological and virological differences from herpetic encephalitis, but with positive oligoclonal IgG antibodies to HSV in CSF from typical VEM patients (8).

Possible research work with micro-RNA (4,7) will provide the answers to these exciting questions, among which the emergence of multiple sclerosis in the Yakut-Sakha only in the late 1980s. And in this case, is complete without mention of the VEM: at those time, there was registered a case of eventually development of neuromyelitis optica (Devic's Disease) from the young woman who survived after the typical acute VEM, followed 5 years, gradually progressing torpid en-

The distribution of cases VEM according to clinical forms in different periods of registration

Decades	Progressive acute and subacute forms	Chronic forms with acute onset	Chronic form, with a gradual onset	All registered VEM patients
1960–1969	20 (29)	34 (42)	27 (30)	81
1970–1979	58 (49)	31 (26)	30 (25)	119
1980–1989	3 (7)	18 (43)	21 (50)	42

cephalopathy characterized by severe mental depressive disorders and asthenic syndrome. It is possible that a detailed study of the ethnic predisposition to VEM will help to shed light on the effects of population relationships VEM mysterious virus and its host, likely contributing to increased immune vulnerability of the Central nervous system "healthy" carriers and the possibility of severe mixed pathology in these cases.

Clinical observation

In confirmation of the above, it is possible to result a case of rapidly progressive meningoencephalitis in woman 53 years, beginning in November 2013, ended in death on March 3, 2014 with clinical and neuroimaging signs similar to probable Creutzfeldt-Jakob disease, but with positive IgG oligoclonal bands in CSF and meningeal symptoms that denies the possibility of CJD.

Patient GGG, date of birth 13.05.1960/53yrs, from the village Tchineke, Vilyuisky district, was admitted to the neurological Department of the Republican hospital No. 2 (the Republican Center of Emergency Medical Care) 10.02.2014, delivered in sanitary aviation, in critical condition with the referral diagnosis "Vilyui encephalomyelitis, tetraparesis".

The disease anamnesis: From the beginning of November 2013, the patient had severe dizziness, disturbances of gait, in the course of the month she was at home, periodically examined by a paramedic, appointed Cavinton, Piracetam. On 26.12.13 she was hospitalized in the neurological bed of therapeutic department of Cenral Region Hospital in Vilyuisk. From the words of older sister of the patient, then she became lethargic, there was dysarthria, marked unsteadiness of gait, weakness in the limbs, walking with support, there was confusion. Contact with the patient was difficult, barely answered questions, no longer recognize her daughter, she developed sleep disorders, pelvic disorders by type of incontinence, stool.

According to her daughter the mother did sick in June-July 2013, she complained of dizziness, were associated with undernutrition. In November 2013, the daughter came home on vacation and noticed that mother became ill to walk – when walking suddenly «dropped» on one or the other leg. While not held in the hand of the subjects, poured the tea. In December 2013, she barely moved. Dragged her feet, was unstable, with difficulty sitting, bad, her speech became

incoherent with slowly words pronunciation. Claimed that her long dead mother is at home nearby. When the daughter lived in Yakutsk, she mistakenly told her sister that her daughter is in the next room. December 26, 2014 when admission to CRH were still talking, not moved since January 2014 did not recognize loved ones, was completely immobile, verbal contact was absent, she had also bad swallowing.

In neurological status from 26.12.2013 – pupils uniform, live reaction to light. It doesn't follow the hammer. Hypomimia. The tongue does not show. Reflexes are high with polikinesia. Muscle tone in the limbs high, oral automatic reflexes are positive. The Babinski symptoms caused easily. No sitting. No active movements observed. No control over urination and defecation. Received Mexidol 4 ml/drip No. 5, Gliatilin 4 ml/No. 5, Vitamin B6 3 ml Dexamethasone 4 mg/m No. 5, Cavinton inside, Prednisolone.

Optometrist CRH consultation – angiopathy of the retina.

Brain CT from 20/01/2014, Conclusion: Foci of pathological density in substance of the brain, brainstem and cerebellum is not revealed.

The history of life: She was Born in the village of Tchinece of Vilyui district, 5th child of 6. The parents: mother died of old age (80 years), father was a party to the World War II, died at 70 years of age, neurological diseases were not sick. Nobody known about VEM and other neurological diseases In their families. One of the brothers of GGG patient for many years suffers from a mental disease with dementia and epileptiform fits and is constantly in a Psychiatric Hospital in Vilyuisk (PND). Neurological examination of the GGG patient's daughter from 26.02.2014 also identified the symptoms of encephalopathy OHMS 3 degrees in the form of a light double sided pyramidal insufficiency, on brain MRI moderate expansion of furrows on the convex are present.

Marital status – not married, has a 22 yrs old daughter.

Graduate librarian (studied in Ulan-Ude). Specialty was not working. Previously worked as a milkmaid (one year after high school), then as a cloakroom attendant in the Verkhne-Vilyuisk in a few months, then returned to his native village, watching the house. Recent years anywhere did not work, lived with the daughter of a native elder sister dependent on her.

The transferred diseases ulcerative

colitis (2007).

No injuries there. Tick bite denied. Surgery was not.

Blood transfusion in 1992, about postpartum complications. After that, always felt weak, she complained of headaches.

In the reports of the Vilyui district neurologist of the GGG patient, born in 1960, registered at risk of VEM with organic neurological micro symptoms 3 degrees (ONMS 3) in 1976. Was examined in connection with accommodation next to the patient OTI, 1929 year of birth who had an acute VEM in 1975 and died of disease after 11 months.

Diagnosed with ONMS 3 - meaning the visible pyramidal insufficiency, the patient was on the account at risk of the VEM, according to her daughter, she was frequently bothered by headaches with nausea and vomiting. Since about 2006 there were psycho-emotional disorders, sudden mood swings, aggressiveness.

Objective status: Normal physique. The nose probe is Installed. Skin and visible mucous membranes of normal color, wet. Peripheral lymphoid nodes are not enlarged. The breath is held, all fields, weakened in the lower divisions. The heart tones are muffled, rhythmic. AD 110/70 mm hg. The abdomen is soft, painless. Urination in a diaper, a urinary catheter installed. Pastoznost lower limbs. Decubitus ulcer of sacral area is medium in size. Pastoznost both feet.

Neurological status: Paresis of gaze to the left. Pupils D=S, the reactions live. Gaze not followed for the hammer. The face without a clear asymmetry. The tongue does not put out. Caused reflexes of oral automatism. No active movements in the lower extremities. Myoclonus of the hands are seen of from the shoulder joints, increased muscle tone in the limbs, more in the hands S>D. Deep reflexes with hands live D=S, with legs low, D=S. Positive (+) Rossolimo symptom from both feet. Mild symptom Babinski is evoked on the left foot. Coordination tests are failed. Sensitive disorders are not reliably assessed. The viscosity of the neck muscles, Kernig symptoms 80° to the left, 60° right.

Optometrist the Republican Hospital No. 2 dated 11.02.2014 – No contact. The eyelids closed. Paresis of gaze to the left. Epithelial edema of the cornea. Miosis, a sluggish reaction to light. Fundus is not seen by ophthalmoscopy. Diagnosis: Ophthalmoplegia.

Conclusion MRI of the brain from 13.02.2014 – the picture is diffuse hypoxic brain damage, in differential terms

you should be aware of carbon monoxide poisoning, metabolic disorders. Atrophic changes of the cerebellum. Mr-signs of dyscirculatory encephalopathy.

When re-analysis of MRI studies of the brain from 14.02.2014 (fig. 1) identified the following changes: a symmetric increase in the intensity of MR-signal at T2VI, TIRM and diffusion-weighted images (ep_b1000) from shells, heads of the caudate nuclei, pillows and dorsomedial divisions of the thalamus (a symptom of the "hockey stick"). Similar hyperintense MR signal was detected along the parasagittal, just medial cortical parts of the frontal lobes and insular areas. Severe atrophic changes of the cerebellum, with moderate atrophic changes in the Pons, the legs of the brain. Small foci of leucopathy in the white matter of the frontal-parietal lobes on both sides. Ventricular system of the brain is not extended. Backup spaces of the brain is practically not expanded. Relationships in the craniocervical transition is not broken. On screening MR-angiography circle of Willis: vessels are typical topography and caliber, signs of AVM and aneurysms of cerebral vessels were not identified. After intravenous administration of an onemolar paramagnetic the areas of excessive accumulation of contrast agent in the substance and membranes of the brain were not revealed.

Conclusion MRI studies: given the clinical data obtained and MR-picture of the brain can assume the existence of Creutzfeldt-Jakob disease.

EEG from 11.02.2014 – expressed diffuse changes in the EEG without clear focality and asymmetry. EEG monitoring showed flashes of sharp waves on the background slow wave activity.

The patient's condition irreversibly deteriorated. Spasmus oralis was registered as an opercular motion of the chin spasmatics muscles, high mandibular reflex, with clonus of the lower jaw. Myoclonus in both hands, greater in the right, flexor-extensor at the wrist joint and in the elbow, also a weak hyperkinetic movement in his right leg, knee, and ankle joints. Cellular muscle tone in the hands and feet are low, muscles atrophy especially of the calf – the gastrocnemius and peroneal muscles. Pyramid muscle tone during passive movements with "a symptom of a folding knife" in the hands to the 3rd degree (a five-point system), the same in the legs 3rd degree in the left, 4th in the right. For percussion hammer on the crest of the tibia was noted reciprocal bringing the opposite limbs (variant recip-

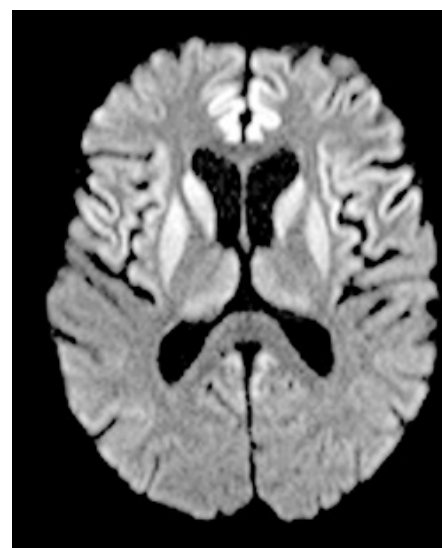
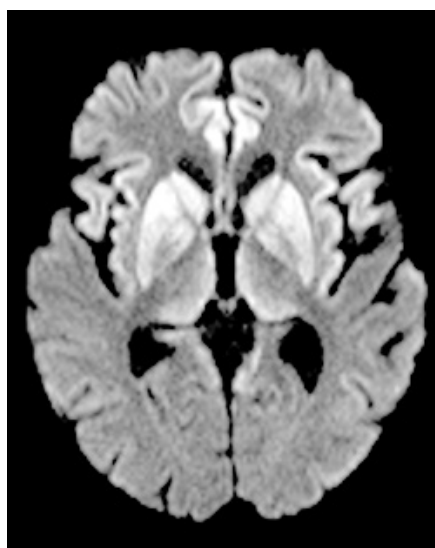


Fig.1-2. MRI photos of patient G., born in 1960. Diffusion-weighted images (DWI) with a coefficient of b1000 determine a symmetric hyperintense signal (restriction of diffusion) from the subcortical nuclei-the heads of the caudate nuclei, the lenticular nuclei (the shell, the pale ball) and the dorsomedial sections of the thalamus (the «hockey stick» symptom). A similar hyperintense signal is noted in the medial cortical areas of the frontal lobes and islet zones on both sides.

rocal pyramidal spinal phenomenon).

Protective reflexes were expressed on the feet more to the right with evoking plantar reflexes. Janiszewski grasping symptom expressed in the left hand. On the feet vividly expressed flexure symptoms of the entire their group. Extensor pathological symptoms were not evoked.

Kernig symptoms on legs right 50°, 80° to the left. Rigidity of muscles of neck to the 3 cross fingers.

The deep reflexes on the arms with bicep evoked live, with expanded area evenly, carpal periosteal evoked when myoclonus were stopped. The knee reflexes has not been evoked. Ankle reflexes low right, left was absent. Without foot clonus.

Abdominal skin reflexes are absent. Red dermographism, wide sharply spreading and resistant. Bedsores on the sacrum, on the skin of the left ankle joint. Central pelvic disorders are expressed.

17.02.2014 analysis of cerebrospinal fluid: With technical difficulties: pinkish, turbid liquor; cytosis= 8/ml³, protein 16.5mg/dl, sugar was 0.46 mmol/dl, chloride 12.1 mmol/dl, leucocytes single in sight, RBC not destroyed 24-28-25 in sight, RBC destroyed -14-18-16 in sight. After centrifugation, the precipitate fell red, transparent.

IgG oligoclonal bands weakly positive in CSF of the patient.

17.02.2014 consultation: Neurological status: She might to respond to the hail, but does not do any job. No oculomotor disorders. Her face without a clear

asymmetry. Tetraparesis, to plegia in the legs. Muscle tone is increased along the pyramidal type, more in the legs. Deep reflexes low, D=S. Flexure pathologic foot reflexes (+). Myoclonus in her hands. No active movements in the legs. She can hold her hands if they are lifting for a while.

The conclusions of the Council: Given the rapidly progressive course of the disease, clinical picture (pronounced pyramidal-cerebellar syndrome, myoclonic seizures, dementia), the typical MRI picture of the disease Creutzfeldt-



Fig. 3. A picture of MRI of patient G., born in 1960. On the images weighted by T1 in the sagittal projection, atrophic changes of the cerebellum, light atrophic changes in the varolium bridge are determined. There is a moderate expansion of basal cisterns. The ratios in the craniocervical transition are not violated.

Jakob, one can think about likely spongiform encephalopathy (CJD). Must be differentiated from manifestations of a slow infection of the Vilyui encephalomyelitis.

In the future, the patient's condition continued to deteriorate inexorably. Transferred to the intensive care unit. March 3, 2014, there was a biological death at the phenomena of cardiovascular and respiratory failure.

Discussion and conclusion

A fatal case of the disease the patient GGG in November 2013, March 2014, proceeded on the mixed fast and slow progressive type, with the most pronounced clinical symptoms were not typical for the VEM onset with cerebellar symptoms, very rapidly progressive dementia (globally dementia), myoclonus (very rare when VEM), EEG and brain MRI are typical for CJD. In history marked by the appearance of neurological symptoms from 16 years of age the patient was possible when she could have a contact with neighbor suffering by severe definite acute VEM, which does not exclude a gradual progression of torpid encephalopathy with subsequent exacerbation in 2013. These data, as well as oligoclonal immunoglobulins in the cerebrospinal fluid, meningeal symptoms are not typical for CJD. However, were the precautions taken according to current WHO recommendations when working with CJD patients. Posthumously, with the same precautions held the fence of brain tissue (research in progress).

The disease Creutzfeldt-Jakob refers to prion encephalopathy. The strong similarity of the pathological picture of the brain in prion diseases of humans and in Alzheimer's disease indicates the existence of general mechanisms that lead to changes in neurons and apoptotic death in these incurable diseases. We described amyloid plaques in chronic VEM, which could be senile origin of the 64-year-old patient (3), on the background of the "burned out" inflammatory lesions. A shared mechanism of formation and evolution of amyloid plaques in the brain in Alzheimer's disease and prion diseases, which show involving of neurons, microglial cells and processes of astrocytes. The differences relate to the nature of a protein that is part of the amyloid plaques. In contrast to prion diseases, in Alzheimer's disease there is no evidence of transmissibility. All this suggests that a promising direction of research prion human diseases is a comparative analysis of changes developing

in the Central nervous system in other diseases related to neurodegeneration.

Upon detection of morphological features of spongiform encephalopathy in our case (patient GGG), it will be possible to know the mutations of prion protein on the background of torpid encephalopathy VEM as other forms CJD at the moment seem highly questionable. It is not excluded that neurodegenerative stage of the VEM due to persistence unidentified viral agent in predisposing genetically determined, immune defective background of Autonomous immune system of the CNS, in the dynamics of the epidemic process of VEM is favorable background for the development of the first recorded neurodegenerative diseases like multiple sclerosis, leukoencephalitis and even prion encephalopathy. The answer to these intriguing questions is expected in the near future, after virological and morphological studies. However, it is already clear that such cases, even being single and not related to prion diseases, should be of great concern to the scientific and medical community and require careful investigation and further study terrible slow VEM infection. Over the last 3 years in Yakutia found 3 similar cases.

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The authors of this article hope that it will help to find differential diagnostic criteria in the diagnosis of severe rare diseases and to develop therapeutic approaches for the optimal

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REFERENCES

1. Abramov D. V. Dental structural materials: a pathophysiological rationale for the optimal use in dental implantation and prosthetics / D. V. Abramov, A. K., Iordanishvili – SPb.: Nordmedizd, 2011. – 162 p.
2. Babich V. V. The organization of diagnosis and treatment of diseases of the temporomandibular joint taking into account adaptive capacity of the organism. / V. V. Babich, A. K., Iordanishvili, M. A. Okunev, N. Udaltsov. – SPb.: Nordmedizd, 2016. – 77. p.
3. Iordanishvili A. K. Dental disease in aircrew / A. K. Iordanishvili. – SPb.: Riviera, 1996. – 76 p.
4. Iordanishvili A. K. Morphological and functional evaluation of the masticatory apparatus have different categories of flight personnel (clinical-experimental study): author. dis. ... d – RA med. Sciences / A. K. Iordanishvili. – SPb.: Publishing house MMA im. S. M. Kirov, 1998. – 38 p.
5. Iordanishvili A. K. Surgical treatment of periodontitis and cysts of the jaw / A. K. Iordanishvili. – SPb.: Nordmedizd, 1996. – 218 p.
6. Iordanishvili A. K. Clinical orthopedic dentistry / A. K. Iordanishvili. – M.: Medpress-inform, 2007. – 248 p.
7. Iordanishvili A. K. Age-related changes of the masticatory-vocal apparatus / A. K. Iordanishvili. – SPb., Chelovek 2015. – 140 p.
8. Iordanishvili A. K. Treatment of periodontitis in elderly and senile age. / Iordanishvili, A. K., S. V. Soldatov, G. A. Ryzhak, L. N. Soldatova – SPb.: Nordmedizd, 2011. – 128 p.
9. Iordanishvili, A. K. Dental health of the nation and the ways of its conservation / A. K. Iordanishvili // Periodontics. – 2015. – № 1 (74). – P. 78-80.
10. Kostur B. K. Age indications for the choice of the complex of methods of research of function of the masticatory apparatus / B. K. Kostur. – L.: Medicine, 1978. – 32 p.
11. Muzykin, M. I. Periostitis of the jaws and their treatment / I. M. Musakin, A. K., Iordanishvili, G. A. Ryzhak. – SPb.: Chelovek, 2015. – 112 p.
12. Orekhova L. Y. The Role of the doctor-periodontist in the diagnosis of somatic disease / L. Y. Orekhov, M. V. Osipov // Periodontics. 2010. – № 4 (57). – Pp. 20-23.
13. Orekhova L. Y. Metabolic aspects of the pathogenesis of inflammatory periodontal diseases in patients with diabe-

tes mellitus / L. Y. Orekhova // Periodontics. – 2012. – № 3 (64). – S. 7-11.

14. Tytyk S. J. Dental health in chronic inflammatory bowel diseases. / S. Y. Tutuk, A. K., Iordanishvili – SPb.: Nord-medizd, in 2016. – 144 p.

15. Filippova E. V. diseases of the mucous membranes of the oral cavity in elderly and senile age / E. V. Filippova, A. K., Iordanishvili, D. A. Liebig // Periodontics. – 2013. – № 1 (66). – P. 60-63.

16. Farman A.G. The basics of maxillofacial cone beam computed tomography / A.G. Farman, W.C. Scarfe // Seminars in Orthodontics. – 2009. – Vol. 15, № 1. – P. 2–13.

17. Yan F. Glicosaminoglycans in gingival crevicular fluid of patients with periodontal class II furcation involvement before and after guided tissue regeneration. A pilot study / F. Yan, R. Marshall, P.M. Bartold // J. Periodontol. – 2000. – Vol. 71. – P. 1-7.

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CLINICAL EXAMPLE OF A SUCCESSFUL LOCAL THROMBOLYTIC THERAPY AT MASSIVE PULMONARY EMBOLISM

ABSTRACT

This article describes a clinical example of successfully carried out an endovascular local thrombolysis at a massive pulmonary embolism. The carried-out local thrombolysis therapy has surpassed all expected effects of treatment.

Keywords: pulmonary artery, pulmonary embolism, local thrombolytic therapy.

Despite advances in treatment of pulmonary embolism, mortality due to this disease remains very high: 7-8% - of hemodynamically stable patients, 25-33% - of patients with systemic hypotension, 67% or higher - of patients with circulatory collapse, who had pulmonary-cardiac resuscitation [1, 2, 3, 7]. At present, the prevalence of PE is estimated at 0.5 cases per 1000 persons

per year. Pulmonary embolism (PE) is one of the most important problems of modern clinical medicine and is the third fatality acute cardiovascular disease [3, 6].

At treatment of PE a priority is elimination of obstruction of a pulmonary artery and restoration of its patency. Hitherto for this purpose used a thrombectomy from a pulmonary artery

and thrombolytic therapy [4]. Surgical treatment can save the patient's life with massive obstruction of a pulmonary artery, but really available only to a very small number of specialized vascular clinics [1,4,7]. Currently, the most affordable and the most commonly used method of recanalization of the pulmonary artery in pulmonary embolism, in spite of the obvious flaws, is a method of

selective thrombolysis [2,3,4,7,8]. Due to the simplicity of selective thrombolysis is often used in almost all vascular centers [1,5,7,9].

In our clinic to date, methods for selective and local thrombolysis in PE have not been applied. With the advent of our clinic, X-ray surgical operating room, minimally invasive endovascular techniques surgery became possible for everyday practice. Therefore, now the challenge before us is improving the efficiency and safety of thrombolytic therapy for PE with the using of minimally invasive endovascular surgical intervention methods, thereby to reduce morbidity and mortality in cases held PE.

Here are examples of the successful treatment of PE happened less than day, day and a week ago, in the first surgical department of the RH №2 EMCC, where we have used local thrombolytic therapy using endovascular minimally invasive surgery techniques.

The patient 'D' of 43 years old with PE happened one day ago. The patient feels ill from 14 march, when in the evening after working day has appeared burning and compression inside the sternum, he was suffering the pain, at night pain gone. On 15 march, he had dyspnea and burning inside the sternum, thought that has caught a chill, he made mustard plasters in the evening. At night, has amplified dyspnea and weakness, in the morning at 6:58 have called emergency medical service. After assistance the patient is anesthetized by morphine, brought to the Republican vascular center office of urgent cardiology. He denies that previously had a myocardial infarction and there were pains in the heart area. He has hypertension in the last 10 years with a maximum pressure of up to 190 mm Hg. Not always taking the medication Lorista, dose does not know. He is adapted to 130/80 pressure. Measures the blood pressure seldom, doesn't visit doctors. Chronic disease: stomach ulcer, diabetes, hepatitis - denies. Denies operations. Harmful habits - denies. Allergic reactions - denies. General state extremely heavy. Consciousness is clear, he is adequate, sociable, guided in time and space. He is a little excited. Integuments are swarthy, acrocyanosis, cyanosis of lips. Peripheral lymph nodes aren't increased. Breath by an open

mouth, the frequency of respiratory movements is 26 per min. In lungs auscultation breath rigid, is weakened in the lower departments, single dry rattles on the right. Tones of heart deaf, rhythmical. Heart rate is 133 per min. Blood pressure is 130/80 mm Hg. The stomach is slightly swollen, it is increased for couples of hypodermic cellulose, soft, painless. The vermicular movement is listened. The liver isn't palpated. There are no peripheral hypostases. The urination is free, painless. A stool from words is regular, framed.

ECG: sinus tachycardia with heart rate 128 per min. Changes of a myocardium to a forward wall in the form of QS with T, ST on the isoline. Cicatrical changes of a myocardium on a forward wall aren't excluded.

16.03.2016. The Computer tomography of bodies of a chest cavity with intravenous bolus contrasting:

Conclusion: CT-view of a massive PE.

16.03.2016. Coagulology.

INR=0.99; PTI=102.1%; APTT=22;

16.03.2016. Ultrasonography of heart and vessels - Doppler echocardiography

Conclusion: the left ventricle global systolic function, it is slightly lowered, cardiac ejection fraction is 52%. The left ventricle diastolic function is broken by type 1. Consolidation of an aorta, shutters of the aortal valve, mitral valve. Small asymmetric hypertrophy of the left ventricle. The most hypertrophied site of a myocardium of the left ventricle - an interventricular partition. Insignificant expansion of the right ventricle. Rough accurate zones of the broken local contractility of a myocardium of the left ventricle aren't revealed. Pulmonary hypertension is moderate, systolic pressure in pulmonary artery is 30 mm Hg.

16.03.2016. Ultrasonography with color Doppler mapping of veins of the lower limbs.

Conclusion: echographic signs of non-occlusive thrombosis of one of pair posterior tibial vein of the left lower limb. Posterior tibial vein expanded on the right and the left.

Clinically diagnosed: iliofemoral thrombosis of the left lower limb. Non-occlusive thrombosis of posterior tibial vein at the left.

Complication: PE of the left trunk.

Acute cardiac respiratory failure.

The patient, accompanied by the anesthesiologist, is urgently transported to the X-ray operating room.

In the X-ray operating room were carried out works on:

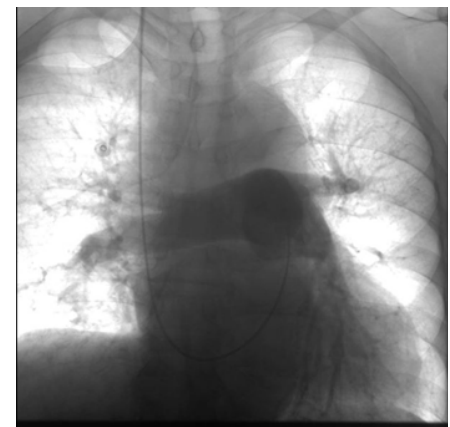
- installation of a "pigtail" catheter for precise thrombolysis therapy through a jugular vein on the right,
- the cavagraphy of the IVC,
- installation of the cava-filter in IVC at lower position than bifurcation of renal veins,
- angiopulmonography.

After installation of a catheter in bifurcation of a pulmonary artery the patient is transferred to DARIC for carrying out an precise thrombolysis. For performing thrombolysis therapy chosen drug – 50 mg solute of Aktelize. As first dose, the 10 mg solute of Aktelize bolus jet was injected into a catheter within 2 minutes. 40 mg of the remaining solute of Aktelize inject with infusion pump within 2 hours under control of a coagulogram. After performing local thrombolysis therapy to the patient the heparin therapy is continued.

As can be seen from the table, significant changes in coagulogram results in a dynamic observation has not happened. This is consistent with data from the literature, in periodic publications of angiology [1,5,9].

After 12 hours of thrombolytic therapy, carried out control angiopulmonography.

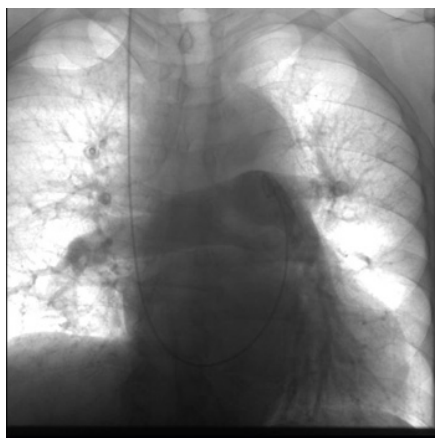
The patient continued heparin therapy at a dose of 20,000 units per day, with subsequent transition to tablet form



Picture 1. Panoramic pulmonography snapshot before thrombolysis. On angiography revealed thrombosis of lower left pulmonary artery branches. In the parenchymatous phase a «mute» zone in the middle third of picture.

Коагулограмма пациента Д., 43 года, с ТЭЛА

Parameter	16.03.16	16.03.16	16.03.16	16.03.16
INR	0,99	1,1	1,04	1,04
PTI	102,1	81,7	90,7	90,7
APTT	22	28,4	22,4	22,4



Picture 2. After local thrombolysis therapy. On dynamics of angiopulmonography of 16.03.2016, thrombus in left lower pulmonary artery branch was not detected. In the parenchymal phase, all areas contrasted evenly on both sides.

of anticoagulants under dose control by coagulogram results. Predischarge conclusion of control CT scan of the chest cavity with contrast agent on comparison with 16.03.2016: positive dynamics, absence of contrast defects in the left pulmonary artery. Installed cava filter is removed on the 14th day after the control cavagraphy.

The lower limbs veins ultrasonography: there is no evidence on thrombosis of lower limb veins. The patient was discharged in satisfactory condition on the 14th day after local thrombolysis therapy with full recovery from cardio-respiratory failure, pulmonary recanalization of the thrombosed arteries and veins of the lower limbs.

With similar progress were carried out sighting thrombolysis therapy for two patients with massive PE happened less than day and a week ago. We used Actelize in a dosage of 50 mg instead of the recommended 100 mg on PE.

At a reduced Aktelize dose of 50 mg achieved normalization of pressure in the pulmonary arteries.

Thus, our local thrombolysis therapy using endovascular surgical techniques showed that normalization of pulmonary artery pressure and recanalization of thrombus on local thrombolysis occurs in 10-15 minutes after the start therapy. In any case of local thrombolytic therapy, there was no occurrence of bleeding.

CONCLUSIONS

1. Using of X-ray-surgical endovascular treatment methods, allows carry out effective local thrombolysis therapy on PE.

2. On local thrombolysis therapy, recanalization of the pulmonary arteries branches it occurs by direct action of a thrombolytic drug in the thrombus, without significant effects on systemic homeostasis. Moreover, thrombolysis have a moderate influence on peripheral circulation without causing bleeding.

References

1. Alexander J.K. Pulmonary embolism. Guide to medicine. Diagnosis and treatment: In 2 vol. / Edited by R. Berkou, E. Fletcher: Trans. from English. - M.: Mir, 1997. - 1 - 4605.
2. Gagarina N.V., Sinitsyn V.E., Veselova T.N., Ternovoy S.K., Modern methods of diagnosing pulmonary embolism // Cardiology. - 2003. - № 5. - S. 7781.
3. Clinical medicine: Color atlas and textbook / Forbes C.D., Jackson W.F.; Trans. from English. / Edited by Kokorin V.A., Razumova E.T. - M.: Logosfera, 2009. - 544 p.
4. Krutko V.S., Poteyko P.I., Khodosh E.M., Pulmonology: external symptoms. - Kharkov: NTMT, 2011. - 186

p.

5. Savelyev V.S. The role of the surgeon in the prevention and treatment of venous thrombosis and pulmonary embolism. 50 lectures on surgery. - M.: Media Medica, 2003. - S. 9299.

6. Handbook of pulmonology / Edited by Putov N.V., Fedoseyev G.B., Khomenko A.G. - L.: Medicine, 1987. - P. 111-112.

7. Bernard A., Cohen M.D., Christoph U., Lehmann M.D. // DermAtlas, Johns Hopkins University; 2000-2009.

8. Heit J.A., Silverstein M.D., Mohr D.N. et al. The epidemiology of venous thromboembolism in the community // Thromb. Haemost. - 2001 - 86 - 45263.

9. Task Force Report. Guidelines on diagnosis and management of acute pulmonary embolism // Europ. Heart J. - 2000. - 21. - 130136.

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