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# CONTENTS

## The editorial

### Original researches

Protopopova N.N., Jakovleva S.J., Burtseva T.E., Nikolaeva L.A.

Hereditary enzymopenic methemoglobinemia in children's population of Republic Sakha (Yakutia)

Davaa J.H., Tereshchenko S.J., Zajtseva O. I.

Risk factors of cerebral ischemia formation in the newborns of Republic Tyva

Snodgrass D., Leonard , Tarskaja L.A., Klimova T.M., Fedorova V. I., Baltahinova M.E., Krivoschapkin V.G.

Metabolic adaptation of the Yakuts (Sakha)

Zhukovets I.V.

Metabolic disorders in women with dysfunction of the hypothalamus in reproductive age

Romanova A.N., Golderova A.S., Voevoda M. I., Alekseeva E.A.

Frequency of a metabolic syndrome and its clinical variants in patients with the verified coronary atherosclerosis in Yakutia

Golderova A.S., Romanova A.N., Krivoschapkina Z.N., Jakovleva A.I., Olesova L.D.

Association of the body mass index with biochemical indexes and risk factors of the atherosclerosis in IHD patients

Palchik A.B., Legonkova S.V., Sofronova G. I.

Ethnic features of fetal alcohol syndrome manifestation

Nikanorov V. N., Kylbanova E.S., Pavlova S.V., Kameneva M. D.

The analysis of frequency of myocardium infarction in native and non-native population of Yakutsk city

Romanova T.A., Voevoda M. I., Kuznetsov S.S., Bugaev G.D., Tomskaja T.J., Tarabukina L.V., Petrova I.R.

Results of percutaneous transluminal coronary angioplasty and stenting of coronary arteries in the IHD native and non-native patients of Yakutia

Tarabukina L.V., Abrosimova S.G.

The indices of heart rate turbulence in indigenous and non-indigenous residents of Yakutia

Efremova A.I., Tatarinova O. V., Nikitin J.P., Shishkin S.V., Simonova G. I., Shcherbakova L.V.

Cerebral stroke in elderly and long-livers of Yakutsk

Osakovsky V.L., Filippenko M. L., Sivtseva T.M., Platonov F.A.

Genetics of patients with multiple sclerosis, living in terrain of Yakutia

Dmitrieva T.G., Argunova E.F.

Virus hepatitis in children with oncohematological diseases in Yakutia

Savvin R.G.

Assessment of risk factors at virus hepatitis in the conditions of Yakutia

Zaharova N.V., Dorovskikh V.A., Borozda I.V.

Role of oxidant stress in occurrence of Legg-Calve-Perthes disease. The basic concepts of pathogenesis, diagnostics and treatment

Motina I.V., *et al.*

Role of oxidative lesion in the development of oxalate nephrolithiasis in rats



Sadullaeva A.S., Ushnitskij I.D.

The clinical characteristic of the orthopedic status of persons of the senior age living in conditions of the North

Semenova A.A., Jakovleva E.J.

The ovarian functional state of the women with tubal-peritoneal infertility

Makarova N.N., Ivanov P. M., Myreeva S.A.

The analysis of results of operative treatment of cervical cancer

#### **Diagnostics and treatment methods**

Guzeva O.V.

Value of complex clinic-electrophysiological inspection in differential diagnostics and a treatment substantiation of paroxysmal disorders of consciousness in children

Zharnikova N.N., Ivanov P. M., Ignatyev V.G.

The retrospective analysis of dynamics of colorectal cancer morbidity on the basis of a componential method

#### **Organization of public health care, medical science and education**

##### **Healthy way of life. Profylaxis**

Shadrin O. V., Lebedeva U.M., Krivoschapkin of Century

Food stereotypes - advantage or harm?

##### **Topical subject**

Pavlova K.K., Trifonova E.A., Gotovtseva L.V., Pavlov F.V., Maksimova N.R., Filippova R. D., Stepanov V. A.

Clinical features of gestosis in the Yakut population

Fedotova A.P., Chibyeva L.G.

Influence of standard risk factors on development of NSAIDs - induced gastric and duodenum ulcers in patients of the various ethnic groups living in Yakutia

#### **Councils, recommendations to the practical doctor**

##### **Exchange of experience**

Tjurekanov K.E., Moseev . . ., Indeev N.V.

The successful reconstructive surgery at a high scar stricture of hepatico-cholechoch in a district hospital

Chichahov D.A.

Standartizing of procedural sedation in pediatric practice

#### **Pharmacology. Pharmacy.**

##### **Point of view**

Ivanov I.A.

Whether was «menyarichennie» purely Yakut disease?

##### **Case from practice**

Nikitina R. S., Vladimirtsev V. A., Danilova A.P., Platonov F.A.

Features of clinical picture of Viliuisk encephalomyelitis at the present stage

#### **From chronicle of events**

##### **History pages**

Nikolaev V. P., Semenov P. A.

They were chosen by time: doctor's assistant Georgij Karadchin

##### **Jubilees**

Semenov P. A., the public health care organizer (on the occasion of his 65<sup>th</sup> birthday anniversary)

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## THE HEREDITARY ENZYMOPENIC METHEMOGLOBINEMIA PREVALENCE IN THE CHILDREN'S POPULATION OF SAKHA (YAKUTIA) REPUBLIC

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The hereditary methemoglobinemia I type is autosomal-recessive disease, endemic for Sakha (Yakutia) Republic. In this article methemoglobinemia registry data of Advisory polyclinic of Pediatric Center RH#1-NSM (Yakutsk) are presented.

**Keywords:** methemoglobinemia, Yakutia, registry data.

### *Introduction*

The hereditary methemoglobinemia I type is autosomal-recessive disease which is characterized by sharp decrease of activity of the solvable form of enzyme NADH-cytochrome-b5-reductase in erythrocytes (less than 10 %) and moderated - in other bloody and tissue cells (20-60 %). According to the world literature the molecular-genetic cause of hereditary methemoglobinemia I – II types' development are changes in gene *DIA1* NADH-cytochrome-b5-reductase coding ferment (diaphorase-1). Gene *DIA1* is localized on the 22<sup>nd</sup> chromosome [4, 5] has length of 31 kb, contains 9 exons and 8 nitrons [9]. Two forms of enzyme, membrane connected and solvable, are produced from this gene by an alternative splicing, using different promoters [3, 7]. At present there is an assumption that at the 1<sup>st</sup> type methemoglobinemia there is a loss of enzyme stability, and at the 2<sup>nd</sup> one - its inactivation. The 1<sup>st</sup> type basically is associated with aminoacid substitutions, the 2<sup>nd</sup> one, behind some exception, with nonsense mutations and deletions in a gene [6].

In the world hereditary methemoglobinemia has wide prevalence in terrain of Alaska among Eskimos and Indians of an Ingalik tribe, who are the Atapask people, living in valleys of the rivers Kuskokwim and Yukon [8]. Single instances of the disease are revealed in populations of the various countries, thus some mutations are described in populations of China and Japan.

The Sakha (Yakutia) Republic is the endemial locus of the 1<sup>st</sup> type hereditary methemoglobinemia cases. The first works on clinical-laboratory indexes of disease are made by E.S. Banshchikova (2002). In the laboratory of molecular genetics of the RH #1-NCM molecular - genetical research is made by means of direct DNA-testing, the mutation of hereditary recessive methemoglobinemia Pro269Leu in gene *DIA* by PCR method, the RFLP -analysis and the subsequent electrophoresis in 2 % agarose gel is revealed. Heterozygous carrying frequency of the mutation is nearby 1 % in population, and among Yakuts is considerably higher - 7 %.

### *Research objective*

To represent prevalence and clinical-laboratory characteristics of hereditary enzymopenic methemoglobinemia in children of Sakha (Yakutia) Republic.

### *Methods*

On the basis of Advisory polyclinic of Pediatric centre RH#1-NSM by the hematologist children with hereditary enzymopenic methemoglobinemia (HEM) are registered.

### *Results and discussion*

Since 2005, 43 children are registered, from them 17 - elder 18 years. 65 % of sick children are boys, girls make up 35 %. Allocation of children on age has shown that the greatest number of children is registered from 7 years (37 children). Probably, it is connected with late diagnostics

and registration. 98 % of sick children are children Yakuts and 2 % of children are Evenks. In Maksimova N.R. work (2008) the disease is revealed in Yakuts with frequency 14, 9 in 100 thousand people while in the world – 1 case in 100 thousand people.

In table 1 the data of the places of residence of children is presented. The greatest quantity of children with E is registered in Viliy region (15 cases – 47,0 in 100 000 of children's population), then in the central areas (11 – 33,3 in 100 000 of children's population) and areas over the river (10 – 12,7 in 100 000 of children's population) (Table 2).

Clinically sick children complain of a short wind at an exercise stress, fatigability, the headaches bound to a hypoxia. Since a birth cyanosis of cutaneous covering and visible mucosa is observed, especially appreciable in the field of lips, nose, lobes of ears, nail plates, oral cavity. The colouring spectrum depends in basic on MetHb level in blood, the higher MetHb level, the most evident is cyanosis. As a result of MetHb accumulation in erythrocytes, at early children's age, when the central nervous and muscular systems continue to develop, in tissues deficiency of oxygen is formed. Children with E are backward in physical development - 14 (31, 8 %), in psychomotor development - 10 (22,7 %). Level of MetHb in blood from the general hemoglobin at observable children has in average - 25,2 %, (min - 4,2 %, max - 46,2 %). As consequence of adaptable reaction of organism to hypoxia, the quantity of erythrocytes and hemoglobin in blood unit should be raised. At observable children under analyses of blood it is revealed only in 17 (39, 5 %), in them hemoglobin level is raised in 1,1 - 1,3 times, and the quantity of erythrocytes is raised in 1,1 - 1,28 times. In 11 (25, 6 %) signs of hypoferric anemia of the 1 degree are revealed that aggravates disease course.

At inspection of children with HEM, following concomitant diseases are revealed: tooth caries - 39 (90, 7 %), small anomalies of heart - 23 (53, 4 %), a chronic tonsillitis - 10 (23, 3 %), in one patient - a congenital heart disease, a valve stenosis of the pulmonary fulcrum, the operated congenital heart disease (ASD), juvenile rheumatoid arthritis, stomach ulcer, epilepsy with dementia, benign tumor of temporal department of brain.

#### *Conclusions*

Most often hereditary enzymopenic methemoglobinemia is revealed in children from Verhnevilyuisky and Ust-Aldan areas. In a clinical pattern congenital cyanosis of cutaneous covering and oral cavity mucosa prevails, MetHb level exceeds norm on the average in 12,6 times, level of hemoglobin and erythrocytes only in 17 (39,5 %) patients are raised compensatorily, in 11 (25,6 %) patients signs of hypoferric anemia of the 1<sup>st</sup> degree are revealed that aggravates a clinical course.

Thus, the carried out analysis of the methemoglobinemia register confirms endemicity of the disease for our Republic, especially for over the river and Vilyui areas and demands working out and introduction of screening methods of research of indigenous population for revealing of carriers of the given gene.

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## THE FACTORS OF A RISK OF THE FORMING OF CEREBRAL ISCHEMIA IN NEW-BORN CHILDREN OF TUVA REPUBLIC

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### RESUME

150 women of the native nationality of Tuva Republic and their new-born children were examined with the aim of discovering of the risk factors of cerebral ischemia in new-born children. Analysis of the statistic meaning of the distinctions of the qualitative signs was made with the help of the criterion  $\chi^2$  with Yeits correction. The index of ratio of the chances with 95% confidence interval was used for risk calculation.

The discovered signs of pre-natal hypoxia during pregnancy increase a risk of acute ischemia of brain in 4,85 times in period of new-borning. Risk of the ischemic injury of central nervous system of a new- born child is increased in 2,92 times at a presence of the urogenital infection in a mother and twice - at a presence of anemia in a pregnant woman and a risk of misbirth.

**Keywords:** new-born children, cerebral ischemia, risk factors, prognosis.

Cerebral ischemia (CI) with hypoxia take a leading place, achieving 38,4-67,5 [1] in the structure of the perinatal sickness and mortality. Cerebral ischemia / hypoxia has got long-term (many years') consequence, and modern demographic situation demands constant perfection of aid to pregnant women and new-born children with the aim of decrease of perinatal sickness, mortality and prophylaxis of disablement since childhood. [2,4]. At the same time it's well

known that it's much easier to prevent development of cerebral pathology in new-born children than to treat it. [1,3,6].

The main element of work at the prognostication of hypoxic cerebral disturbances in new-born children is a comparison of peculiarities of process of pregnancy, labor (giving a birth) and early neonatal period with development of children during the first year of their life [5]. Clinical practice shows that neonatologists, dealing with the labor (giving a birth) in the most problematic new-born children, having clinical signs of CI and obstetricians, controlling pregnant women at the antenatal period, would like to know a risk of occurrence and persistence of the symptoms of ischemia for modern correction of the therapeutic collection. However, till now the main markers of the risk of the forming of the syndrome of cerebral ischemia in new-born children are not studied enough.

We valued such risk comparing the frequency of occurrence of CI with the index of ratio of the chances and its 95% confidence interval in two groups. The children having CI and presence of the definite clinical anamnestic factor were in the first (main) group. The children, having clinical signs of CI in the new borning period but not having some probable factors of the risk according to the interviews of the mothers and individual cards of the pregnant woman and a woman in labor (giving a birth woman) were in the second group of the control. In the gradations of the "evidence-based medicine" such approach belongs to the retrospective research of the factors of a risk of the type "case-control". At the same time the design of the research, made by us, means some limitations. Particularly, the probability of the presence of the systematic mistake is not excluded because of the influence of the outcome on remember about the causative factor with the using of the personal data of the clinical-anamnestic anamnesis. Cohort prospective research could avoid such mistake and it, however, must continue for many years (from 5 till 10 years). The approach used by us allowed to get the answer the question interesting clinicians in the short period with minimum costs.

#### **The materials and the methods of the research.**

150 women and their new-born children were included in the research. The group of the pregnant women included in the research was homogeneous according to nationality. (100%-tuvinkas living in Kizil city, Tuva republic).

The next clinical-anamnestic factors were valued by us:

1. The social factors (age, education, mother's and father's social position, conditions of living, quantity of children and adults living together).
2. The data of the gynecological anamnesis (age and characteristics of menarche, gynecological and somatic disease)

3. The process of pregnancy, presence of toxicosis, danger of abortion, anemia of pregnant women, edematous syndrome, signs of prenatal infection, syndrome of chronic placental insufficiency, syndrome of chronic prenatal hypoxia, urogenital infection (infection of the genital tracts).

#### **The statistical methods of the analysis.**

The analysis of the statistic meaning of the distinctions of the qualitative signs was made with help of the criterion  $X^2$  with correction Yeitsa. The index of ratio of the chances with 95% confidence interval was used for risk calculation.

#### **The results and the discussion**

The examined pregnant women were at the age of 16 till 41. The middle age of the pregnant women was 25 years old. Majority of the women were at the age of 21-29 (54,7%), then the age group according to frequency was 16-20 years old (22,6%) and at the 3 place – 30-35 years old (18,7%), 4% - women older 35 years old.

The examined group was homogeneous according to the singularities of labor (giving a birth) due to the fact that all labors were well-timed at the periods 37-41 weeks of pregnancy and all labors were natural, it means – through- the natural birth canals and in the head presentation. The maternity aid wasn't in the labors in 83 cases, it was 58,9%; 58 (41,1%) parturient women got the maternity aid, 37,9% of them had an augmentation of labor, 62,1% - episiotomy. 46,7% were boys and 53,3% were girls among 150 new-born children (examined by us). All children were full-term new-born children. 28% of children were born with the loop of cord, 72%- without the loop of cord. The mark of the condition of new-born children according to the Apgar scale was 8-10 scores (numbers) in 76% children in the end of one minute of life, 6-7 scores (numbers) in 20,7% children, till 6 scores (numbers)- 3,3 % children.

The weight of the body of the new-born child was minimum 2377 gr, maximum- 4150 gr, on the average- 3344 (+-) 386 gr. he average length of the new-born child's body was 50,3 (+-) 1,7 cm, the circle of the head- 35(+-) 1,2 cm. 57 (38%) new-born children were healthy in the perinatal period. The spectrum of pathology of the perinatal period in other new-born children is in the table 1.

In 20% the children with perinatal pathology had the treatment according to the official recommendations for every pathology, other- 80% new-born children needn't any treatment. 60% new-born children were discharged on the 5-th day after their birth, 40%- after 5 day. The analysis made by us showed that none factors accountable by us and analyzed parameters of early and late gynecological anamnesis didn't influence materially on the forming of cerebral ischemia in new-born children. The quantitative data of the made analysis is in the table 2. As



it's clear from the presented facts (data), the signs of chronic prenatal hypoxia, detected during the pregnancy, increase a risk of the acute ischemia of brain in new-born period in 4, 85 times. The risk of ischemic injury of CNS of a new-born child increases in 2,92 times if his mother has urogenital infection and in 2 times if the pregnant woman has anemia and threat of abortion. All these factors are fully or partly operated and depend on the degree of organization of the obstetric-gynecological aid and tight cooperation between a pregnant woman and an obstetrician and gynecologist controlling her. Generally anemia of pregnant women demands minimum financial costs for diagnostics and correction.

### Conclusion

So, the influence of the factors of the exogenous nature on the process of pregnancy and perinatal period very connected with the local organization of the obstetric-gynecological aid and tight cooperation between a pregnant woman and all specialists controlling her. The most main factors influencing on the development of a syndrome of cerebral ischemia are anemia of pregnant women, urogenital infection and a syndrome of chronic antenatal hypoxia.

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**I.V. Zhukovets**

**METABOLIC DISORDERS IN WOMEN WITH DYSFUNCTION OF THE  
HYPOTHALAMUS IN REPRODUCTIVE AGE**

Metabolic disorders at 185 women with DH are studied. The results are comparable with similar at women without endocrinal disorders. At women with DH the increase in an index of body mass, abdominal type of obesity is marked. Against barrenness menstrual cycle disorders, lowering of progesterone level in the 2 phase of the menstrual cycle are revealed. At every fourth surveyed glucose tolerance disorders, insulin resistance and LPVP decrease are marked. Timely diagnostics and correction of metabolic disorders will allow to improve the reproductive prognosis.

**Keywords:** dysfunction of the hypothalamus, metabolic disorders.

**Introduction**

Dysfunction of the hypothalamus (DH) in women of reproductive age leads to anovulation, hyperplasia of the endo and myometrium [1,3]. In the development of metabolic disorders in women with AT play a major role of hyperinsulinemia [4]. In 1990, metabolic disorders and diseases, developing in patients with obesity, were united in the concept of metabolic syndrome (MS). MS - a combination of metabolic disorders, is a factor of early atherosclerosis and cardio - vascular complications. The main symptoms and manifestations of MS are: abdominal obesity, insulin resistance, dyslipidemia, hypertension, impaired glucose and lipid metabolism [2,4]. Currently, the concept of MS does not include violations in the reproductive sphere. In this regard, we consider the disease as a DH with metabolic disorders. In 60.0% of women with infertility DH noted that due to anovulation or luteal insufficiency [3,5]. Violations of the reproductive system in conjunction with metabolic disturbances lead to the development of hormone-dependent gynecological disease, type 2 diabetes and endothelial dysfunction. In this regard, only the correction of reproductive disorders does not lead to permanent restoration of health. On the background of metabolic abnormalities during pregnancy causes such complications as miscarriage, placental insufficiency and preeclampsia. Therefore, the diagnosis of metabolic disorders should be undertaken in all women with AT for their timely correction. The purpose of the study is to examine the metabolic disorders in women with DH for timely correction and improvement of the reproductive prognosis.

**Materials and methods**

The study included 185 women with a wall (study group) and 20 - without endocrine disorders (control group). Group of comparable age. For the diagnosis of metabolic and reproductive disorders were clinical research methods: a body mass index (BMI) was calculated using Brey G. (1997), the distribution of body fat was determined by calculating the ratio of OT / OB, estimate the severity of androgenization was conducted by counting the number on the scale girsutnogo Ferriman Golvey, blood pressure measurement. Laboratory Methods included determination of fasting blood glucose, glucose tolerance test (TSH) with 75 g glucose load was determined by the meter company Johnson & Johnson (USA), the definition of high-density lipoprotein cholesterol (HDL-C) was performed on the biochemical multichannel analyzer Ehpress -550, firms «Ciba-Corning» (UK), study the content of immunoreactive insulin (IRI) was performed on an empty stomach with the use of test systems IBOH (Belarus), on insulin resistance was evaluated by index Caro F. (Fasting glucose / IRI). Progesterone in serum on day 21 of the menstrual cycle was determined by ELISA using a set of RIO-T4-NG IBOH (Belarus). Statistical data processing performed on a personal computer using Microsoft Excel software and the software package Statistica fo Windows v.6.0. All data processed by the method of variation statistics. For each quantitative parameters were determined mean value (M) and the error of the mean (m). Were considered statistically significant differences at  $p = 0,05$  (95% significance level) and  $p = 0,01$  (99% significance level).

### Results and discussion

The average age of women from the main group was  $27,9 \pm 3,4$  years. Body Mass Index  $32,4 \pm 2,8$  kg/m<sup>2</sup> in the control group  $22,4 \pm 1,4$  kg/m<sup>2</sup> ( $p = 0,05$ ). Of the 185 women from the main group of overweight was diagnosed in 74 (40,0%), obesity I degree in 68 (36,7%), II degree in 34 (18,4%), III degree in 28 (15,1%) subjects. Abdominal type of obesity was at 78,9%. In the study group, the average ON / ABOUT  $0,89 \pm 0,03$ , in the comparison group  $0,76 \pm 0,05$  ( $p = 0,05$ ). In the studied groups of women girsutnoe number on the scale Ferriman Golvey did not differ significantly and amounted to  $7,2 \pm 0,6$  and  $5,4 \pm 0,8$  in the groups respectively ( $p = 0,05$ ). Androgen dermopathy in the study group found in all cases, including in 54 (29,18%) acne, in 185 (100%) strii. In 98 (52,9%) women from the main group of clinical manifestations were headache and increased blood pressure to 140/90 mm Hg, of whom 43 patients increased blood pressure was first diagnosed in our study. The average age of menarche in main group  $11,8 \pm 0,4$  years. The average age of menarche in girls of the Amur region  $13,3 \pm 0,6$  years. In 104 (56,2%) women were menopausal disorders, including type opsomenorei in 78 (75,0%) and proyomenorei in 26 (25,0%). Primary sterility was found in 46 (24,9%), secondary - in 139 (75.1%) women from the main group. In 98 (52,9%), pregnancy outcomes were birth, in

42 (22.7%) abortion, and 21 (11,4%), spontaneous miscarriage, in 24 (12.9) Missed miscarriage. Our data confirm other studies that have noted the menstrual function, characterized opsomenoreey and persistent anovulation in women with overweight and obesity [3]. The main group of women impaired glucose tolerance was detected in 26 (14.05%), hyperinsulinemia in 49 (26,4%). The level of serum insulin in the study group was  $18,9 \pm 1,49$  MS U / ml, in the comparison group  $5,6 \pm 0,7$  MC U / ml ( $p = 0,05$ ). Insulin resistance in 49 women from the main group was confirmed by lower index Caro F. up to  $0,28 \pm 0,02$ . In women, the main group level L P V P was  $1,19 \pm 0,07$  mmol / l in the control group  $1,30 \pm 0,03$  mmol / l ( $p = 0,05$ ). In this gipalfaholisterinemiya was noted in 4 women, each of the main group. According to research by E. A. Sosnova [4], insulin resistance and compensatory hyperinsulinemia, in combination with abdominal obesity and atherogenic dyslipidemia lead to a breach of steroydogeneza in the ovaries and chronic anovulation. This is confirmed by our further studies. Progesterone levels in the study group was  $23,17 \pm 1,23$  nmol / l in the control group  $89,01 \pm 4,67$  nmol / l ( $p = 0,001$ ). The main principles of treatment of metabolic disorders in the study group, women were integrated and individual approach, with an endocrinologist. The mainstay of treatment was reasonable and balanced diet, changing lifestyles, increasing physical activity and energy expenditure. Multifactor pathogenesis DH involving carbohydrate, lipid metabolism, reproductive disorders causes low efficiency of therapy, the basis of which is a lifestyle change, and requires the use of drugs. To correct metabolic abnormalities and improve tissue sensitivity to insulin 75 (40.5%) women were treated Siofor dose of 1500 mg per day. The course of treatment was 6 months. In 92 (49.0%) women from the main group without disrupting tissue insulin sensitivity correction of body weight was carried out centrally acting anorectics drug sibutramine (Merida) 10-20 mg per day. The course of treatment was 6 months. Simultaneously, 104 (56,2%) women are the main group carried out the correction of the menstrual cycle of combined oral contraceptives.

### Conclusions

Women with DH there is an increase in body mass index, abdominal type of obesity. On the background of infertility found menstrual irregularities, decreased progesterone levels in the 2 phase of the menstrual cycle. Every fourth of the survey indicated impaired glucose tolerance, insulin resistance and lower HDL. Thus, women with metabolic disorders identified by the DH is one of the causes of reproductive disorders, timely diagnosis and correction of these disorders will improve the reproductive prognosis.

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## FREQUENCY OF THE METABOLIC SYNDROME AND ITS CLINICAL VARIANTS AT PATIENTS WITH THE VERIFIED CORONARY ATHEROSCLEROSIS IN YAKUTIA

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By results of research it is shown that atherosclerotic lesion of coronary arteries, first of all, is connected with metabolic syndrome, arterial hypertension and dislipidemia are one of leading components of metabolic syndrome in the surveyed ethnic groups.

**Keywords:** coronary atherosclerosis, metabolic syndrome.

### INTRODUCTION

The metabolic syndrome ( S ) in recent years draws steadfast attention of doctors of different specialities. By definition of VNOK experts (2009) S is characterized by increase of visceral fat weight, decrease in sensitivity of peripheral tissues to insulin and hyperinsulinemia which cause development of carbohydrate, lipid, purin metabolism disorders and arterial hypertension ( H ) [8]. Occurrence of concept S (or the X-syndrome) is associated with name of American scientist G. Reaven which in the work published in 1988 has connected development of clinical signs of this syndrome with insulin resistance (IR) [7]. The author hasn't carried abdominal adiposity to number of obligatory signs of S. However in 1989 J. Kaplan, having described «deadly quartet», has included abdominal adiposity along with H, glucose tolerance disorder and hypertriglyceridemia in number of important components of syndrome [9]. Medico-social importance of S is caused by higher frequency (in 4,2 times higher, than in population) of development in patients of vitally dangerous cardiovascular diseases. The S is a disease of a civilization. Its prevalence in the world according to different researchers makes from 14 to 40 %, increases with the years, especially in average and senior age group (30-40 %) [13, 17]. The clinical importance of S allocation is caused by convertibility of the given condition, influencing one of components of S, it is possible to achieve improvement of its other components, and also is connected with the fact that it precedes development of ischemic heart disease and diabetes 2 type which are now principal causes of raised death rate of the population [1, 9, 15]. The S essentially influences clinical current of IHD, raises risk of coronary complications. At men with S risk of sudden death from myocardial infarction (MI) is higher even if they don't have symptomatic of IHD. The combination of arterial hypertension, hyperglycemia and hypertrygliceridemia or HDL low level is connected with the maximum coronary risk at S [12, 14].

Now the tendency to unification of S definition is observed and there is no uniform criterion of such component of S as abdominal adiposity, and is recommended to use various specifications, proceeding from regional and ethnic features of concrete populations [10].

Thus, the problem of revealing of S prevalence is actual for specification of diagnostic criteria of S taking into account regional features of separate groups of the population, and also for planning of the regional preventive actions directed on decrease of risk of development of cardiovascular diseases taking into account ethnicity.

The purpose of research was studying of frequency of metabolic syndrome and its clinical variants at the IHD patients suffering with the verified coronary atherosclerosis and persons without clinical signs of IHD, representatives of native and non-native population of Yakutia.

## **MATERIAL AND METHODS**

Results of survey of 400 men are included in research at the age of 45-64 years: from them 200 – the patients who were on stationary survey and treatment in cardiological branch of Republican hospital 1-National center of medicine of Yakutsk and 200 – persons without the clinical signs of IHD, surveyed during forwarding actions. 4 groups of men were analyzed: 1 – IHD patients with the verified coronary atherosclerosis, representatives of native nationality of Yakutia ( $n=100$ , middle age  $55,85 \pm 0,97$  years); 2 – IHD patients with the verified coronary atherosclerosis of non-native nationality ( $n=100$ , middle age  $53,15 \pm 1,04$  years); 3 – persons without IHD signs of native nationality ( $n=100$ , middle age  $51,82 \pm 1,50$  years) and 4 – persons without IHD signs of non-native nationality ( $n=100$ , middle age  $51,75 \pm 1,30$  years). Yakuts are considered to be representatives of native nationality, non-native – Russian and Ukrainians living in Yakutia constantly. As criteria of exception of research served: unstable stenocardia, acute myocardial infarction, in comparison groups – presence of IHD clinical signs and electrocardiograms-signs of the old myocardial infarction.

Survey was spent by standard techniques and included following obligatory sections: poll under Rose's questionnaire and the questionnaire developed for estimation of objective condition; the informed consent to carrying out of researches and blood delivery; triple measurement of arterial pressure (AP); anthropometrical survey with measurement of growth, weight and calculation of body mass index (BMI), volumes of waist (VW) and hips (VH) with estimation of the relation VW/VH; electrocardiogram registration in rest; selective coronaroangiography; blood sampling from elbow vein in the morning on empty stomach for revealing of infringements carbohydrate (blood glucose, insulin, C-peptid) and lipid metabolism (HDL, LDL, TG) disorders, the hormonal status (testosterone). Estimation of results spent on the standard classifications. For calculation of index IR used the standard index HOMA-IR (D. Matthews, 1985): Serum insulin on empty stomach (mked/ml) plasma glucose on empty stomach (mmol/l) / 22,5. Value of index  $> 2,27$  is considered as IR presence [16]. For diagnostics of S criteria IDF (2005), ATP III (2004) and VNOK (2009) were used. At estimation of clinical variants of S IDF criteria are used. Statistical processing of the received data was held by means of package of computer programs SPSS (version 11.5). The importance of distinctions was estimated with t Student criterion. Results are presented in the form of  $M \pm m$ , where M – average arithmetic, m – standard error of average. Distinctions were considered statistically significant at  $p < 0,05$ .

## RESULTS AND DISCUSSION

In both groups of patients with coronary atherosclerosis significant increase of frequency of S by criteria IDF and VNOK in comparison with control groups (accordingly at native 48

and 12 % (IDF,  $<0,01$ ) and 52 and 15 % (VNOK,  $<0,05$ ), non-native 48 and 18 % (IDF,  $<0,05$ ) and 58 and 26 % (VNOK,  $<0,05$ ) was marked. Depending on ethnicity significant distinctions are not revealed. With use of standard criteria III underestimated frequency of S among the surveyed groups of men is received and distinction between patients and persons without IHD were insignificant (accordingly at native 18 and 4 %, non-native 28 and 10 %) (tab. 1). In number of works it has been shown that prevalence of S even at use of one version of definition fluctuates in very wide limits – from 10-12 % in the general population and to 70 % depending on prevailing pathological conditions in investigated group [7].

The S in the form of combination of abdominal adiposity, the raised arterial pressure and dislipidemia at patients with the verified coronary atherosclerosis in both ethnic groups was shown in 70,8 % of cases, and in comparison groups – among aboriginals in 66,7 % and non-native in 42,8 % of cases. Clinical variant of S in the form of combination of abdominal adiposity and dislipidemia (hypertrygliceridemia + hypoalfacholesterolemia) was marked in 25 and 29,2 % of cases among patients with coronary atherosclerosis, and also in 16,7 and 21,8 % of cases among persons without IHD clinical signs accordingly. In groups of patients with the verified coronary atherosclerosis the combination of abdominal adiposity, the raised arterial pressure, dislipidemia and hyperglycemia is revealed at 8,3 % of native and 16,7 % non-native populations. In comparison groups the similar combination was met only at representatives of non native nationality in 10,2 % of cases. The data obtained by us by clinical variants of S are coordinated with the data of other authors [6].

Average indexes of anthropometrical parameters (BMI and the relation VW/WH) were significantly higher among patients with coronary atherosclerosis in comparison with persons without IHD (accordingly at native – BMI  $27,73 \pm 0,89$  and  $25,26 \pm 0,73$  kg/m<sup>2</sup>, VW/VH  $0,98 \pm 0,01$  and  $0,95 \pm 0,007$ ,  $<0,05$ ; non-native – BMI  $29,59 \pm 0,73$  and  $29,59 \pm 0,73$  kg/m<sup>2</sup>, VW/VH  $0,97 \pm 0,11$  and  $0,94 \pm 0,006$ ,  $<0,01$ ). Average values of BMI were higher among men of non-native nationality in comparison with aboriginals. The adiposity connected with the central accumulation of fat, is considered to be one of the major factors associating with atherosclerosis development, and as consequence with development of MI and cerebral insult [2].

The average levels of AP systolic pressure (SP) and diastolic pressure (DP) the AP at patients with coronary atherosclerosis exceeded indicators of compared groups with IHD (accordingly at native – the SP  $134,7 \pm 1,7$  and  $128,0 \pm 1,3$  mm hg,  $<0,01$ , DP  $84,9 \pm 0,9$  and  $82,1 \pm 0,7$  mm hg,  $<0,05$ ; non-native – the SP  $134,8 \pm 2,0$  and  $129,1 \pm 1,3$  mm hg,  $<0,05$ , DP  $84,8 \pm 1,0$  and  $81,5 \pm 0,7$  mm hg,  $<0,01$ ). Some authors specify in distinctions in influence



of SP and DP concerning development of IHD. So, according to 20-year-old prospective supervision only systolic H is of great importance in respect of the forecast, and diastolic AH doesn't play role in this process [11].

At the comparative analysis LDL, HDL and G average levels among patients with coronary atherosclerosis were significantly higher unlike persons without IHD. So, the average levels of studied blood serum lipids have made: LDL accordingly at aboriginals  $3,39 \pm 0,1$  and  $3,06 \pm 0,1$  mmol/l ( $< 0,05$ ), non-native –  $3,45 \pm 0,1$  and  $3,08 \pm 0,1$  mmol/l ( $< 0,01$ ); HDL accordingly at native –  $0,97 \pm 0,03$  and  $1,30 \pm 0,03$  mmol/l, non-native –  $0,90 \pm 0,03$  and  $1,28 \pm 0,03$  mmol/l ( $< 0,001$ ); G at native –  $1,93 \pm 0,1$  and  $1,32 \pm 0,1$  mmol/l ( $< 0,05$ ), non-native –  $2,43 \pm 0,1$  and  $1,61 \pm 0,1$  mmol/l ( $< 0,001$ ). The TG average levels were significantly higher among men of non-native nationality in comparison with aboriginals,  $< 0,001$  (tab. 2). The data obtained by us are coordinated with the literary ones. It has been noticed that except hypercholesterolemia and hypoalphacholesterolemia the role of hypertriglyceridemia in progressing and development of coronary atherosclerosis is significant. At men in the clinical researches spent on system "case-control", at the one-factorial analysis between TG level the positive association is found in plasma, IHD mortality, MI and expressiveness, by coronarangiography data, coronary atherosclerosis [3-5].

The glucose average levels in all surveyed groups of men were within admissible values, but at the same time at patients with coronary atherosclerosis of native nationality the glucose average level was significantly higher in comparison with persons without IHD ( $5,26 \pm 0,26$  and  $4,33 \pm 0,14$  accordingly,  $< 0,001$ ). At glucose indicator on empty stomach above 5,2 mmol/l the risk of development of atherosclerosis increases in blood in 5-8 times. The insulin average levels, C-peptid in groups of men with coronary atherosclerosis were significantly higher in comparison with control groups (accordingly at native – insulin  $17,62 \pm 0,52$  and  $10,68 \pm 0,51$  mked/ml, C-peptid  $2,21 \pm 0,16$  and  $1,01 \pm 0,19$  ng/ml,  $< 0,001$ ; non-native – insulin  $16,21 \pm 0,52$  and  $7,76 \pm 0,59$  mked/ml, C-peptid  $1,98 \pm 0,19$  and  $0,71 \pm 0,12$  ng/ml,  $< 0,001$ ). Index IR HOMA-IR at patients with coronary atherosclerosis exceeded admissible indicator and was significantly higher in comparison with persons without IHD (accordingly at native –  $4,18 \pm 0,52$  and  $2,12 \pm 0,53$ ,  $< 0,001$ ; non-native –  $3,85 \pm 0,51$  and  $1,82 \pm 0,52$ ,  $< 0,001$ ) (tab. 3). Hyperinsulinemia and insulinresistancy are the basic starting moments of development of S and, accordingly, atherosclerosis. Significant distinctions in testosterone average levels between compared groups are not revealed (accordingly at native –  $15,10 \pm 1,32$  and  $13,12 \pm 1,39$ ; non-native –  $12,78 \pm 1,35$  and  $10,51 \pm 1,34$ ,  $p > 0,05$ ). The average levels of insulin, C-peptide, index

HOMA-IR and testosterone were higher at aboriginals unlike non-native at tendency level that demands the further studying.

### CONCLUSION

By results of research it is shown that atherosclerotic lesion of coronary arteries first of all is connected with S, arterial hypertension and dislipidemia are one of leading components of metabolic syndrome in the surveyed ethnic groups of men. At patients with coronary atherosclerosis in comparison with persons without clinical signs of IHD potentially atherogenous distinctions in indicators lipid blood profile are revealed: raised levels of LDL and, especially, TG, and also lowered level HDL. The complex of lipid metabolism indicators testifies about more favorable lipid spectrum of blood at native population of Yakutia, including at patients with coronary pathology.

Table 1

#### Frequency of metabolic syndrome at patients with coronary atherosclerosis in comparison with persons without IHD signs

Group	IDF, 2005	ATP III, 2004	VNOK, 2009
1 native IHD(+)	48%**	18%	52%*
2 non-native IHD(+)	48%*	28%	58%*
3 native IHD(-)	12%	4%	16%
4 non-native IHD(-)	18%	10%	26%
	** - (1-3)<0,01		* - (1-3)<0,05
	* - (2-4)<0,05		* - (2-4)<0,05

Table 2

#### The average levels of the indicators which are part of metabolic syndrome at patients with coronary atherosclerosis in comparison with persons without IHD signs (M±m)

Group	BMP, kg/m <sup>2</sup> *	WV, mmHg*	SBP, mmHg**	DBP, mmHg*	LDL, mmol/l*	HDL, mmol/l***	TG, mmol/l*
1 IHD(+)	24,89±0,89*	134,7±11,7**	84,9±9,9*	3,39±0,71*	0,97±0,03***	1,93±0,1*	

2 non- native IHD(+)	29,59±0,73**	0,97±0,11**	134,8±2,0*	84,8±1,0**	3,45±0,1**	0,90±0,03***	2,43±0,1***
3 native IHD(-)	25,26±0,73	0,95±0,007	128,0±1,3	82,1±0,7	3,06±0,1	1,30±0,03	1,32±0,1
4 non- native IHD(-)	29,59±0,73	0,94±0,006	129,1±1,3	81,5±0,7	3,08±0,1	1,28±0,03	1,61±0,1***
(+)- (-)	* - <0,05; ** - <0,01; *** - <0,001						

Table 3

The average levels of glucose, insulin, C-peptide and testosterone at patients with coronary atherosclerosis in comparison with persons without IHD signs (M±m)

Group	Glucose, mmol/lл	Insulin, mkEd/ml	C-peptid, ng/ml	Testosterone, ng/ml	Index HOMA-IR
1 native IHD(+)	5,26±0,26***	17,62±0,52***	2,21±0,16***	15,10±1,32	4,18±0,52**
2 non-native IHD(+)	5,39±0,24	16,21±0,52***	1,98±0,19***	12,78±1,35	3,85±0,51**
3 native IHD(-)	4,33±0,14	10,68±0,51	1,01±0,19	13,12±1,39	2,12±0,53
4 non-native IHD(-)	5,30±0,15	7,76±0,59	0,71±0,12	10,51±1,34	1,82±0,52
(+)- (-)	*** <0,001	*** <0,001			** <0,01

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**ETHNIC FEATURES  
OF FETAL ALCOHOL SYNDROME MANIFESTATION**

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The current study is prepared with information support of Fogarty International Center (U.S. National Institute of Health) as a part of the investigation «Brain Disorders in the Developing World» (grant N R21 TW006745-01) by Barbara Bonner (PhD, University of Oklahoma Health Sciences Center). The content of the present work may not reflect the point of view of Fogarty International Center or U.S. National Institutes of Health.

**Summary:** An incidence of fetal alcohol syndrome (FAS) in maternity, child hospitals and orphanages of St. Petersburg and Republic of Sakha (Yakutia) (RS (Ya)) was investigated. 39 children with FAS from St. Petersburg and 39 ones from Republic of Sakha (Yakutia) were evaluated in detail by means of the standard neurological assessment, Developmental Scales, anthropometry, 4-Digit Diagnostic Code and MRI and Cranial Ultrasound. Even and Sakha children demonstrated significant decrease of palpebral fissure length compared with the europoid babies up to the age of 3 years old. Sakha children had most often ptosis, epicanthus and dilatation of subarachnoidal spaces than St. Petersburg babies regardless of ethnic features. No significant difference between babies' subgroups in physical and neurodevelopment was detected.

**Key words:** fetal alcohol syndrome, ethnic features.

**Introduction.** Toxic encephalopathies of neonates take one of the main places among children neurological disturbances.

In the first place – fetal alcohol syndrome (FAS). Its importance is defined by wide alcohol consumption among population, in particular women (including pregnant), severe consequences of alcohol exposure for fetus and baby, and also by the fact that FAS is perhaps the only avertable cause of mental retardation in children [6, 7].

The prevalence of FAS has distinct ethnic and social regularities. It is generally agreed that FAS prevalence rate is estimated to be between 0.2–2.0 in every 1000 live births. In families of low economic level FAS prevalence is about 3.0–5.0 per 1000 live births. Less expressed fetal alcohol effects are found in 1 case per 300 live births. In North America FAS problems are studied closely: in American Indians families the FAS rate is 8.5 per 1000 live births, in Canadian Indians families fetal alcohol spectrum disorders (FASD) – up to 190 in every 1000 live births. If there is one baby with FAS in a family the incidence rate of FAS in all younger children in this family is 771:1000 [8, 15]. According to CDC criteria [11] FAS diagnosis requires:

1. Documentation of all three FAS facial features present (smooth philtrum, thin vermilion and small palpebral fissures);
2. Documentation of growth and weight deficits;
3. Documentation of central nervous system abnormalities;
4. Documentation of prenatal alcohol exposure.

As the first three parameters' definition depends on regional and ethnic features, there is a question of ethnic specificity of FAS manifestation.

**The aim of this investigation** is to study ethnic and regional features of FAS in St. Petersburg and Republic of Sakha (Yakutia).

**Materials and methods.** In St. Petersburg (SPb) maternity clinic, specialized neonatological center, psychoneurological orphanage and correction orphanage for children with development disturbances 39 europoid babies with FAS aged up to 7 years old were observed. Also FAS was studied in Allaykhovsk, Oymyakon, Idan, Verkhnevilyusk regions, and in Evenki settlement Iengra, RS (Ya), where 39 children with FAS were found (18 natives, 21 europoids).

FAS is diagnosed with criteria of 4-Digit Diagnostic Code (University of Washington): confirmed growth and weight deficiency, facial dysmorphism (smooth philtrum, thin vermilion and small palpebral fissures), central nervous system damage, prenatal alcohol exposure. On the basis of the above-mentioned they assessed facial features, anthropometric data, neurological status, other specialists conclusions and additional investigations results [9].

Nervous system of neonates was estimated with L.M.S. Dubowitz Scale [10] and Depression-irritation profile [5]. Neurodevelopment dynamics was estimated with L.T. Zhurba Scale [2], Denver test, and also Motor Quotient (MQ) [3] and Developmental Quotient (DQ) [4, 13, 14].

Childrens' physical development was estimated with guideline "Assessment of the main anthropometric features and several physiological parameters of the children living in North-West" [3]. The physical development of neonates was estimated with "Neonates physical development assessment: methodological recommendations" (ed. by G.M. Dementieva) [1].

Structural characteristics of disease were defined with cranial ultrasonography and brain MRI.

The results were processed with nonparametric analysis methods ( $\chi^2$ -criterion, Spearman correlation) and the standard programme Statistica for Windows 8.0.

**Results.** The analysis of FAS diagnosis in SPb social and health-care institutions is presented in Table 1. In the studied RS (Ya) orphanages 26 children with FAS were found, it is 13%. The examination of different FAS manifestations in SPb and RS (Ya) children is made with consideration of childrens' ethnicity.

Palpebral fissures length distribution according to childrens' age, region and ethnicity is presented in Table 2.

The analysis of the data in this Table shows that up to 3 years old palpebral fissures length is less in Even and Sakha children than in europoids both in RS (Ya), and in SPb ( $\chi^2 = 7.14$ ;  $p = 0.0076$ ). After the age of 3 years old these differences come to nought. No difference between europoid children, regardless of region, was detected.

Examination of other facial features is presented in Table 3.

As you can see from this Table, low nasal bridge, low forehead and ear auricle anomaly were found in children with FAS without significant difference regardless of region and ethnicity. Low nasal bridge in RS (Ya) children was detected more frequently regardless of ethnicity ( $\chi^2 = 20.35-26.41$ ;  $p < 0.0001$ ), as well as epicanthus ( $\chi^2 = 17.12-30.54$ ;  $p < 0.0001$ ). Other disembirogenetic stigmas' and developmental defects' analysis did not show any significant differences or regularities (Table 4).

Anthropometric data of the observed children (Table 5) is also homogeneous, it indicates equal developmental delay in all subgroups.

Cerebral structural changes diagnosis in children with FAS (Table 6) detected more frequent visualization of subarachnoidal spaces dilatation in RS (Ya) children and residual changes in St. Petersburg babies.

Assessment of neurological status and developmental milestones (Table 7) showed more frequent incidence of ptosis in RS (Ya) children ( $\chi^2 = 7.22$ ;  $p = 0.0072$ ).

Thus, having examined FAS prevalence and manifestation in St. Petersburg and RS (Ya) children, we may come to the following **conclusions**: FAS diagnosing varies in different medical institutions, in maternity clinic it is estimated between 0.79–3.6%, in specialized institutions – up to 46.4%. FAS is manifested by growth and developmental delays, facial dysmorphia and other signs of dysembryogenesis, motor delay and mental retardation; all these features were detected almost in all observed children. Cerebral structural changes were found by means of neurovisualization only in a small part of the observed children, in the neurological picture muscle tone changes prevailed. Comparison of FAS clinical manifestation in St. Petersburg and RS (Ya) children showed that Even and Sakha children up to 3 years old had less palpebral fissures than children-europoids, regardless of the region; RS (Ya) children more frequently had ptosis, epicanthus and dilatation of subarachnoidal spaces, but less frequently residual changes at neurovisualization. No significant difference between babies' subgroups in physical and neurodevelopment was detected.

**Discussion.** The present work studies current interdisciplinary problem: consequences of prenatal alcohol exposure. FAS has distinct ethnic and regional characteristics.

There are certain ethnic and geographical isolates with high incidence of FAS and FASD, it is determined by alcohol consumption mode in these ethnic groups during pregnancy, and also by genetic traits of alcohol metabolism.

In the present pilot study data concerning FAS diagnosing in St. Petersburg social and health-care institutions is presented, though we did not get this information in RS (Ya). On the other hand, because of ethnic heterogeneity in RS (Ya), there is a problem of verification of facial dysmorphia, anthropometric parameters, and rate of neurodevelopment.

The current work shows that the main diagnosis element – palpebral fissures length – is less in Even and Sakha children compared to europoids from RS (Ya) and SPb only under 3 years old. We can hardly explain the obtained data about more frequent occurrence of ptosis and epicanthus in children from RS (Ya), including europoids, compared to SPb europoids. Also we do not have an explanation of significant differences of neurovisualization data from two regions.

Thus, taking into account this preliminary investigation results we can note that to improve FAS diagnosis we should standardize childrens' physical and neurodevelopment parameters with consideration of regional and ethnic features, and specification of interpretive parameters of neurovisualization methods.

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Table 1

## Dynamics of FAS diagnosis in St. Petersburg children's institutions

Institution	Year of registration									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Maternity clinic, %				2.7	1.17	3.62	2.25	2.38	2.4	0.79
Neonatological center, %						3.5	1.2	1.0	0.6	0.3
Specialized orphanage, %	9.3	8.7	9.0	7.0	7.3	6.7	6.5	8.9	4.6	6.2
Correction orphanage, %							46.4	44.6	42.7	

Table 2

## Palpebral fissure length of children with FAS (n = 78)

Age	Ethnicity and region			
	Even	Sakha	Europoid (RS (Ya))	Europoid (SPb)
<b>Palpebral fissure length</b>				
<b>Neonate</b>				
13 mm				1
15 mm				4
16 mm				1
<b>1–6 months</b>				
15 mm	1			1
16 mm		1		1
18 mm			1	1
<b>7–11 months</b>				
16 mm				1
18 mm			1	
<b>1 year</b>				
12 mm	1			
15 mm		1		1
16 mm		1		
17 mm		1		1
18 mm	1		1	3
19 mm				1
20 mm				2
<b>2 years</b>				
15 mm	1	1		

16 mm				1
17 mm			1	1
18 mm		1	1	2
19 mm			2	1
20 mm			2	3
<b>3 years</b>				
16 mm				1
17 mm				1
19 mm			1	1
20 mm				3
<b>4 years</b>				
18 mm	1		1	
20 mm		2	2	1
21 mm				1
<b>5 years</b>				
17 mm		1		
18 mm				
19 mm			2	
20 mm			1	
21 mm				
22 mm			1	
<b>6 years</b>				
17 mm		1		
18 mm				
20 mm	1			
21 mm				
22 mm				
<b>7 years</b>				
19 mm		1		
20 mm		1		

Table 3

## Facial dysmorphia in the observed children

Facial feature	SPb (n = 39)	RS (Ya)		
		Even (n = 6)	Sakha (n = 12)	Europoids (n = 21)
Low nasal bridge	3 (7.7%)	5 (83.3%)	9 (75%)	15 (71.4%)
Epicanthus	1 (2.5%)	4 (66.6%)	9 (75%)	10 (47.6%)
Low forehead	3 (7%)	2 (33.3%)	4 (33.3%)	4 (19%)
Ear auricle anomaly	7 (17.9%)	1 (16.6%)	3 (25%)	7 (33.3%)

Table 4

## Disembriogenetic stigmas and developmental defects \*

Stigmas and defects	SPb (n = 39)	RS (Ya) (n = 39)
Optic nerve hypoplasia	4	4

Conductive hearing loss	2	3
Uranostaphyloschisis	1	2
Chest distortion	1	5
Hip joint dislocation	2	1
Hemangiomas	2	4
Congenital heart defects	19 (48.7%)	15 (40.5%)

Table 5

## Anthropometric measurements of children with FAS (n = 76)

Centiles	Height			Body weight			Head circumference		
	3	10	25	3	10	25	3	10	25
Mongoloids (RS) (n = 17)	14	3		14	2	1	15	2	
Europoids (RS) (n = 20)	18	2		18		2	16	4	
Europoids (SPb) (n = 39)	34	4	1	33	5	1	27	8	4
Total	66	9	1	65	7	4	58	14	4

Table 6

## Cerebral structural changes according to neurovisualization data \*

Structural changes	SPb (n = 25)	RS (Ya) (n = 22)
Agenesis and hypogenesis of the corpus callosum	1	2
Cerebellar vermis hypoplasia	1	0
Pachygyria	0	1
Cysts (of central fissure and pellucid septum)	3	4
Dilatation of subarachnoidal spaces	0	6
Inhomogenous parenchyma	2	2
Residual changes	8	0
NAD	4	4

Table 7

## Neurological disturbances and features of neurodevelopment in children with FAS \*

Feature	SPb	RS (Ya)
Ptosis	4 (10.2%)	14 (35.8%)
Strabismus	8 (20.5%)	10 (25.6%)
Muscle tone change	22 (56.4%)	26 (66.6%)
Speech delay	19 (90%)	26 (92.9%)
Fine motor skills delay	13 (61.9%)	23 (82.2%)
Motor delays and mental retardation (L.T. Zhurba et al. Scale)	Risk group	5 (50%)
	Development delay	5 (50%)
		3 (33.3%)
		6 (66.6%)

\*Because of occasional occurrence the ethnicity is not detected.

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**The analysis of frequency of myocardium infarction at native and non-native population of Yakutsk city (based on a hospital register of the cardiologic unit MI «Yakutsk clinical hospital»)**

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We carried out the retrospective survey of 5061 history cases of inpatients of the cardiological unit MI «Yakutsk clinical hospital» during 2006-2009. Of them 723 cases had myocardium infarction with Q on the electrocardiogram. The data obtained testify to available distinctions of myocardium infarction with Q on the electrocardiogram at the natives and non-natives. The prevalence of Q positive myocardium infarction was higher at men as compared with women in both ethnic groups for all period of the survey. During 2006 – 2009 the increase of myocardium infarction was marked both at men and women in both ethnic groups. The frequency of myocardium infarction at the native population was lower in comparison with the non-natives. During the last years the rejuvenation of myocardium infarction has been noted at the natives of Yakutsk.

**Key words:** myocardium infarction, ethnic features, Yakutia.

**Actuality.** Death rate from illnesses of cardiovascular system comprises more than half of all death, being one of principal causes of increased death rate in Russia. During 1990-2007 the death rate from illnesses of blood circulation system in the Russian Federation has increased up to 35,2 %, and 58,4 % in able-bodied men, 54,9% at women [2]. In a structure of cardiovascular diseases the leading place is given to ischemic heart disease (IHD). More frequently the lethality of IHD is caused by myocardium infarction (MI) [8, 9].

The death rate of the population of Yakutia is basically resulted from illnesses of blood circulation system (BCS) - 41,6 %. According to the Territorial Control of Federal State Statistics in RS(Y) the primary disease of CVD has increased in 1,9 times for the last 5 years, including 127% of hypertensive illnesses, 75% ischemic heart disease, 106% of cerebral-vascular pathologies. The significant growth and death rate among the native population of Yakutia is resulted from myocardium infarction and cerebral thrombosis with obvious tendency of "rejuvenation" of the given pathology [4,6].

**Aim.** To analyze myocardial infarction with Q on the electrocardiogram at native and non-native rural population of Yakutsk in the course of 2006 and 2009.

**Material and methods.** As materials 5061 history cases of inpatients of the cardiological unit MI «Yakutsk clinical hospital» during 2006-2009 were used. 723 of them were with myocardium infarction with Q on the electrocardiogram. The majority of patients have been hospitalized by the ambulance service of Yakutsk city. Mean age of the controls was  $60,1 \pm 0,45$ .

The patients were divided into 2 ethnic groups: native and non-native population. The native group comprised Yakuts, Evenks, Evens; the non-natives - Russians, Ukrainians, Byelorussians, natives of Caucasus, Central Asia. 5 age groups were formed: 1<sup>st</sup> from 22 till 39, 2<sup>nd</sup> from 40 till 49, 3<sup>rd</sup> from 50 till 59, 4<sup>th</sup> from 60 till 69 and 5<sup>th</sup> 70 years and more. Myocardium infarction with Q was diagnosed according to recommendations of WNSC from 2007 «Diagnostics and treatment of patients with acute myocardium infarction with ST lifting segment of ECG» - Typical increase and gradual decrease in biochemical markers of myocardium necrosis combined with pathological Q on the electrocardiogram.

Statistical data processing was carried out by means of SPSS 17 software package. Results were presented in the form of  $M \pm m$ , where M stands for an average arithmetic, m as a

standard error of the average arithmetic. Authenticity of distinctions in indices between two ethnic groups was proved by means of Mann-Whitney and X-square nonparametric tests.

**Results and discussion.** According to the comparative analysis of the frequency of myocardium infarction with Q on ECG for 4 years, there is an authentic tendency of "rejuvenation" of the patients aged  $60,1 \pm 0,89$  in 2006 vs  $59,3 \pm 0,87$  in 2009 ( $p < 0,001$ ) (Table 1). In gender comparison in both ethnic groups the mean age was higher at women as compared with men (Table 2).

The analysis of inpatient history cases referring to myocardium infarction with Q on ECG has shown the authentic prevalence of non-native men and women for all period of the survey,  $p < 0,001$ . (Table 3). When comparing ethnic features the more expressed "rejuvenation" of native patients was observed: at men aged  $59,64 \pm 2,02$  in 2006 vs  $55,60 \pm 1,87$  in 2009; at women aged  $71,28 \pm 2,21$  in 2006 vs  $64,66 \pm 3,61$  in 2009,  $p < 0,01$  (Table 2,3). The comparative analysis found out that the female age group of the natives had myocardium infarction more frequently at senior age than of the non-natives ( $p < 0,05$ ). At the same time myocardium infarction was noted authentically earlier at men than at women in both ethnic groups,  $p < 0,001$  (Table 2).

When comparing the native male patients between age groups in 2007 the myocardium infarction appeared more frequently at the age of 70 and more as compared with other age groups (30,8 %,  $p < 0,01$ ). There is an authentic dynamics of the "rejuvenation" of Q myocardium infarction from 28,2 % in 2007 to 35,0 % in 2008 among the patients aged 40-49 years ( $p < 0,01$ ) (Tab. 4). While in the group of the non-native male population for all years MI occurred at the age of 50-59 years ( $p < 0,01$ ). In both native and non-native female patients there was a tendency of increased frequency of Q positive myocardium infarction with declining age (Tab. 5).

The non-native male patients had authentic high frequency of MI with Q on ECG during the whole survey as compared with the natives in age group of 50-59 years,  $p < 0,001$  (Table 4). The analysis found out that the frequency of myocardium infarction at the native women increased with declining age, being up to 77,8 % in age group of 70 and more vs 42,3 % in the non-natives for 2008. But in 2009 the frequency of myocardium infarction differs authentically from the dynamics presented, with decreased MI - 33,3 % at the natives in senior female age group as compared with the non-native group, it amounting for 47,8 %,  $p < 0,001$ . Based on the data for 2007, myocardium infarction is observed more often among the native group (Table 5).

The analysis concerning to the localization of myocardium infarction has shown that there is frequent affection of anterior wall of the left ventricle both at the male and female natives and non-natives.

Our showings correspond to the literary data on atherosclerosis research in Yakutia. In pathoanatomical researches of atherosclerosis of coronary arteries in Yakutia essential ethnic features were marked having smaller expressiveness of atherosclerosis of coronary arteries at native population [1]. Last researches have also confirmed that development of sharp coronary cases is linked not so much with degree of stenosis of coronary arteries, as with formation of non-stable plaque [7]. Moreover, the stable stenocardia in the field of stenosis is rarely accompanied by the acute myocardium infarction [6].

Epidemiological researches on risk factors and cardiovascular diseases have been carried out in Buryatiya [5, 7]. Authors conducted a one-stage and prospective research in order to study the prevalence of IHD and its risk factors among the native and non-native population of Ulan-Ude. As a result of these researches authentically lower prevalence of IHD was noted among the Buryat native population of Ulan-Ude as compared with the Russians, authentically increasing in the sixth and seventh decades of life, the latter being similar to the data obtained in Yakutia. The frequency of atherogenic dyslipidemia (DLP) appeared to be significantly lower among the native population as compared with the non-natives. The surveys conducted have shown the frequency of IHD was 1,5 times higher and myocardium infarction was 4 times higher among the Russians.

The ischemic heart disease at equal intensity of peroxide lipid oxidation is distinguished with high adaptive activity among the native population. Representatives of non-natives and migrants are characterized by sufficient adaptation in the period of residing Buryatiya for more than 10 years. The Ukrainians turned out to be irrespective of birthplace as well as a residing period in Ulan-Ude, so the activity of antioxidant systems has disadaptive orientation [10].

According to the survey MONICA the high prevalence of arterial hypertension (50 % aged 25-64 years), stroke, IHD was observed in Novosibirsk city as compared with other regions (Chukotka, Yakutia, Transbaikalia, Hakassija, Altai). The mid-annual trend of stroke has amounted for 1.6 %, myocardium infarction at 3.8 %. The natives of southeast part of Siberia had a higher rate of arterial hypertension and brain stroke, and lower IHD than in Novosibirsk. In northern territories arterial hypertension and atherosclerosis affections are marked more slightly than in Novosibirsk, though their rates of increase during the last years being higher than in Novosibirsk [6].

**The conclusion.** The data obtained by us testify to available distinctions of myocardium infarction with Q on the electrocardiogram at natives and non-natives. The sickness rate of Q positive myocardium infarction is higher at men as compared with women in both ethnic groups for all period of the survey. During 2006 - 2009 the increase of myocardium infarction is marked both at men and at women in both ethnic groups. The frequency of myocardium infarction at the natives is lower in comparison with the non-natives, at the same time during the last years the rejuvenation of myocardium infarction has been registered among the natives of Yakutsk city.

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Table 1

## Mean age of patients with Q – positive myocardium infarction

	2006 (1)	2007 (2)	2008 (3)	2009 (4)	P 1-2	P1-3	P1-4
Age	60,14±0,89	61,50±0,90	59,14±0,93	59,31±0,87	0,065	0,001	0,001

Table 2

## Mean age of patients with Q positive myocardium infarction

	Group	2006 (1)	2007 (2)	2008 (3)	2009 (4)
	Men (A)	Natives (I)	59,64±2,02	59,77±2,22	56,15±1,71
Non-natives (II)		55,42±1,10	56,70±0,98	57,36±1,16	56,19±1,10
P I-II		0,087	0,257	0,494	0,661
Women (B)		2006 (1)	2007 (2)	2008 (3)	2009 (4)
	Natives (I)	71,28±2,21	69,33±2,62	75,00±4,21	64,66±3,61
	Non-natives (II)	64,50±1,80	71,63±1,68	64,27±2,32	67,30±1,64
	P I-II	0,031	0,610	0,016	0,545
P A-B	Natives	0,001	0,019	0,001	0,047
	Non-natives	0,001	0,001	0,005	0,0001

Table 3

## Frequency of Q positive myocardium infarction

Sex	Group	2006		2007		2008		2009	
		Aбс	%	Aбс	%	Aбс	%	Aбс	%
Men	Natives (1)	31	59,6	39	72,2	40	81,6	38	76,0
	Non-natives (2)	85	66,9	97	70,3	88	77,2	93	66,9
	P 1-2	0,001		0,001		0,001		0,001	
Women	Natives(1)	21	40,4	15	27,8	9	18,4	12	24,0
	Non-natives (2)	42	33,1	41	29,7	26	22,8	46	33,1
	P 1-2	0,008		0,001		0,004		0,001	

Table 4

## Classification of men in accordance with age groups with Q positive myocardium infarction, comparison between ethnic groups

Ethnic groups	Age groups	2006		2007		2008		2009	
		Abs	%	Abs	%	Abs	%	Abs	%
Natives (A)	till 39 (1)	-	-	1	2,6	1	2,5	2	5,3
	40-49 (2)	5	16,1	11****••	28,2	14**	35,0	12	31,6
	50-59 (3)	12	38,7	7***	17,9	9**	22,5	12	31,6
	60-69 (4)	8	25,8	8••	20,5	8	20,0	3	7,9
	70-79 (5)	6	19,4	12	30,8	8	20,0	9	23,7
	Total (6)	31	100%	39	100%	40	100%	38	100%
Non-natives (B)	till 39 (1)	2	2,4	3	3,1	2	2,3	5	5,4
	40-49 (2)	25****••	29,4	24	24,7	20	22,7	22	23,7
	50-59 (3)	35****	41,2	33	34,0	36	40,9	36	38,7

	<b>60-69 (4)</b>	12 <sup>••</sup>	14,1	23	23,7	18	20,5	16	17,2
	<b>70-79 (5)</b>	11	12,9	14	14,4	12	13,6	14	15,1
	<b>Total (6)</b>	85	100%	97	100%	88	100%	93	100%
<b>P (A-B)</b>	<b>1-1</b>	-		0,317		0,564		0,257	
	<b>2-2</b>	0,001		0,028		0,303		0,086	
	<b>3-3</b>	0,001		0,001		0,001		0,001	
	<b>4-4</b>	0,371		0,007		0,050		0,003	
	<b>5-5</b>	0,225		0,695		0,371		0,297	
	<b>6-6</b>	0,042		0,250		0,835		0,821	

2-3 - \* < 0,001; \*\* < 0,01; \*\*\* < 0,05. 2-4 - • < 0,001; •• < 0,01; ••• < 0,05. 3-5 - < 0,001; < 0,01; < 0,05.

Table 5

**Classification of women in accordance with age groups with Q positive myocardium infarction, comparison between ethnic groups**

Ethnic	Age groups	2006		2007		2008		2009	
		Abs	%	Abs	%	Abs	%	Abs	%
<b>Natives (A)</b>	<b>till 39 (1)</b>	-	-	-	-	-	-	-	-
	<b>40-49 (2)</b>	1	4,8	1	6,7	-	-	2	16,7
	<b>50-59 (3)</b>	-	-	-	-	2	22,2	2	16,7
	<b>60-69 (4)</b>	7	33,3	5	33,3	-	-	4	33,3
	<b>70-79 (5)</b>	13	61,9	9	60,0	7	77,8	4	33,3
	<b>Total (6)</b>	21	100	15	100	9	100	12	100
<b>Non-natives (B)</b>	<b>till 39 (1)</b>	1	2,4	-	-	-	-	-	-
	<b>40-49 (2)</b>	5	11,9	1	2,4	3	11,5	3	6,5
	<b>50-59 (3)</b>	8	19,0	6	14,6	6	23,1	11	23,9
	<b>60-69 (4)</b>	13	31,0	13	31,7	6	23,1	10	21,7
	<b>70-79 (5)</b>	15	35,7	21	51,2	11	42,3	22	47,8
	<b>Total (6)</b>	42	100	41	100	26	100	46	100
<b>P (A-B)</b>	<b>1-1</b>	-		-		-		-	
	<b>2-2</b>	0,102		1,000		-		0,655	
	<b>3-3</b>	-		-		0,157		0,013	
	<b>4-4</b>	0,180		0,059		-		0,109	
	<b>5-5</b>	0,705		0,028		0,346		0,001	
	<b>6-6</b>	0,016		0,472		0,149		0,414	

УДК 611.2.089.6 (571.56)

**Results of percutaneous transluminal coronary angioplasty and stenting of coronary arteries in IHD patients of indigenous and non-indigenous nationality of Yakutia**

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In a work basis direct and mean-term (1 year) clinical-angiographic results of percutaneous transluminal coronary angioplasty (PTCA) and stenting of coronary arteries (C ) in 86 IHD patients, residents of Yakutia are put. The factors affecting on unfavorable IHD clinical course after CA stenting, appearance of coronary stents restenosis are studied. The assessment of efficacy of application of usual metal stents and drug-eluting stents at CA stenting is given.

**Keywords:** coronary stenting, drug-eluting stents, restenosis in CA stents, complete anatomical and functional revascularization of myocardium.

*Introduction*

Last decade in our country was marked by intensive propagation of a perspective direction of small-invasive IHD treatment - percutaneous transluminal coronary angioplasty (PTCA) and stenting of coronary arteries (CA). In Yakutsk RH 1 - NCM for the first time PTCA procedure and CA stenting have been executed in 2005. Now in the department of X-ray surgery diagnostics methods and treatment annually more than 70 PTCA and CA stenting are carried out.

Implantation of coronary stents has allowed to thousands of patients with IHD to refuse a constant antiangina therapy, to dilate the vital activity and to avoid serious complications of IHD - unstable stenocardia, myocardial infarction, sudden death [7]. Despite constant perfection of technique of performance of PTCA and stenting procedures, production of new "biocompatible" stents, application of auxiliary antithrombus therapy, remains a problem of restenosis - the subsequent hemodynamically significant reduction of artery lumen in situ intervention [1]. In a result of a great number of researches risk factors of restenosis development inside stent were defined [2]. The maximum reduction of risks-factors would prevent development of this complication. The hope of the decision of this problem has occurred with producing of drug-eluting stents. [6,11,5]. However, despite overwhelming quantity of the researches confirming efficacy of application of stents with drug coating, in the last years it was revealed that development of complications in the remote period was registered significantly more often in patients with implanted "covered" stents [9, 3].

**The purpose** of our research was studying and assessment of clinical-angiographic results of PTCA and CA stenting in IHD patients, residents of Yakutia at application of usual metal stents and drug-eluting stents.

*Materials and methods*

In research 86 IHD patients, native (Yakuts) and non-native (Russians) residents of Yakutia with I FC - IV FC stenocardia (Canadian classification), «silent ischemia», microfocal and macrofocal myocardial infarction ( in different terms after infarction and various localization), underwent PTCA and CA stenting, were included. Medical endovascular procedures were carried out in the department of X-ray surgery diagnostics methods and treatment on angiographic system «Axiom Artis BA» Siemens (Germany). Procedures were carried out under the standard indications: narrowing of a vessel lumen on 75 % and more, both at CA one-vascular and multivascular lesion. Direct results of intervention were estimated at

control angiography (CAG). To patients have been implanted most widely applied drug-eluting stents: Cypher, Taxus, Genous, eucaTax and without a coating: Zeta, Penta, Gazelle, Driver. In total 128 stents have been implanted in diameter from 2 mm to 3,5 mm and length from 8 to 25 mm. After stent implantation procedure in CA the qualitative and quantitative assessment of a coronary blood-flow on system TIMI 0-III was made. Criteria of successful CA stenting were cases, when: recommended degree of a residual stenosis was less than 35 % (ideally 0 %); hemodynamically significant lesion in a tract of distal outflow was absent (stenosis less than 50 %); a blood flow - not less TIMI III; dissection inside stented segment was absent (completely covered dissection); there was no defect of a lumen contrasting inside stent. As a good clinical effect of PTCA and CA stenting at presence of angiographic result in the postoperative period absence of electrocardiogram-signs of ischemia of myocardium, absence or fall of stenocardia attacks, enriching of myocardial contractility and its perfusion were considered. Out-patient aftercare of patients was carried out monthly within a year at planned visits of patients. All patients received standard treatment. After a 1-year of supervision 80 patients underwent CAG, 6 patients underwent control CAG in earlier terms in connection with negative clinical dynamics. At control CAG a state of a coronary channel as a whole and a state of CA stented segments were estimated. At presence of restenosis in stent as significant was considered narrowing of a lumen of artery 50 % from referential diameter and reduction of diameter more than on 1,2 mm. As vessel occlusion in stented segment absence of antegrade blood-flow, TIMI 0, distal than stent was considered. Statistical data processing was made with use of software package SPSS (version 17.0).

#### Results

From 86 patients underwent PTCA and CA stenting, 48 (55,8 %) patients were representatives of native nationality - I group and 38 (44,2 %) patients – non-native nationality of Yakutia - II group (Table 1).

**Table 1. The short clinical characteristic of patients before performance of PTCA and CA stenting procedures**

Indexes of the clinical status	I group (n=48)	II group (n=38)	
Old MI with Q	17 (35,4%)	23 (60,5%)	<b>0,020</b>
Old MI without Q	19 (39,6%)	14 (36,8%)	0,795
Diabetes mellitus	6 (12,5%)	5 (13,2%)	0,928
Arterial hypertension	39 (81,3%)	34 (89,5%)	0,290
Absence of stenocardia	0 (0%)	1 (2,6%)	0,332
Stenocardia FC - I	1 (2,1%)	1 (2,6%)	
FC - II	22 (45,8%)	11 (28,9%)	
FC - III	24 (50%)	25 (65,8%)	
FC - IV	1 (2,1%)	0 (0%)	

The patients of the native and non-native nationality underwent PTCA and CA stenting, did not differ on risk factors and IHD clinical manifestations. However, frequency of penetrating myocardial infarction in the anamnesis was significantly higher in patients of non-native nationality in comparison with native patients ( $p=0,020$ ).

At comparison of initial angiographic results features on frequency of diffusion of types of heart blood supply in patients of native and non-native nationality are revealed. So, in patients of the I group the right type of heart blood supply was revealed much less often, than in patients of the II group. On severity of CA lesion between patients of both groups statistically significant distinctions were not revealed (Table 2).

**Table 2. Comparison of CAG results in patients of indigenous and non-indigenous nationality**

Types of heart blood supply and severity of CA lesion	I group (n=48)	II group (n=38)	
Right	7 (14,6%)	13 (34,2%)	<b>0,035</b>
Balanced	21(43,8%)	16 (42,1%)	0,879
Left	20 (41,7%)	9 (23,7%)	0,083
1 vascular CA lesion	25 (52,1%)	16 (42,1%)	0,360
2- vascular CA lesion	16 (33,3%)	17 (44,7%)	0,283
3- vascular CA lesion	7 (14,6%)	5 (13,2%)	0,850

To all 86 patients 128 stents were implanted, 109 CA stenosis were intervened. By quantity of stents in CA allocation was the following: to 53 (61,6 %) patients 1 stent in CA was installed, to 27 (31,4 %) patients - 2 stents in CA, to 3 (3,5 %) patients - 3 stents and to 3 (3,5 %) patients - 4 stents in CA. By quantity of implanted stents in CA both groups of patients had no distinctions (Table 3). In total to patients of the I group stents were implanted, to patients of the II group - 55 stents.

**Table 3. Allocation of patients according to quantity of stents in CA**

Quantity of stents in CA in IHD patients of both groups	I group (n=48)	II group (n=38)	
1 stent in CA (n=53)	28 (58,3%)	25 (65,8%)	0,482
2 stents in CA (n=27)	17 (35,4%)	10 (26,3%)	0,369
3 stents in CA (n=3)	1 (2,1%)	2 (5,3%)	0,427
4 stents in CA (n=3)	2 (4,2%)	1 (2,6%)	0,701

From total number of patients underwent PTCA and CA stenting (n=86) - to 32 (37,2 %) patients stents without a medicinal coating are implanted, to 42 (48,8 %) patients – drug-eluting stents, to 12 (14 %) patients stents with a coating and without a coating have been implanted. By types of implanted stents both groups of patients also did not differ ( =0,306).

Most often stenosis in anterior interventricular artery were exposed to stenting: 32 (29,4 %) in IHD patients of native nationality and 25 (22,9 %) in IHD patients of non-native nationality. Less often stents were implanted at stenosis in RCA: 15 (13,8 %) in patients of native nationality and 12 (11 %) in patients of non-native nationality. The least quantity of the stenosis which were exposed to treatment, was in circumflex artery: 14 (12,8 %) and 11 (12 %) in native and non-native patients accordingly.

At comparison of CA stenosis types in patients of the I and II groups, underwent PTCA and stenting according to ACC/AHA morphological classification of significant distinctions are not revealed (Table 4). About in half of cases both in the indigenous and non-indigenous residents of Yakutia PTCA and CA stenting were carried out on stenosis of type A, that is on stenosis of low risk.

**Table 4. Comparison of types of CA stenosis in the indigenous and non-indigenous patients in conformity with ACC/AHA morphological classification**

Types of CA stenosis, underwent stenting	Stenosis in IHD patients of the I group	Stenosis in IHD patients of the II group	
Type A	29 (47,6%)	22 (45,8%)	0,814
Type B	20 (32,8%)	15 (31,3%)	0,838
Type C	3 (4,9%)	2 (4,2%)	0,846
Types A and B	6 (9,8%)	3 (6,3%)	0,490
Types B and C	2 (3,3%)	5 (10,4%)	0,133
Types A and C	1 (1,6%)	1 (2,1%)	0,867

*Direct clinical-angiographic results of stenting procedure*

Optimum angiographic result (TIMI III) has been reached in 81 (94,2 %) patients. At the other 5 (5,8 %) patients on angiograms antegrade blood flow with filling of postdilute segments was defined, however balloting of contrast medium and indistinct filling with contrast medium of CA distal segments were marked. The angiographic result in these patients has been regarded on system TIMI 0-III as TIMI II. Procedure complications (dissections, occlusions of lateral branches, CA perforations, and no-reflow effect) were not marked.

Complete anatomical revascularization (of all stenosis more than 50 %) and complete functional revascularization (dilation of symptom-bound artery) have been reached in 63 (73,3 %) patients, incomplete functional revascularization (impossibility of dilation of one or several stenosis, which can invoke a myocardium ischemia) - in 23 (26,7 %) patients. At complete revascularization in 50,8 % of cases drug-eluting stents have been used, in 34,9 % of cases – stents without drug coating and in 14,3 % of cases - those and other types of stents. At a hospital stage in all cases efficacy of a myocardium revascularization by clinical criteria (Table 5) was marked. However, in 3 (3,5 %) patients were complications of arterial access in the form of the hematomas which are not demanding operative treatment, but extending patients stay in a hospital.

**Table 5. A clinical state of patients after PTCA procedure and CA stenting at a hospital stage**

Index	Stents with coating (42 patients)	Stents without coating (32 patients)	Stents with coating and without coating (12 patients)
Smooth clinical flow	40 (95,2%)	31(96,9%)	12 (100%)
Repeated procedures	0	0	0
AMI Q	0	0	0
Complications of arter. access	2 (4,76%)	1 (3,13%)	0
Lethal outcome	0	0	0

*Clinical-angiographic results of CA stenting at control inspection in a year after procedure performance*

By results of control CAG restenosis in stented segment are revealed in 14 (16,3 %) patients, in 72 (83,7 %) patients there was no restenosis. From 14 patients with restenosis in stents repeated revascularization of myocardium (PTCA and CABG) was required to 10 (71,4 %) patients, to 4 (28,6 %) patients in connection with small degree of stenosis (30 % - 35 %) conservative treatment was made. IHD relapse in the form of unstable stenocardia and acute coronary syndrome have been registered in 3 (23,1 %) patients with restenosis in CA stents. In one case the patient after discharge from a hospital died - sudden death (Table 6). Autopsy was not made.

**Table 6. A clinical state of patients after PTCA and CA stenting at control (at an out-patient stage of supervision)**

Index	Stents with coating (42 patients)	Stents without coating (32 patients)	Stents with coating and without coating (12 patients)
The favorable flow	39 (92,86%)	26 (81,25%)	11 (91,67%)
Stent restenosis	4 (9,5%)	8 (25%)	2 (16,7%)
Repeated procedures	1 (2,38%)	4 (12,5%)	1 (8,33%)
AMI with Q/ without Q	0	0	0
CABG, CBG	2 (4,8%)	2 (6,25%)	0
Lethal outcome	0	0	1 (8,33%)

In the patients having drug-eluting stents, in 1 case in a year there was a need in carrying out TBCA, in 2 cases - surgical revascularization of myocardium in connection with the big degree of restenosis in CA stents and progressing of IHD clinical symptoms was required. In patients with implanted stents without drug coating, in 4 cases PTCA has been made (on the average in 5,75 months after stenting). In 2 cases - surgical revascularization of myocardium (in 5 and 8 months after stenting), in connection with a stent thrombosis and with stent restenosis of the big degree, with progressing of IHD clinical flow. At the analysis of the restenosis causes in 8 patients having stents without coating, it was revealed that in 6 of them steel template stents Gazelle firm «Biosensors International» (Netherlands) were implanted. In patients with implanted stents without drug coating the tendency to increasing of restenosis cases in stents in comparison with the patients having stents with antiproliferative coating ( $\chi^2=0,077$ ) was marked.

*Restenosis and the factors affecting on its occurrence*

Among IHD indigenous patients (n=48) restenosis in CA stents is revealed in 8 (16,7 %) patients, among IHD non-indigenous patients (n=38) restenosis is revealed in 6 (15,8 %) patients, comparisons have not revealed significant distinctions ( $\chi^2=0,65$ ). At comparison of IHD risk factors: arterial hypertension, diabetes, smoking, hyperlipidemia, the burdened heredity before PTCA procedure and stenting in patients with restenosis in CA stents and in patients without lumen change of stents significant distinctions are not revealed. However, in all patients with restenosis in stents, IHD was combined with arterial hypertension. The patients having restenosis in CA stents and without restenosis differed on clinical manifestations of myocardium ischemia - stenocardia. So, in patients with restenosis in CA stents angina of effort with I FC to III FC was registered, in patients without restenosis angina of effort III FC was registered less

often, than in patients with restenosis in CA stents ( $p=0,004$ ). IHD relapse in the form of unstable stenocardia and acute coronary syndrome have been registered in 3 (23,1 %) patients with restenosis in CA stents and in 7 (9,6 %) patients without restenosis ( $p=0,16$ ). The acute Q-forming myocardium infarction in patients with restenosis in CA stents has not been registered.

Average duration of IHD before procedure of myocardium revascularization in patients with restenosis in CA stents made  $4,68\pm 3,93$  yrs and did not differ from duration of IHD in patients without restenosis -  $4,16\pm 3,88$  yrs ( $p=0,649$ ).

Comparison of clinical-anamnestic data and IHD risk factors in patients of various ethnic groups having restenosis in CA stents had shown that in the non-indigenous patients penetrating myocardial infarction in the anamnesis was met more often, than in the indigenous patients ( $p=0,005$ ). Statistically significant distinctions between the indigenous and non-indigenous patients on risk factors and IHD clinical manifestations in groups of patients with restenosis and without restenosis in CA stents was not revealed. Thus, it is possible to assume that in patients of non-indigenous nationality presence in the anamnesis of penetrating myocardial infarction can be the unfavorable factor of restenosis development in CA stents.

At comparison of clinical manifestations of myocardium ischemia in the form of angina of effort in the patients having restenosis in CA stents and without restenosis, statistically significant distinctions have been found. So, in all patients with restenosis in CA stents angina of effort with I FC to III has been registered, and stenocardia of III FC in patients with restenosis in CA stents was found significantly more often, than in patients without restenosis in CA stents ( $p=0,008$ ).

Comparison of angiographic and clinical results of CA stenting in patients with restenosis and without CA restenosis, has shown that at achievement of complete anatomical and functional myocardium revascularization restenosis in CA stents was revealed considerably rarely, than at incomplete myocardium revascularization ( $p=0,001$ ).

**Table 7. The relative analysis of CA stenting results in indigenous and non-indigenous patients**

Anatomical and functional myocardium revascularization	Patients with restenosis in CA stents (n=14)		Patients without restenosis in CA stents (n=72)		1-3	2-4
	native (n=8)	Non-native (n=6)	native (n=40)	Non-native (n=32)		
	1	2	3	4		
Complete revascularization (n=63)	4 (50%)	1 (16,7%)	32 (80%)	26 (81,3%)	<b>0,074</b>	<b>0,001</b>
Incomplete revascularization (n=23)	4 (50%)	5 (83,3%)	8 (20%)	6 (18,8%)		



In group of the indigenous patients the tendency to augmentation of restenosis cases in CA stents is found at incomplete myocardium revascularization (Table 7). In the non-indigenous patients the interrelation of incomplete anatomical and functional myocardium revascularization with development of restenosis in CA stents ( $p=0,001$ ) is revealed.

By comparison of types of heart blood supply in indigenous and non-indigenous patients with restenosis the tendency of prevalence in the indigenous of balanced type of heart blood supply, and in the non-indigenous - the right type ( $p=0,061$ ) is revealed. Comparisons in group of patients without CA restenosis have shown the following: in the indigenous patients with IHD the left type, in the non-indigenous - the balanced type of heart blood supply ( $p=0,028$ ) prevailed. Comparisons in ethnic groups of patients with restenosis and without restenosis of CA stents have revealed that in group of indigenous patients with restenosis of CA stents there was no left type of heart blood circulation in comparison with indigenous patients not having restenosis in CA stents. Thus, it is possible to conclude that in our research the favorable course after implantation of stents in CA (restenosis absence) in indigenous patients associated with presence of the left type of heart blood supply. Comparison of CAG results in groups of indigenous and non-indigenous patients with restenosis and without restenosis of CA stents has not revealed interrelation of restenosis process of coronary stents with quantity of implanted stents.

At studying of restenosis process in coronary stents in patients with various severity of lesion and localization of critical stenosis in CA significant distinctions in groups of native and non-native patients with restenosis in CA stents are revealed. So, among patients of non-native nationality with restenosis in coronary stents patients with widespread lesion of RCA in comparison with patients of native nationality (Table 8) prevailed.

**Table 8. Atherosclerotic lesion of RCA in patients with restenosis and without restenosis in coronary stents**

Index of severity of RCA lesion	Patients with restenosis in CA stents		Patients without restenosis in CA stents					
	I (n=8)	N (n=6)	I (n=40)	N (n=32)	1-2	3-4	1-3	2-4
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>				
Insignificant stenosis in RCA	6 (75%)	1 (16,7%)	19 (47,5%)	16 (50%)	<b>0,03</b>	0,83	0,16	0,140
Critical stenosis and occlusion of RCA	2 (25%)	5 (83,8%)	21 (52,5%)	16 (50%)	<b>1</b>	3	2	

All patients with restenosis of coronary stents had critical stenosis in AIVA, but statistically significant distinctions between groups of patients of indigenous and non-indigenous nationality is not revealed.

Comparison of morphological types of CA stenosis in patients with restenosis and without restenosis has revealed that in patients with CA stents' restenosis initially more often were exposed PTCA and stenting of stenosis of middle and high risk and, on the contrary, in

patients without restenosis more often PTCA and stenting of low risk stenosis were carried out (Table 9).

**Table 9. The relative analysis of morphological characteristics of CA stenosis KA in patients with revealed stents' restenosis and without restenosis of CA stents**

Types of stented CA stenosis	Patients with restenosis in stents (n=14)	Patients without restenosis in stents (n=72)	
Type	0 (0%)	44 (61,1%)	-
Type	9 (64,3%)	20 (27,8%)	<b>0,010</b>
Type	4 (28,6%)	1 (1,4%)	<b>0,0001</b>
Types and	0 (0%)	4 (5,6%)	-
Types and	1 (7,1%)	2 (2,8%)	0,418
Types and	0 (0%)	1 (1,4%)	-

Between patients of indigenous and non-indigenous nationality significant distinctions between initial morphological type of CA stenosis with restenosis process in CA stents are not revealed.

*Discussion.* In our research patients of indigenous and non-indigenous nationality of Yakutia underwent procedure of PTCA and CA stenting did not differ on IHD risk factors, localization, prevalence and severity of atherosclerotic lesion of coronary arteries. However, the old penetrating myocardial infarction in the anamnesis in group of non-indigenous patients was met authentically more often, than in the indigenous. At comparison of type of heart blood supply authentic distinctions also were found: in patients of indigenous nationality the right type of heart blood supply was revealed authentically infrequently, than in non-indigenous patients ( $p=0,035$ ). By quantity, localization and kinds of implanted stents in CA both groups of patients of indigenous and non-indigenous nationality did not differ. PTCA and implantation of stents in CA in both groups of patients was carried out on stenosis of low risk that probably explained optimal angiographic result directly after procedure and the favorable clinical course of IHD at a hospital stage. At control, in 14 (16,3 %) patients restenosis in CA stented segments have been revealed, and to 6 patients control angiography was made in earlier terms in connection with stenocardia progressing. The index of revealed restenosis in patients coordinates with the data of some authors. The lethality at the out-patient stage after PTCA and CA stenting has made 8,3 %.

The relative assessment of application of usual stents and drug-eluting stents in our research has not revealed authentic distinctions in frequency of restenosis development both in the general group of patients, and in IHD patients of indigenous and non-indigenous nationality of Yakutia. However, in patients with implanted stents without drug coating the tendency to increase of restenosis cases in stents in comparison with the patients having stents with antiproliferative coating ( $p=0,077$ ) was marked.

Restenosis in CA stents happened more often at stenting of stenosis of moderate and high risk (type B and type C), at incomplete anatomical and functional myocardium revascularization.

All patients of non-indigenous nationality with restenosis in CA stents had penetrating myocardial infarction in the anamnesis. In them more often, than in the indigenous the right type of heart blood supply and heavier atherosclerotic lesion of RCA prevailed. All patients of non-indigenous nationality with restenosis of coronary stents had critical stenosis and occlusions of AIVA. This data coordinate with numerous researches of restenosis process of CA stents in which myocardial infarction in the anamnesis and AIVA lesion have been defined as the main risks-factors of restenosis development in stent [4, 10]. Results of angiographic inspection of

indigenous patients with restenosis in stents differed from results of non-indigenous patients. So, in them the balanced type of heart blood supply is more often revealed and there was no left type, they had more often insignificant stenosis in RCA and rarely, than non-indigenous – myocardial infarction in the anamnesis. However, in 100 % of cases in indigenous patients with restenosis of coronary stents, also as well as non-indigenous, severe lesion of AIVA has been revealed. In view of that is the most frequent both in group of indigenous, and in group of non-indigenous IHD patients, of stents were implanted into AIVA, in indigenous patients at the left type of blood supply disorder of a coronary alimentation in AIVA basin at restenosis in stent would lead to more serious coronary events, than in non-indigenous patients. Considering that in our research of group of indigenous and non-indigenous patients did not differ by quantity of stented stenosis in AIVA and on number of patients with restenosis in stents, it is possible to assume that the revealed features are caused by initial distinctions of angiographic pattern - prevalence in group of indigenous patients with restenosis of coronary stents insignificant stenosis of RCA and achievement in group of indigenous patients of complete myocardium revascularization in 50 % of cases, and in group of non-indigenous patients only in 16,7 % of cases. In result, in our research positive angiographic result and the favorable clinical course after implantation of coronary stents (restenosis absence) was observed in indigenous patients with the left type of heart blood supply. In whole, the obtained data has shown the following:

1) direct optimum angiographic result of PTCA and CA stenting has been reached in 81 (94,2 %) patient. At control inspection in 72 (83,7 %) patients efficacy of myocardium revascularization after PTCA and CA stenting on clinical and angiographic criteria was marked.

2) we did not reveal statistically authentic distinctions in occurrence of restenosis after implantation in CA of drug-eluting stents and stents without drug coating, however, a tendency ( $p=0,077$ ) to increasing of cases of restenosis in CA stents in patients with stents without antiproliferative coating was marked.

3) achievement of complete myocardium revascularization at stenting, PTCA and stenting of low risk stenosis (type A) reduces risk of occurrence of restenosis in stented CA segments and raises efficacy of treatment of IHD patients.

In our research by angiographic data in patients of non-indigenous nationality with restenosis in CA stents the right type of heart blood supply, and heavier RCA atherosclerotic lesion prevailed. Indigenous patients with restenosis of CA stents more often had a balanced type of heart blood supply, there was no left type and more often insignificant stenosis in RCA was revealed.

In the conclusion it is necessary to note that the revealed distinctions in angiographic pattern in patients with restenosis of coronary stents of indigenous and non-indigenous nationality, possibly, are caused by genetical features of morphoanatomical pattern of coronary heart blood supply. The revealed facts demand the further profound studying.

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**The indices of heart rate turbulence  
In indigenous and non-indigenous residents of Yakutia**

**Tarabukina L.V., Abrosimova S.G.**

The aim of the research is to investigate the indices of heart rate turbulence among indigenous and non- indigenous residents of Yakutia.

The patients with different diagnoses who were directed to the Holter ECG monitoring at the department of functional diagnosis by the doctors of cardiology clinical advisory department of RH 1-NCM were examined.

The pathological values of HRT were registered more often among non-indigenous residents of Yakutia, in the older age group and patients with a strong family history.

Abnormal values were parameter of TO.

**Keywords:** heart rate turbulence, indigenous and non- indigenous residents of Yakutia.

**Introduction:** Heart rate turbulence (HRT) characterizes the response of sinus node to ventricular ectopic activity, it was introduced in electrocardiography from 1999, as a new noninvasive index. The interest to this index in recent years increased with both clinical and prognostic point of view in the different patient groups. As for patients with coronary heart disease assessment of indices of HRT is a strong risk predictor of mortality in post infarction patients [7]. The search of predicts of cardiac death is also relevant for patients with non-coronary heart disease. The researchers investigated the indices of HRT in diabetes [2], congestive heart failure [6], idiopathic dilated cardiomyopathy [10]. In a number of publications the age-gender specifics of HRT were identified [8].

The aim of the research is to investigate the indices of heart rate turbulence among indigenous and non- indigenous residents of Yakutia.

**Materials and methods:** 73 patients with different diagnoses were involved in the research, 25 women (42,9%), 48 men (57,1%), who were directed to the Holter ECG monitoring at the department of functional diagnosis by the doctors of cardiology clinical advisory department of RH 1-NCM were examined.

The average is 53,  $81 \pm 1,02$  years. 57,5% are the indigenous people of Yakutia of total number of patients, 42,5% - non-indigenous. 34 (46,6%) patients have strong family history of diseases of the cardiovascular system (coronary artery disease, hypertension), 11 (15,1%) patients have type 2 diabetes. 39 (53,4%) patients have the diagnosis of CHD, also stable effort angina of I-III FC (Canadian Cardiovascular Society classification), CHF of FC I-II (NYHA) post infarction cardiosclerosis. 52 (71,2%) patients have the diagnosis of hypertension I-III degree. 12 (16,4%) patients have coronary artery revascularization (stenting, heart bypass). According to echocardiogram of left ventricular hypertrophy (LVH) were detected at 22 (30,1%) patients, left ventricular ejection fraction (LVEF) was  $65,38 \pm 0,95\%$  (Table 1). The Holter ECG monitoring was held on a system of «Mars II» (Germany) with modified bipolar recording of three ECG which reflects the potentials of the front, side walls of the left ventricle of heart. The average daily, average daytime, nighttime heart rate, circadian rhythm index (CI), the heart rate turbulence parameters (HRT, segment ischemic changes ST were determined.

Depending on the values of numerical indices of HRT, patients were divided into 2 groups. 1 group consisted of 55 patients with normal values of the indices HR (TO <0%, TS > 2,5 mc / RR), 2 group - 18 patients with pathological values of indices of HRT (TO > 0%, TS < 2,5% mc / RR).

In the statistical analysis the t-test criterion by Student's was used at a value  $p = 0,05$  (confidence level for the median 95%).

Results and screening: During the analysis of data it was found (Table 2) that the pathological values of indices of HRT were more prevalent in patients of older age group,  $58,11 \pm 2,14$  vs.  $52,4 \pm 1,11$  ( $p = 0,015$ ), more often in men than in women, 14 (77,8%) and 4 (22,2%). In some publications noted the gender and age influence on some indices of the autonomic nervous system, also on the indices of HRT [9], as well as small manifestation of HRT in the older age group [8]. According to other researchers, among patients with sudden cardiac death (SCD) the pathological response of sinus node in the form of anomalous of HRT for all types of ventricular ectopy met more often in males than females [1]. The normal values of indices of HRT detected in 34 (61.8%) indigenous and 21 (38,2%) non-indigenous residents of Yakutia. The pathological indices of HRT detected more frequently in non-indigenous (55.6%) patients with a strong family history of cardio - vascular system (66,7%) ( $p = 0,05$ ), with a diagnosis of CHD (66,7% ), hypertension I, II, III degree (94,4%) ( $p = 0,029$ ). 34.5% patients with post infarction cardiosclerosis detected the normal indices of HRT, 27.8% - abnormal. The pathological indices of HRT were investigated in patients in myocardial infarction for the first time [7], and considered as independent predictors for overall mortality. In work of other researchers found that a weakened parameter of TO restore after 12 months after acute myocardial infarction, and TS remained unchanged [4].

In the analysis of heart rate in groups - an average daily rates, the daytime average, nighttime heart rate did not differ significantly. Ventricular ectopic activity of high grade was recorded in both groups. According to ECHO CG the left ventricular hypertrophy was among 44,4% patients with abnormal and 25.4% patients with normal values of HRT.

During the investigation the indices of HRT in patients with hypertrophic cardiomyopathy Kawasaki T. and his colleagues found that the values of TO and TS did not differ from the control group [5].

Myocardial revascularization suffered in 22.2% patients of II group and 9,1% - I group.

In work of researchers noted a significant weakening of HRT in patients with coronary artery bypass surgery, a possible connection with damage of autonomic nervous endings in the

aortic clamping. Restore the parameter of TO noted at 12 months, while the parameter of TS is reduced [3].

LVEF in the groups did not differ,  $64,44 \pm 1,84\%$  and  $65,69 \pm 1,12\%$ .

The pathological values of the parameter of TO recorded in II group patients. The indices of TS were within normal range.

In the analysis the indices of HRT in II group patients revealed that the pathological indices of TO registered in 11 patients (61,1%), TS - in 3 (16,7%), TO and TS - 4 (22,2%). The pathological significance of HRT were identified in 8 patients indigenous and 10 non-indigenous residents of Yakutia (Table 3). The average values of TO for non-indigenous residents were higher than those of indigenous,  $2,02 \pm 0,50$  and  $0,27 \pm 0,24$  ( $p = 0,011$ ). Ventricular ectopic activity of high grade was registered more often in indigenous residents of Yakutia. In non-indigenous - ventricular ectopy of 1-2 classes. 87,5% of indigenous patients have CHD and 8,5% have AH, 100% of non- indigenous patients have AG and 50% have CHD.

#### Conclusion

The pathological values the indices of TCP was registered more often in non-indigenous residents of Yakutia, in the older age group, patients with a strong family history. The parameter of TO were pathological.

(Table 1)

№	Indices	n-73
1.	Age	53,81±1,02
2.	Men	48 (65,8%)
3.	Women	25 (34,2%)
4.	The indigenous residents of Yakutia	42 (57,5%)
5.	Non-indigenous residents of Yakutia	31 (42,5%)
6.	Have a strong family history	34 (46,6%)
7.	Patients with coronary artery disease	39 (53,4%)
8.	Patients with hypertension	52 (71,2%)
9.	Patients with type 2 diabetes	55 (39,3%)
10.	Revascularization of coronary arteries	12 (16,4%)
11.	LVH	22 (30,1%)

12.	LVEF	65,38 ±0,95
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(Table 2)

№	Indices	I group n=55	II group n=18
1.	Age	52,40±1,11	58,11±2,14*
2.	Men	34 (61,8%)	14 (77,8%)
3.	Women	21 (38,2%)	4 (22,2%)
4.	The indigenous residents of Yakutia	34 (61,8%)	8 (44,4%)
5.	Non-indigenous residents of Yakutia	21 (38,2%)	10 (55,6%)
6.	Have a strong family history	34 (46,6%)	34 (50,7%)*
7.	Patients with coronary artery disease	27 (49%)	12 (66,7%)
8.	Patients with hypertension	35 (63,6%)	17 (94,4%)*
9.	Patients with type 2 diabetes	8 (14,5%)	3 (16,7)
10.	Revascularization of coronary arteries	7 (12,7%)	5 (27,8%)
11.	LVH	14 (25,4%)	8 (44,4%)
12.	LVEF	65,38±0,95	68,21±0,90
13.	Average daily HR	71,76±1,19	75,44±2,78
14.	Average daytime HR	76,15±1,36	81,39±3,05
15.	Nighttime heart rate HR	63,45±1,27	66,06±2,33
16.	Circadian index	1,20±0,17	1,23±0,31
17.	Supraventricular ectopy	38 (69,1%)	12 (66,7%)
18.	Including steam NZHE + SVT	17 (30,9%)	6 (33,3%)
19.	Ventricular ectopy	54 (98,2%)	18 (100%)
20.	Including VE 1-2 classes	19 (34,5%)	9 (50,0%)
21.	Including PVC of high grade	35 (63,6%)	9 (50,0%)
22.	Daytime circadian VE	21 (38,2%)	8 (44,4%)
23.	Night circadian VE	2 (3,6%)	4 (22,2%)
24.	Mixed circadian VE	31 (56,4%)	6 (33,3)
25.	Ischemic ST segment changes	8 (14,5%)	3 (16,7%)
26.	Values of TO	-2,56±0,19	1,25±0,36 ***
27.	Values of TS	10,97±1,45	6,47±2,42
28.	TO>0%	-	11 (61,1%)
29.	TS<2,5/mc RR	-	3 (16,7%)
30.	TO+TS	-	4 (22,22%)

p 0,05\*: p 0,01\*\* : p 0,001



(Table 3)

№	Indices	I group n=55	II group n=18
1.	Age	60,0±2,54	56,60±3,32
2.	Men	7 (87,5%)	7 (70,7%)
3.	Women	1 (12,5%)	3 (30,0%)
4.	Have a strong family history	5 (62,5%)	7 (70,0%)
5.	Patients with coronary artery disease	7 (87,5%)	5 (50,0%)*
6.	Patients with hypertension	7 (87,5%)	10 (100%)
7.	Patients with type 2 diabetes	1 (12,5%)	2 (20,0%)
8.	Revascularization of coronary arteries	2 (25,0%)	3 (30,0%)
9.	LVH	4 (50,0%)	4 (40,0%)
10.	LVEF	63,25±2,81	65,40±2,52
11.	Average daily HR	75,88±5,17	75,10±3,11
12.	Average daytime HR	80,25±6,18	82,30±2,77
13.	Nighttime heart rate HR	66,38±3,40	65,80±3,35
14.	Circadian index	1,19±0,04	1,26±0,04
15.	Supraventricular ectopy	6 (75,0%)	6 (60,0%)
16.	Including steam NZHE + SVT	4 (50,0%)	2 (20,0%)
17.	Ventricular ectopy	8 (100%)	10 (10%)
18.	Including VE 1-2 classes	2 (25,0%)	7 (70,0%)
19.	Including PVC high grade	6 (75,0%)	3 (30,0%)
20.	Daytime circadian VE	4 (50,0%)	4 (40,0%)
21.	Night circadian VE	1 (12,5%)	3 (30,0%)
22.	Mixed circadian VE	3 (37,5%)	3 (30,0%)
23.	Ischemic ST segment changes	3 (37,5%)	1 (10,0%)
24.	Values of TO	0,27±0,24	2,02±0,50**
25.	Values of TS	3,23±0,66	9,07±4,25
26.	TO>0%	5 (62,5%)	6 (60,0%)
27.	TS<2,5/mc RR	2 (25,0%)	1 (10,0%)
28.	TO+TS	1 (12,5%)	3 (30,0%)

p 0,05\*: p 0,01\*\* : p 0,001

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### Strokes in the elderly and long-livers of Yakutsk

Epidemiological indexes of prevalence of cerebral stroke are studied. Gender and ethnic features of cerebral stroke prevalence according to population screening of Yakutsk residents at the age of 60 years and elder are shown.

**Keywords:** strokes, prevalence.

#### *Introduction*

The stroke is on the second place in structure of the causes of mortality and is the major cause of physical inability in Russia. 75 % of strokes go to on age elder than 60 years [1].

For last 7 years in population of Yakutsk deterioration of epidemiological situation concerning a stroke, bound to growth of morbidity and a tendency to growth of mortality [2] is observed.

*Objective:* To estimate frequency, gender and ethnic features of a cerebral stroke in subjects of 60 years and senior, living in Yakutia, on an example of Yakutsk city population.

#### *Background and methods*

For carrying out of population screening representative sample of Yakutsk residents in number of 600 persons at the age of 60 years and senior has been generated on the basis of service records. The surveyed have been divided according to sex: men (256 - 43 %) and women (344 - 57 %) and to age decades (60-69 yrs, 70-79, 80-89 and 90 years and senior). According to ethnicity two groups are marked out: indigenous ethnos (Yakuts, Evens, Evenks) - 277 and non-indigenous ethnos (Russians, Ukrainians, Byelorussians, Germans, Finns) - 323 persons (mean age of the surveyed - 75 yrs).

The examination program included following obligatory partitions: the socially-demographic data, questioning for revealing of the old acute cerebral impairment and neurologic examination. All cases of the old cerebral stroke were considered.

Questioning and examination procedures have been standardized and carried out according to the recommendations which have been taken over in epidemiological researches (Rose G. et al, 1982, Oganov R. G, 1990).

Criteria of a stroke diagnostics corresponded to the WHO standard recommendations: the stroke is defined as signs which have unexpectedly developed clinical signs of local or general (in a case of subarachnoid hemorrhage) cerebrovascular impairment, lasting more than 24 hours or leading death for shorter time term.

Research findings have been subjected to statistical processing with use of package SPSS (version 11,5). For quantitative indicators in compared groups the assessment of average arithmetic and mean-square deviations and (standard) errors of mean was made. These descriptive statistics are designated as  $M \pm m$ , where  $M$  - an average, and  $m$  - an error of mean. T - Student criterion for normal allocation of indexes and nonparametric methods for the indexes which allocation differed from the normal were used. The value  $p < 0,05$  was taken as a criterion of statistical confidence. At studying of cerebral stroke prevalence the method of direct standardizing was applied. Thus for the standard age-gender composition of the Yakutsk population senior 60 years by results of census of 2002 was taken.

### *Research results*

The statistical analysis has shown that the standardized on age index of prevalence of the old stroke in the surveyed population of Yakutsk senior 60 years has made up 3,5 % for persons of both sexes. Distinctions in prevalence of a stroke in men (1 %) and women (2,5 %) were not statistically significant ( $p=0,8$ ). The standardized indexes of prevalence of a stroke have formed 2,8 % of ischemic and 0,7 % of hemorrhagic stroke for persons of both sexes (fig. 1)

The cerebral stroke in the anamnesis is registered among 125 surveyed people that has formed 21 %. Among the surveyed men the stroke was in 52 people that has formed 21 %, among women - 73 people (20 %).

Mean age of persons of both sexes with a cerebral stroke was 79,14 yrs, with ischemic stroke - 78,9 yrs (men-78,04, women-79,65), with hemorrhagic stroke - 80,11 yrs (men - 79,29, women - 80,4 yrs).

When one is older frequency of a stroke dramatically increases: at the age of 80-89 years - twice more often, than in persons of 60-69 years, and at the age of 90 years - three times more often, than in the first age decade. The greatest prevalence of a stroke is revealed at the long -

livers (41, 3 %), the smallest in men at the age of 60-69 years - 10, 2 %. In group of long-livers statistically significant increase of a cerebral stroke frequency in women, than in men ( $p=0,013$ ) is marked.

In geront's city population in all age decades statistically significant increase of frequency of ischemic stroke, than hemorrhagic stroke (tab. 1) is revealed. The ischemic stroke is documented in 17 % of the surveyed, including 18 % of the surveyed men and in 16 % of women. The hemorrhagic stroke was in 4 % of persons among the surveyed, in men this type of a stroke took place in 2 %, in women - in 5 %.

Table 1

The cerebral stroke in the Yakutsk population at the age of 60 years and senior

Age, years	Ischemic stroke	Hemorrhagic stroke	P
	%	%	
60-69	10,9	3,1	0,002
70-79	16,4	2,0	0,000
80-89	20,4	5,2	0,000
90	30,0	10,0	0,011

The cerebral stroke is registered in 22 % of the natives, including in 9 % of men and 12 % of women. Among the non-natives the cerebral stroke is noted in 20 % from number of the inspected non-native population, in 8 % of men and in 12 % of women. The ischemic stroke is revealed in 16, 6 % of the natives and in 17,3 % of the non-natives. 4, 7 % of the natives and 3, 1 % of the non-natives had hemorrhagic stroke.

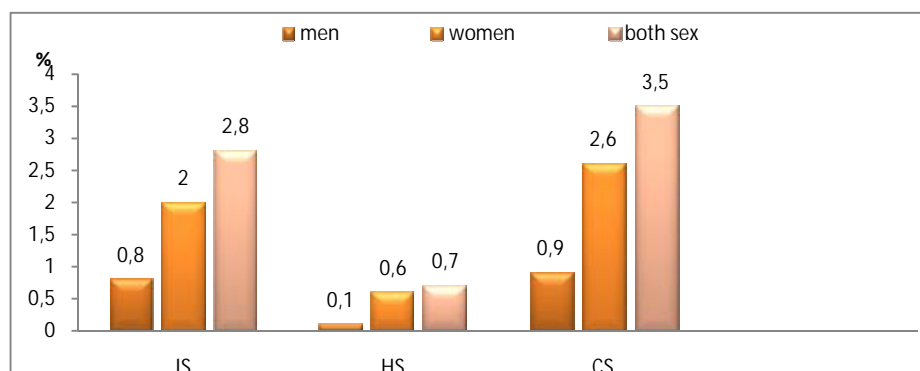
Under our data, the ischemic stroke was met in 4 times more often than hemorrhagic, with HS and IS interrelation 1: 4,4 (in absolute figures 23 and 102 cases, accordingly). The analysis of prevalence of a cerebral stroke on age-grades has revealed that frequency of ischemic stroke was statistically significantly higher than a hemorrhagic stroke in all age decades. In long-livers frequency of a cerebral stroke was higher in 3 times in comparison with an age-grade of 60-69 years (in men in 3,5 times, in women in 2,4 times).

Among patients of indigenous and non-indigenous nationality the ischemic stroke prevailed. Interrelation HS and IS has formed 1:3, 5 in the natives (in absolute figures 13 and 46 accordingly) and 1:5, 6 in the non-natives (in absolute figures 10 and 56 accordingly).

Hemorrhagic variants of a stroke (HS) in elderly and aged persons were met infrequently in comparison with patients of young and middle age though the first often had hypertensive disease. Possibly, vascular malformations, aneurysms are more often sources of intracerebral hemorrhages at young age, rather than in 60 years and senior [4]. In process of ageing the number of hemorrhagic forms of a stroke [3] decreases.

### Conclusions

1. In persons of elderly and senile age, including long-livers of Yakutsk high prevalence of a cerebral stroke is registered.
2. Positive age dynamics of frequency of strokes and prevalence of ischemic types of a stroke over hemorrhagic ones is shown.
3. Frequency of a stroke in long-livers in 3 times surpasses a similar index in persons of advanced age.
4. Ischemic strokes in population of elderly and long-livers of Yakutia are met slightly more often in the non-indigenous, than in the indigenous population. And hemorrhagic strokes are met more often in the indigenous residents, than in the non-indigenous ones.



Notes: IS- ischemic stroke, HS - hemorrhagic stroke, CS - cerebral stroke.

Fig. 1. Prevalence of cerebral strokes among the elderly population 60 years of Yakutsk (the indexes standardized on age)

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### **Genetics multiple sclerosis of patients, inhabitants Yakutia**

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#### **Annotation**

Results of genetic research on row of gene-candidates determining predisposition to multiple sclerosis disease are given.

For the first time it is shown that disease has reliable association with reception gene CD40 and cytokine gene TNF- .

**Keywords:** multiple sclerosis, receptor CD40, cytokine TNF .

### Introduction

Multiple sclerosis is inflammation disease of central neural system, associated by demyelination neuron and loss neuronal functions. There is supposition, that clue events of disease development is contact cells microglia with activated T-cells, by infiltrating in brain [5,3]. The role of factor that hits oligodendrocytes is cytokine TNF- , it is secreting by activated microglia with contact T-cells. However, in vivo this process is proceeding more complex. The first, activated microglia of transforming into macrophage may secrete oxygen radicals, straight affective oligodendrocytes [6]. The second, it was shown, that affective factor may be protease active of serum IgG by inducible disease. It is protease active IgG destruct molecules of membrane oligodendrocytes. 90% patients of multiple sclerosis are showing intratecal syntheses IgG, and this is significant criterion of diagnostic. This fact is supposing taking part in development pathogenesis of multiple sclerosis T- and B-cells [2]. Uncover of genetics these interactions may be discover of this disease pathogenesis real picture.

### Material and methods

Total number of multiple sclerosis patients in Yakutia equally 150 man, and 30 man out of is Sakha. For research was collected 75 samples of vein blood patients multiple sclerosis which were registered in Center of multiple sclerosis. From collected samples DNA was extracted .

Analyses of the DNA collection was going with total collection DNA of Institute of Chemical Biology and Fundamental Medicine SD RAS. Summary collection of patients of populations West Siberian of region Russian Federation and Republic Sakha was equally 1808 man (normal control – 760, multiple sclerosis – 1048).

Genetic analysis of the collection DNA was made replication genes of variants KIF1B, TNFRSF1A, CD40, IL-18, TNF- and HLA-DRB1.

TNFRSF1A, CD40 and HLA-DRB1 genes are coding receptors of immunocompetent cells, responsible for its activation.

Gene KIF1B is coding protein kif1b need for axon growth and it myelination. Gene IL-18, TNF- are coding inflammation cytokines, taking part for immune response.

Genetic analysis and statistic processing was made by pharmacogenomics group of Institute of Chemical Biology and Fundamental Medicine of SD RAS.

### Results

Research results showed, that variant SNP (rs1800629) gene TNF- and SNP (rs6074022) gene CD40 was associated with multiple sclerosis ( $p=0,009$  and  $p=0,00009$  accordingly).

While, difference in frequent alleles for other was analyzed genes between of group multiple sclerosis and control was no detected.

Its researching indicate that gene reception CD40, responsible for contact microglia cell with periphery T- lymphocytes, by infiltrating into brain.

This contact is activating microglia and assisting of secretion inflammation cytokine TNF- [5], and, possible, it is activating B-cells with following forming of plasmatic cells and secreting intratecal IgG. Intratecal synthesis IgG the patients by European birth was observed in correlation +6/-1 [7]. Symbol (+6) mean six man have synthesis IgG, (-1) – one man have no synthesis.

On table 1 was shown analytic dates for patients of multiple sclerosis, inhabitant on territory Yakutia.

Table 1. Distribution patients of multiple sclerosis by european and sakha birth according to gene TNF- and CD40.

gene	allele	sakha (n=14)	European (n=61)	total (n=75)
TNF rs1800629	G	16	110	126
	A	12	12	24
$X^2$		<b>14,546: p&lt; 0,005</b>		
CD40 rs6074022	T	19	72	91
	C	9	32	41
$X^2$		0,019: p>0,05		

75 patients with multiple sclerosis were analyzed (Sakha – 14, European -61 man).

On the table 1 was shown that patients Sakha and European don't differ on index gene CD40 ( $X^2 = 0,019$ ;  $p>0,05$ ). This gene was associated with developing sick of multiple sclerosis. While, index on gene TNF- does differ trustworthy yakuts from Europeans ( $X^2 = 14,546$ ;  $p<0,005$ ). Patients of sakha did not associate with TNF- gene. Possibly, with this are relate low correlation of intratecal synthesis IgG at sakha (+1/-4). This correlation are typical for Asiatic population.

How-ever, this correlation at European patients are residing in Yakutia, also low (+2/-1), as compared with patients from southern origin (+6/-1).

Possibly, climatic condition in Yakutia influence on mechanic processes of pathogenesis multiple sclerosis.

## Discussion

Sophie Chabot [5] with group researchers proposed the schema of taking part genes CD40 and CD40L in activating of microglia (figure.1). It does carry out by contact of receptors CD40 and CD23 with its ligands CD4 T- lymphocytes of blood by infiltrating into brain. It seen that receptor CD40 on microglia serves as an amplifier of inflammatory response in the brain.

Under resting condition, the level of CD40 on microglia is relatively low, but is markedly increased upon challenge with cytokines IFN-g, and some worse TNF- and lipopolysaccharide.

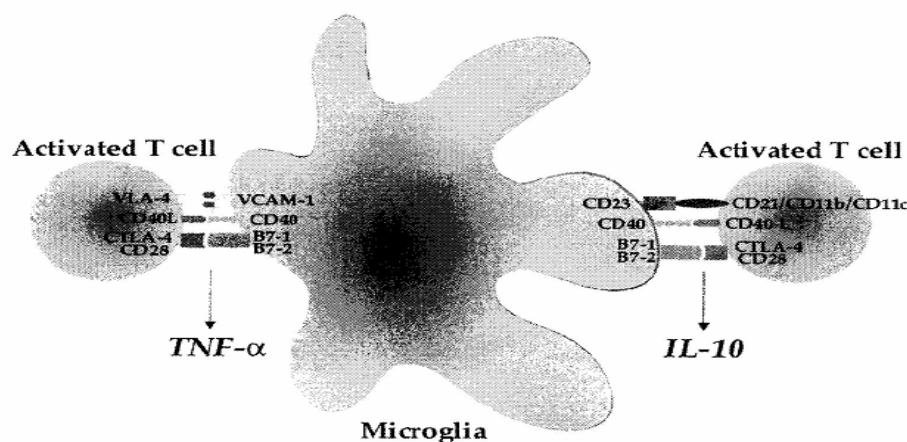


Figure 1. Cell complex: microglia – T lymphocytes (Th1 and Th2) [5]





CD4 T-cells have ligands CD40L and CD23L. Activated cell complex are secreting cytokines TNF- and IL10. These cytokine are antagonist, and that's dominating secretion one carry out inhibition other. Balance between action inflammation TNF- and anti-inflammation IL10 are be conditioned of clinic patience. Cell complex must include B-cell (contact CD4 T-cell with reception CD40 B-cell). Activated B-cell of transformed to plasmatic cell and produce IgG. Difference on cytokine TNF- , and also in correlation intratecal of olygoclonal synthesis IgG by patience sakha, apparently, be accounted by dominating IL10 and about inhibiting action TNF- .

Formation of inflammatory cell complex with serum T-cells are evidence straight of taking part adaptive immunity of organizer, by was acquired of effect exogenic factors (infection or other) on background of genetic preposition to disfunction of immune system.

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## VIRAL HEPATITIS OF CHILDREN WITH ONCOHEMATOLOGICAL DISEASES IN YAKUTIA

This article presents data on chronic viral hepatitis of children with oncohematological diseases. There were evaluated clinical and laboratory data of 11 children with chronic viral hepatitis B and C, among which 10 patients were with monoinfection and 1 was with mixed hepatitis

B + C. It also presents results of treatment of chronic viral hepatitis with interferon-alpha in children with hematologic malignancies.

**Keywords:** chronic hepatitis C, chronic hepatitis B, oncohematological diseases, children, interferon- .

Chronic viral hepatitis B is a serious problem of health care in general and of pediatrics in particular. The proportion of hepatitis C in children was 40,8 %, another 5 % of CHC proceeds in combination with CHB, 1 % in combination with G, and about 1 % of chronic hepatitis C patients have markers of hepatitis viruses B and D [4].

The greatest frequency of detections of markers of hepatitis B and C is marked in some regions of Russia, one of which is the Republic of Sakha (Yakutia). According to official data, 11,6 % of the whole population and 4,5 % of indigenous population in Yakutia were positive for HBsAg and anti-HCV, respectively. The frequency of HBsAg carriage in pregnant women was twofold higher than the corresponding federal rate (2 % and 1,1 %, respectively). The frequency of detection of HBsAg in children aged 0 to 14 years in the Arctic uluses of Sakha (Yakutia) is 4,2 % while it is 2,7 % in the central zone of Russia [3, 4, 6, 7].

Infection with hepatitis B virus (HBV) and C (HCV) of children with an acute leukemia (AL) is very high. According to A.R. Reyzis it reaches 75 %, of them 25-30 % of patients are infected with HBV, 35-45 % with HCV and they are often combined. The reason for such a high hepatitis virus infection is a massive blood transfusion-load, state of profound immunosuppression, toxic injury of liver on the background of polychemotherapy (PCT) [2, 3]. Under circumstances when currently 60-80 % of children recover from AL, hepatitis becomes a serious problem for them in the future [2].

On the application of IFN-alpha in the treatment of chronic viral hepatitis C in children with acute hepatitis diseases, the elimination of the virus occurs in 47,6 % of cases [4].

**Patients and methods.** We studied the case records of children diagnosed with AL, who received and receives treatment in the hematology department (HD) of Republican Hospital No.1 affiliated to the National Centre of Medicine for the period from 2000 to 2008. 83 children were diagnosed with AL, including 64 children (77,1 %) with an acute lymphoblastic leukemia (ALL) and 19 children (22,9 %) with an acute nonlymphoblastic leukemia (ANLL). Viral damage of liver was diagnosed in 10 children (12 %) of 83 patients with AL. Hepatitis C virus was diagnosed in 6 children (7,2 %), hepatitis B virus in 3 children (3,6 %) and 1 patient was diagnosed with mixed-hepatitis B + C. 8 patients with VH suffered from ALL (12,5 % of all children with ALL), one child suffered from an acute myeloid leukemia (AML) (5 .3 % of all ANLL) and one boy suffered from biphenotypic leukemia. One girl was diagnosed with histiocytosis from Langerhans' cells.

All patients with viral hepatitis were diagnosed on the basis of research methods of EIA and PCR (qualitative and quantitative). All patients took check studies before and after the therapy: determination of antibodies to the thyroid gland, EEG, blood count, general urinalysis, biochemical blood tests every month during the therapy; PCR (qualitative and quantitative) after 1, 3, 6, 9 and 12 months of the therapy. PCR control was performed on a quarterly basis after the completion of treatment.

The effectiveness of antiviral therapy was assessed on the basis of recommendations of the American Association for the Study of Liver Diseases. Therapy was considered effective if the patient had experienced an SVR, i.e. the absence of the genome of the virus in the blood for 6 or 12 months after treatment. Early virological response was evaluated after 3 months of treatment and used for SVR predicting. Pre-early virological response was assessed after 1 month of therapy and was also used to predict SVR [1, 8].

**Results and discussion.** All patients entering the hematology department are screened for markers of viral hepatitis (VH). Only one patient out of all with AL was diagnosed with chronic viral hepatitis B before admission. This child was detected with HBsAg. Other markers of HBV were not defined.

Serologic tests of patients with HCV showed anti-HCVcor, anti-NS with two or more pools, so everyone has been diagnosed with new-onset chronic hepatitis C. HBsAg, anti-HBcor IgG and anti-HBcor Ig M were found in all children with viral hepatitis B and HBeAg was found in only one child.

The presence of an active replication was confirmed by a PCR analysis. Among patients with HBV DNA HBV was found in all children, RNA HCV was detected in 5 of 6 patients. The

active replication of DNA HBV was replaced by RNA HCV in a patient with mixed-hepatitis. The remission period in this patient was actually absent.

Serological markers of hepatitis B were first identified mainly on the stage of treatment - consolidation of remission (in 8 children with ALL, one patient with histiocytosis from Langerhans' cells), at the stage of maintenance therapy in 2 patients (1 child with ALL, 1 with AML). Patients with AL experience the major transfusion-load during the polychemotherapy – induction of remission, which protracts 43 days. Thus, the average number of blood transfusions (concentrated or washed red blood cells) in the induction of children with HV was –  $6,75 \pm 1.2$  times, transfusion of FFP –  $2,57 \pm 0.7$  times, platelet concentrate –  $26,5 \pm 3.4$  doses, albumin –  $4,4 \pm 0.2$  times.

Only one patient had visual manifestation of jaundice in the form of sclera icteritiousness and dark urine, but the increase of the overall level of bilirubin in the blood serum (up to 0.31) occurred in 3 patients. All the children had mild hepatomegaly. Hyperenzymemia was determined in 6 children (4 patients with HBV and 2 patients with HCV). Increased ALT levels ranged from 49,3 to 124 U/l and averaged  $71,8 \pm 12$  U/l, AST levels varied from 47 to 86 U/l and averaged  $58,3 \pm 5,6$  U/l. In some children lesion of the biliary system was noted (4 patients): AP increase by 2-4 times (normal 98-279 U/l) and GGT in 4-6 times (normal). However, it should be noted that all the changes of biochemical parameters were determined on the background of polychemotherapy both in the presence of an active replication of HBV or HCV, and remission. Patients without HV which were treated with chemotherapy had also hyperenzymemia, and hyperbilirubinemia to a lesser extent. Thus, we cannot clearly recognize toxic and viral infection of hepatocytes in patients with AL and HV during the exacerbation period.

An US revealed homogeneous diffuse changes in the liver parenchyma with an average echo-density – 6 children, elevated echo-density – 4 children; fine-grained echostructure was detected in 2 children. No one had changes in the intrahepatic bile duct and portal vein. Induration of the gallbladder's walls occurred in 5 patients.

Treatment of hepatitis (toxic or viral) in children with AL was performed pathogenetically in the hematological department. Hepatoprotective drugs (SAmE, urosfolk, inosine, tocopherol acetate, succinic acid) were mainly used. Somewhat better biochemical parameters were noted on the background of the therapy. Antiviral therapy was not performed.

During the treatment one patient with biphenotypic AL and CHBV (his diagnose was set before the start of polychemotherapy) died at the stage of consolidation of remission. The cause of death was an acute hepatic failure.

Children who had successfully completed the polychemotherapy were taken for a specialized control by a hepatologist. If hematological remission maintained 3 months and some more, then antiviral therapy was considered. Indication for the therapy was a proven viremia.

RNA HCV was detected in 3 months after the completion of polychemotherapy in 2 patients. These patients had a low viral load ( $<600^{\circ}000$  IU/ml) and normal levels of ALT and AST. Antiviral therapy has been appointed as the drug Intron A 3 MIU 3 times a week. Both children had pre-early and early virological response, therefore the selected treatment regimen was left unchanged. Against the background of the interferon therapy there were no side effects in these children. The feverish reaction to the first injection did not exceed  $38^{\circ}$  C. Further the temperature rise was observed in 1 patient, but not above  $37,5^{\circ}$  C. Changes in the blood count were not found.

In one patient after the completion of the antiviral therapy a persistent virological response was marked until 12 months. In the second patient the relapse was recorded in the third month after the end of the antiviral therapy.

In one patient the active replication of RNA HCV was detected 12 months after the completion of chemotherapy. In two patients with HCV an exacerbation was diagnosed in 1.5 years.

Therapy treatment: Intron A 3 MIU 3 times a week. 2 children had a pre-early and early virological response; one boy had not the early virological response. This patient was assigned to a daily intake of Intron A 3 MIU. All patients had side effects to treatment in the form of febrile reaction to the injection, muscle aches, decreased appetite and low mood. Changes in the blood count were not found. The patient with a daily administration of this drug had no differences in severity of side effects.

The persistent virological response was achieved in one patient within 6 months. The two patients are currently completing a course of antiviral therapy (40 and 42 weeks). Estimation of the efficiency will be carried out within the next 12 months.

**Conclusion.** Thus, the infection of children with AL HV is 12,0 %, including hepatitis B – 3,6 %, hepatitis C – 7,2 %, mixed-hepatitis B + C – 1,2 %. Markers of hepatitis were detected mainly at the stage of polychemotherapy - consolidation of remission, i.e., hepatitis B virus occurs during the induction of remission, when children experience the greatest transfusion-load. Clinical manifestation of the liver disease on the background of chemotherapy could be caused by a toxic or viral agent. Antiviral therapy of hepatitis B is conducted 3 months after the completion of polychemotherapy at the persistent clinical and hematologic remission.

For efficient prevention and early diagnosis of parenteral viral hepatitis in children with the oncohematological pathology it is necessary to:

- \* conduct strict blood control of donors for hepatitis B and C,
- \* test patients receiving polychemotherapy for markers of viral hepatitis at least 1 time in 3 months,
- \* carry out the control of the active replication once every 3 months for children with a diagnosis of viral hepatitis.

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У Д К [616.36-002.12:578.891]-092 (571.56)

**Savvin R.G.**

**Assessment of risk factors at virus hepatitis in the conditions of Yakutia**

In this scientific work there was firstly described evaluation of risk factors of viral hepatitis B (HBV) contamination in Far North area among indigenous rural population. There were studied transmission routs and multiple-factor risk of hepatitis B (HBV) contamination. There was found out under multiple-factor risk analysis associated connection with the following risk factors: chronic disease, family contact, alcohol abuse and male sex.

**Keywords:** hepatitis B, transmission rout, risk factor.

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**N.V. Motina, A.Yu. Zharikov, Ya.F. Zverev, A.V. Lepilov, V.V. Lampatov, Yu.G. Motin**

**ROLE OF OXIDATIVE DAMAGE AT THE EXPERIMENTAL OXALATE NEPHROLITHIASIS IN RATS**

**Altai State Medical University, Barnaul, Russia**

**Summary.** The results of kidney medulla morphological study from rats with ethylenglycol oxalate nephrolithiasis model are analyzed. Characteristics mitochondrial superoxide dismutase and malone dialdehyde expression during ethylenglycol oxalate nephrolithiasis modeling are evaluated. Registered morphological signs of oxidative damage activation and antioxidant enzyme attenuation in renal tissues.

**Key words.** Experimental nephrolithiasis, oxidative damage, morphology.

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## THE CLINICAL CHARACTERISTIC OF THE ORTHOPEDIC STATUS OF PERSONS OF THE SENIOR AGE GROUP LIVING IN CONDITIONS OF THE NORTH

Sadulaeva A.S., Ushnitskij I.D.

On a basis of conducted researches high level of prevalence of dental diseases including defects of tooth alignments of the persons of Sakha Republic of elderly and senile age is revealed. Thus, the considerable part of dentures, which are in the inspected people's mouth, needs to be changed. In combination with pathological processes of bodies and mouth tissues it defines their requirement for the dental help.

**Keywords:** caries, periodontal diseases, defects of tooth alignments, fixed and non fixed dentures.

**Introduction.** Nowadays there are facts described by science, which characterize the change of age characteristics of population. So, according to the prognosis of United Nations in 2025, the number of people elder than 60 will increase till more than 1 milliard, which will correspond to one to quarter of population of planet [14,16]. Objective biological ageing process of society is natural and embraces all the countries of the world.

In Russian Federation in 1959 the specific gravity of faces older than 60 was 9,4 (nine point four)%, and in 1970 it was 11,8 %, and at present the specific gravity is more than 25%-30% [2,6,15]. In our country for the last decades there have been a tendency of increase of number of elderly and senile people, who form about 20,8 % of population (32 million people), which, as a whole, need to be worked out and to inculcate more efficient forms of rendering of dental help with calculation of epidemiological and regional peculiarities.

According to the facts of Territorial fond of obligatory medical insurance in Sakha Republic 163786 people of retirement age were registered. It testifies about considerable number indicators whereas 959 people live in the region [1, 4].

It's necessary to note that natural and climatic conditions of North leave a negative sign on the functional condition of bodies and fabrics of mouth [8]. So, the optimization of organization of dental help must be conducted with calculation of regional peculiarities of the Republic.

The process of ageing of the organism promotes breach of bodies and systems functions and expressed breaches of tooth and jaw system. In connection with it learning of peculiarities of clinical stream of pathological processes of bodies and mouth fabrics from elderly and senile

people and to define their requirement in dental help, its organization and finance security is an actual medical and social problem nowadays [14].

**Purpose** of research is to define a requirement and level of rendering of orthopedic help to elderly and senile people in the region, on the basis of complex dental, social and hygienic research.

**Material and methods.** A complex dental inspection of elderly and senile people was conducted in the geriatric centre of Republic Hospital 3 with use of standard form-card, which was worked out in the department of orthopaedic dentistry of Krasnoyarsks state medical University [14]. Definition of dental status was based on the appraisal of indicator of prevalence (%) and on the intensity of caries (according to index KPU). For the requirements analysis in orthopaedic help availability and date of use of defects of tooth alignments on the upper and lower jaws and various kinds of orthopaedic constructions in mouth were considered. Thus, definition of hygienic index by Bernadskaya for the people who use set of false teeth was conducted. 106 people in age from 60 till 93, who live in Sakha Republic, were inspected. Social and hygienic section of research was conducted by conduction of questioning of respondents, which includes treatment of the inspected to their health, questions about nourishment and level of sanitary group.

**Results of research.** A lot of negative factors can influence on the functional condition of tooth alignments, where the most important are demineralising processes of firm teeth fabrics. In connection with it, we conducted the analysis of prevalence and intensity of elderly and senile people's caries. Thus, the frequency of caries among these age groups constituted 100%. According to KPU index intensity was 24,  $74 \pm 0,74$ . In the structure of composing elements of KPU index component «P. O.» - pulled out teeth, which composed  $84,41 \pm 0,37\%$ , the next is a component «F» - filled teeth -  $10,41 \pm 2,13\%$ . Lower level of a component «C» - caries teeth ( $5,18 \pm 2,25\%$ ) is connected with the loss of teeth because of the caries complications and active stream of parodontium diseases of inflaming and destructive and eschanging and dystrophic character. They promote to form defects of tooth alignments of the faxes of old age group.

Analysis of breach of unremittingness of tooth alignments characterizes presence of some peculiarities. According to Cannedy in classes structure the first class appeared on the upper jaw ( $65, 85 \pm 0, 62\%$ ), and defects in the side section of tooth alignments composed  $26, 84 \pm 0, 71\%$ . For all that one-sided trailer defects of tooth alignments were in the level 4,  $87 \pm 0, 93\%$ , and breach frequency of unremittingness of tooth alignments by the first class was  $2,44 \pm 0,95\%$ .  $25, 02 \pm 0,45\%$  of the inspected had a complete absence of teeth on the upper and lower jaws.

The same picture of the rank edentia in the jaws of persons in elderly and senile ages was got by other researchers too [3, 12, 11, 5]. In 62,  $12 \pm 0$ , 90 per cent of the cases the whole edentia was mentioned in the upper jaw and in 37,  $88 \pm 1$ , 48 per cent in lower jaw. But in spite of it, in 1,  $32 \pm 0$ , 57 per cent examined people tooth alignments without breaches of ceaselessness of teeth assidment had revealed.

For an analysis of orthopedic help degree and its requirement from examined age groups availability of other constructions of dentures in the mouth cavity and their functional condition were explored. So, the general number of faces, having the artificial limbs constituted 89,  $47 \pm 0.25$  per cent. In their midst 58,  $82 \pm 1$ , 05 per cent had fixed artificial limbs, and 41,  $18 \pm 1$ , 50 per cent had non fixed artificial limbs. 82,  $52 \pm 0$ , 64 per cent of the examined had the laminar constructions in the structure of removable dentures in the either of the jaws. And 17,  $48 \pm 3$ , 02 per cent had fixed artificial limbs only in the upper jaw. A frequency of the complete removable constructions constituted 54,  $38 \pm 1$ , 31 per cent, and of the partial removable 45,  $62 \pm 1$ , 56 per cent in the midst of persons, using the fixed artificial limbs. It is important to emphasize that in the structure of persons wearing the complete removable dentures: 45, 16 per cent had the complete fixed artificial limbs in the either of jaws, 48, 38 per cent in the upper jaw and in the lower jaw had 6, 46 per cent.

An evaluation of orthopedic constructions state, available in the mouth cavity of examined had some features. So, an exploitation time didn't exceed 3 years only in 4, 65 per cent of the fixed artificial limbs, hence, their fixation and functional condition dissatisfied the persons of elderly and senile ages. Whereas the using time of 95, 35 per cent of the artificial limbs constituted by 10 and more years, what demanded by readings a making of new orthopedic constructions. In the evaluation of condition of non fixed orthopedic constructions with the using time till 7 years was registered in 46, 42 per cent of examined. But in 53, 58 per cent of the examined people the artificial limbs are serving more than 10 years, where the breaches of the fixation and integrity of construction, which characterized the necessity of re- prosthesis, were revealed.

The researches, held by us, revealed an insufficient degree of service and high requirement in orthopedic dental help for people of elder age group, living under the conditions of high latitude.

**Conclusion.** The analysis of received results testifies about the high prevalence of pathological processes in the dental system and about the high prevalence of people of elderly and senile ages of the region in special dental help. Herein the degree of a doing somebody a help is very low. All it testifies about the necessity to elaborate and infiltrate scientifically valid

recommendations, directional to the optimization of revealing of medical help with the tallies of all the age and region peculiarities.

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### **The ovarian functional state of the women with tubal-peritoneal infertility**

**Summary:** 100 women of the active reproductive age with tubal-peritoneal infertility and 30 women of the same age without fertile malfunction were examined. Assessment of ovarian

reserve was performed on the content of Follicle-Stimulating Hormone (FSH), Inhibin B, Anti Muller Hormone (AMH) in the blood serum, according to the data of echoscopy of ovaries and Doppler studies of stromal vessels. It was found, that, in patients with infertility of tubal-peritoneal genesis, ovarian reserve is diminished. Parameters of ovarian reserve reflect the functional state of women's ovaries and the most reliable marker of ovarian reserve is the level of AMH.

**Keywords:** Infertility, ovarian reserve, Inhibin B, Anti Muller Hormone.

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Infertility is one of the most important problems of modern medicine. The infertile marriages rate in Russia exceeds 15 %, that, according to the data of the World Health Organization, is a critical level [3]. The tubal-peritoneal factor occupies the first place in the structure of main reasons of infertility (40-72 %) [6, 7, 9].

The widespread use of methods of assisted reproductive technologies in the treatment of various forms of female and male infertility necessitates the search of reliable markers to estimate the functional state of the reproductive system. Diagnostics of the functional state of the ovaries before the beginning of therapy allows to choose treatment strategy, dose of preparations and to determine indications for IVF adequately (T.A. Nazarenko and others, 2008).

In clinical practice, the concept of ovarian reserve is widely used. Despite the considerable amount of research works, the significance of different parameters for determination of the functional state of ovaries still is not fixed [3]. The value of FSH, Inhibin B, AMH, ultrasound characteristics of ovaries for ovarian reserve estimation [4] are under discussion.

**Research objective:** To study the ovarian functional activity of the native women of the North with tubal-peritoneal infertility for determining treatment tactics, including methods of assisted reproductive technologies.

## **Materials and methods**

100 native women of the North with tubal-peritoneal infertility (the main group) were completely examined. The levels of FSH, LH (Luteinizing Hormone) were determined on days 2 – 3 of the menstrual circle, the Progesterone level – on days 20-22 of the period, using competitive Enzyme-Linked Immuno-Sorbent Assay (ELISA) method by means of test systems, produced by "Hema-Medina" Co., Moscow. The levels of Inhibin B and MH were determined on days 2 – 3 of the menstrual cycle by the ELISA method, using commercial sets of "DSL" Co., USA.

At ultrasound research we defined the shape and sizes of uterus, its structure, the average sizes of the M-echo. When researching ovaries, we measured their sizes, volume, estimated the state of the follicular apparatus and Doppler sonographic imaging.

Based on the results of the perspective analysis of the content of FSH, Inhibin B, H, Progesterone and three-time echographic monitoring during the menstrual circle, two subgroups were made up: 1 subgroup – 65 women with tubal-peritoneal infertility without ovarian malfunction, 2 subgroup - 35 women with ovarian dysfunction. The comparison group included 30 native women of the North without reproductive malfunction.

## Results and discussion

The age of examined women of the both groups ranged from 22 to 39 years old and on the average, was  $30,7 \pm 0,7$  years in the main group,  $29,7 \pm 5,2$  ( $p > 0,05$ ) in the comparison group. The middle age of women of subgroups 1 and 2 was  $29,9 \pm 0,5$  and  $31,6 \pm 0,9$  years old accordingly.

All women of the main group complained of infertility. The duration of infertility in the subgroup 1 was  $4,9 \pm 0,4$  years, in the subgroup 2 –  $7,09 \pm 0,6$  years ( $< 0,05$ ). Gynecologic diseases were observed in the main group, being there 3,6 times more often ( $p < 0,01$ ). Sexually transmitted infections were 2,6 times more often in the main group than in the comparison group ( $< 0,05$ ). Chronic inflammatory diseases of the pelvic organs can disrupt the ovarian function, leading to enhanced follicular atresia, due to activation of anti-inflammatory cytokine cascade [8].

The content of FSH in the blood serum of women with tubal-peritoneal infertility on days 2-3 of menstrual cycle was higher than in the group of women without fertile dysfunction ( $10,3 \pm 0,4$  IU/ML vs  $7,6 \pm 0,3$  IU/ML;  $< 0,05$ ) (tab.). In the group of women with ovarian malfunction the value of FSH reached  $11,7 \pm 1,0$  IU/ML ( $< 0,001$ ). According to some authors,

the FSH content, being higher than 10 IU/ML, indicates diminished ovarian reserve [2]. However, some experts consider, that a moderate increase of FSH at the relatively young age is not necessarily an indication of early ovarian ageing and this fact should be taken into account when advising these patients [10,11,12].

The content of LH in the blood serum of women of the comparison group at the early follicular phase was  $5,9 \pm 0,4$  IU/ML, that had no significant difference with its content in the blood serum of women of the 1st and 2nd subgroups ( $4,6 \pm 0,2$  IU/ML,  $4,4 \pm 0,4$  IU/ML;  $> 0,05$ ). These results coincide with the ones of other researchers [15]. In women without reproductive dysfunction, the Progesterone content was  $51,0 \pm 5,1$  nmol/l, that did not differ from that of women from the main group and the subgroup with normal ovarian function ( $p > 0,05$ ). In the blood serum of the women of the subgroup 2 the Progesterone content was 2,2 times lower, than in the comparison group ( $< 0,01$ ). The basal level of Estradiol in the blood serum of women of examined groups and subgroups did not differ significantly.

For a better understanding of the functional state of the ovaries the measurement of Inhibin B and H was important. Women of the senior reproductive age or young patients with diminished ovarian reserve had not enough antral and growing follicles and, accordingly, had low concentration of Inhibin B. As Inhibin B regulates the hypophysis secretion of FSH, determining the content of Inhibin B allows to estimate the ovarian function more precisely, than FSH measuring [5]. At the same time, some experts consider that Inhibin B is not very informative as compared with FSH, because it has direct correlation dependence with the latter. Trying to assess the prognostic value of Inhibin B, we analysed its content in the compared groups. In the group of women without fertile disorder the content of Inhibin B did not differ from the one of women with tubal-peritoneal infertility ( $64,5 \pm 6,7$  pg/ml and  $59,6 \pm 6,2$  pg/ml accordingly;  $p > 0,05$ ), that confirms the opinion of other authors about little informative value of Inhibin B as an early marker of the diminished ovarian reserve. However, the decline of Inhibin B was detected in the subgroup of women with ovarian dysfunction ( $47,8 \pm 4,4$  pg/ml;  $< 0,01$ ) as compared with the group of women with normal ovarian function and the comparison group ( $66,0 \pm 3,0$  pg/ml,  $64,5 \pm 6,7$  pg/ml accordingly). Therefore, we think that the measurement of its content in the blood serum can be used in the algorithm of examination of women with infertility of tubal-peritoneal origin.

AMH is of the greatest interest in the estimation of ovarian reserve and reproductive potential of women. AMH is one of the most significant regulators of female reproductive function, that reflects the growth of follicles from the primordial pool stage to the stage of large antral follicles [2]. When analyzing the AMH content in the blood serum, lower indicators



( $1,9 \pm 0,1$  ng/ml) were obtained in the group of women with tubal-peritoneal infertility as compared with the group of women without fertile malfunction ( $2,5 \pm 0,3$  ng/ml;  $<0,05$ ). The lowest content of AMH was observed in the group of women with ovarian dysfunction ( $1,3 \pm 0,2$  ng/ml;  $<0,01$ ), indicating the decrease of the primordial follicles pool amount. Thus, it confirms the opinion of other experts about the importance of determining the level of AMH as the best marker showing the diminution of ovarian reserve.

The hemodynamics state in the stroma of ovaries was studied three times: in the early follicular phase, in the preovular period and in the period of the maximum growth and activity of the corpus luteum. In the preovular period the Resistance Index (RI) of the gynecologically healthy women was  $0,47 \pm 0,05$  s.u. in the right ovary,  $0,48 \pm 0,05$  s.u. - in the left ovary,  $0,42 \pm 0,050$  s.u.,  $0,43 \pm 0,06$  s.u. - in the period of the maximum growth and activity of the corpus luteum respectively, and was lower ( $<0,05$ ) as compared with RI of infertile women during the same periods of the menstrual cycle, that characterizes the best hemodynamics in the ovarian stroma. Animals studies confirmed that increase of the blood supply to the ovaries is the determining factor in selection of the dominant follicle [13]. According to some authors, the decrease of the ovarian blood supply, detected by Colour Doppler Mapping, serves as an earlier marker of diminished ovarian reserve, than increase of the FSH level. Poor ovarian blood supply can, in its turn, lead to the resistance of the ovary to stimulation and to ovarian failure [1].

In women with ovarian dysfunction the average number of antral follicles in the early follicular phase was  $5,7 \pm 1,5$  in the right ovary and  $4,8 \pm 1,7$  in the left ovary, and was less than the ones in women with normal ovarian function and without reproductive disorders ( $<0,05$ ). It was found, that the availability of less than 5 antral follicles in an ovary is an unfavorable prognostic sign of the ovarian reserve. According to a number of authors, the reduction of the number of antral follicles is the best indicator of the ovarian extinction, after determining the AMH content in the blood serum [16].

### **Pregnancy rate in the examined groups**

We carried out the comparative analysis of pregnancy rate among women of the main group. In the subgroup of women without ovarian dysfunction 21 (32,3 %) women got pregnant, including: 11 (52,3 %) patients - after the course of combined therapy (antibacterial, anti-inflammatory and physiotherapy), 8 (38,1 %) women - after laparoscopic surgery, 2 (9,5 %) women - after IVF and Embryo Transfer (ET). In the IVF program 5 women from this group took part.

In the subgroup of women with ovarian dysfunction 4 (11,4 %) patients achieved pregnancy, including: 2 women - after the course of combined treatment, 1 patient – after laparoscopic surgery and 1 woman – after IVF with ovum donation. In the IVF program 4 women participated.

Thus, in the group of women without ovarian dysfunction the pregnancy rate was 2,8 times higher.

## Conclusions

In women with infertility of tubal-peritoneal origin, the state of ovarian reserve is worsening; the time for realisation of reproductive plans is shortening. The basic principles of treatment of tubal-peritoneal infertility lie in the integrated approach, taking into account the functional state of the ovaries.

Parameters of ovarian reserve (the content of FSH, Inhibin B, AMH, number of antral follicles) reflect the functional state of the ovaries.

The most reliable marker of the ovarian reserve state is the AMH level.

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Table

## Parameters of ovarian reserve

Groups	The levels of hormones			Number of antral follicles	
	FSH (IU/ML)	H (IU/ML)	Ingibin	Right ovary	left ovary
Main (n=100)	10,3±0,4 <0,05	1,9±0,1 <0,05	59,6±6,2	5,07±1,5	4,9±1,7
Subgroup: 1 (n=65)	8,9±0,2	2,2±0,1	66,0±3,0	5,1±1,5	5,1±1,6
2 (n=35)	11,7±1,0 -2<0,01	1,3±0,2 -2<0,01 1-2<0,01	47,8±4,4 -2<0,01 1-2<0,05	5,02±1,6 2<0,05	4,6±1,8 -2<0,05 1 2<0,05
Comparison (n=30)	7,6±0,3	2,5±0,3	64,5±6,7	5,7±1,2	5,6±1,1

– the differences between the main group and a comparison group; -2 - between the comparison group and a subgroup 1 1-2- between the subgroups 1 and 2.

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**Makarova N.N., Ivanov P. M., Myreeva S.A.**

### **The analysis of results of operative treatment of cervical cancer**

Results of operative treatment of 290 women with cervical cancer, carried out as a stage of the combined treatment, depending on a process stage are analyzed. It is revealed that 3 and more year's survival rate compounds 70, 7 % of women. Efficacy of treatment and life quality directly depend from timely diagnostics and the program of the treatment based on clearly determined principles.

**Keywords:** cervical cancer, operation, results, survival rate.

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**Guzeva V.V.**

### **Results of the estimation of functional state of the endocrine system at the epilepsy various forms in children**

The purpose of research was comparison of parameters of the contents of hormones in blood of boys with different forms of epilepsy. Significant differences in contents of hormones were revealed in group of children with idiopathic and symptomatic generalized epilepsies. Findings of investigation testify that the most expressed changes in contents of hormones in blood were revealed in boys of all ages with symptomatic temporal form of epilepsy. Obtained data confirm necessity of research and evaluation of hormonal status at children with epilepsy for prevention and correction of possible endocrine disturbances.

**Keywords:** symptomatic epilepsy, idiopathic epilepsy, hormones, endocrine state, boys.

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**Zharnikova N.N., Ivanov P. M., Ignatyev V.G.**

**The retrospective analysis of dynamics of colorectal cancer morbidity  
on the basis of a componential method**

Use of a method of the component analysis and materials of the statistical reporting of department of medical statistics of the Yakut republican oncological clinic for 1995-2005 have allowed to define that the increase of total number of patients with CRC happened mostly for the account of "change of number and age structure of the population», than «from risk to fall ill». In men decrease is marked at the expense of reduction «from risk to fall ill» than from «change of number and age structure of the population». In women the general increase of number of the CRC diseased is bound both to growth of influence of risk factors, and with number and age structure changes.

**Keywords:** malignant neoplasms, a component, risk factors.

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## **FOOD STEREOTYPES – ADVANTAGE OR HARM?**

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**Introduction.** Food questions are now the most actual and they need attention of both public health services bodies, and the wide public (4).

It is not the secret that health of both an individual and a society on the whole depends practically on its half on a qualitative and regular food (1, 2, 3).

It is necessary to make the public conscious that qualitative food is necessary first of all in practical purposes but not for the sake of beautiful conclusions.

In a society there are a lot of food stereotypes that are out-of-date – for example, daily frying of food, let even on vegetable oil. Other example is that fruit is necessary every day only for children, and it is unessential to adults.

It is necessary to notice that though knowledge of the population is sufficient on some questions, practically almost 80 % of the population cannot follow WHO recommendations.

It is due to levels of income and food stereotypes. Besides, the essential part is played by absence of time and desire to cook food at home by modern working women.

After all it is much easier to buy half-finished products in shop and to feed the family in the evening. And that the food contains plenty of conservants, salt and sugar is remembered in last turn.

The basic food intake at working and studying population is usually in the evening during a supper. Whereas at this particular time metabolism of a person is slowed down, the organism prepares for night rest.

The plentiful evening meal leads to gaining weight and body mass excess.

But in the morning and in the afternoon when metabolism in a person is the most intensive, on the contrary, food intake is often missed because of time shortage or it is very poor and takes place in improper conditions.

During lunch time food intake in the public catering places is in any way impossible to consider as the way out because plenty of fats, salt and sugar are frequently put into dishes to increase flavoring qualities. Besides it is difficult to check freshness and quality of products.



All this is aggravated by the fact that for the majority of population food intake is either means for calm and psychological comfort or the enemy No 1 because of desire to get rid of fatness.

Many emotions are connected with food both positive, and negative.

Because of much advertising of aerated sweet drinks, chocolate, beer, energy increasing drinks, half-finished products the population follows the tastes of manufacturers of food, without wishing to trouble itself with studying of bases of cookery and qualitative food.

As it is known advertisement operates on subconscious and the person with readiness goes to a supermarket to buy half-finished products and the advertised drinks, instead of going to the market to buy fresh vegetables, greens, fruit and, of course, Yakut wild-growing berries which possess unique properties. All these products are often considered simply as delicacies for children or products for a table decoration on holidays.

The great advantage of fresh fruit, berries, greens and vegetables is absolutely ignored by a society. Though everyone heard about vitamins, minerals and cellulose, containing in them, fruit and vegetables and furthermore berries and greens are used in minute quantities.

It is connected as well with aspiration to high-calorific food which is in genes of each inhabitant of the North. After all severe cold and the long winter period are perceived as a signal to plentiful high-calorific food.

Though actually we live for a long time in warm houses, we practically do not go by foot and our work is now more intellectual or easy physical.

Because of the listed factors metabolism goes down, the necessary quantity of food decreases accordingly, but the requirement for the basic vitamins and mineral substances does not decrease in any way.

These «scissors» can be overcome only by quality of food. The person should think what he eats and what for he eats. Because of bad mood swallows plenty of sweets and confectionery or plans the week diet so that it contains as much various and fresh foodstuff as possible.

Our research carried out since 2001 has already showed that food intake of the population of the Republic of Sakha (Yakutia) and of Russia as well is absolutely insufficient concerning the basic vitamins and mineral substances.

In the major part of population, especially rural, food is very monotonous and insufficient both in sore milk and fish products and in fruit and vegetables.

**Materials and methods.** Estimation of an actual food intake was made by method of individual interviewing of respondents according to standards of WHO international program of

integrated prevention of noninfectious diseases – CINDI. In our research the special questionnaire adapted to the survey of the population in the local conditions developed by State Research Center of Preventive Medicine of the Ministry of Health and the Institute of Food of the RF Academy of Medical Sciences (Moscow, 2004) was used.

**Results.** According to the plan of the research work in 2010 the study of an actual food intake of the inhabitants of Megino – Kanganalassky ulus (region) of the Republic of Sakha (Yakutia) was carried out with the use of frequency analysis method. It was revealed that according to the frequency of daily consumption of the basic products white bread was on the 1-st place (87.9 %), beef was on the 2-nd place (72.2 %) and butter was on the 3-d place (61.7 %). At the same time the respondents seldom or never mentioned of liver (76.6 %), freshly-frozen fish (71.8 %) and rye bread (62.9 %).

We would like to single out the foodstuff from local food products which can be divided into 2 groups: meat and dairy-sour-milk products. The first group consists of elk meat, reindeer meat, hare meat, blood sausage (khaan), pluck (is); the second consists of salamat, kyorchakh, suorat, byyrapkh, kymys.

Thus, the population consumed seldom or never the local products of the first group - from 57.7% to 94.8%, of the second group - from 29.0% - 96.4% (tab. 1).

Bread and the bakery products that make the basis of healthy food, the majority of the interviewed population consumed daily- 87.9 %. Women consumed white bread less than men (83.2 % against 92.7 %).

72.2 % of the interviewed population consumed meat every day. There were no great differences in meat consumption between women and men (71.2 % against 73.2 %). The rural population consumed beef more often in comparison with other sorts of meat.

Liver is rich in protein and fat-soluble vitamins. This product was consumed seldom or never by 76.6 % of the interviewed. The distinctions in liver consumption in women and men it was not observed (76.8 % against 76.4 %).

As far as sausage products was concerned daily consumption of boiled sausage was 33.9 % and that of half-smoked sausage – 34.3 %. Men consumed sausage daily more often than women (24.0 % against 44.7 %).

Concerning consumption of fish and fish products the following results were received. Only 3.2 % of men and women consumed fish every day, 48.8 % of the respondents answered that they consumed lake fish 1-2 times a week. The very high percent of the respondents (71.8 %) consumed fish seldom or never. Daily consumption of fish was higher in men (4.9%) than in women (1.6 %).

Milk and dairy products (milk and sour-milk products, cheese, cottage cheese) possess a number of very important nutritious properties that cannot be replaced by other products. However, milk was consumed every day only by 47.2 % of the interviewed population, they used milk mainly adding it in tea, i.e. in minute quantities. Distinctions in consumption of the given product depending on sex was not revealed. 23.0 % of the respondents gave preference to milk with low content of fat (0.5-2.5 %). It should be noticed that sour-milk products (kefir, yogurt) were consumed seldom by more than half of the interviewed population (71.8 %), and the preference was given to the local milk products.

As to cottage cheese and sour cream the respondents consumed these products seldom or never in 58.5 and 34.7 %, accordingly.

Such products as potato, fresh vegetables and greens were consumed several times a week by 43.1 % and 39.1 % of the population accordingly.

36.7 % of the respondents included fresh fruit in the diet 1-2 times a week.

As to consumption of dried fruit and nuts it was found out that these products were used seldom or never by 77.4 % and 70.2 % of the interviewed population accordingly.

According to WHO food recommendations regular consumption of various groats makes the basis of healthy food. The received data showed that groats were consumed daily by 44.8 % of the respondents, men consumed the given product more often than women (56.1 % against 33.6 %).

During our research it was revealed that 61.7 % of the surveyed population consumed butter every day and the difference in consumption of this product between women and men was not observed.

As to such product as vegetable oil that is the irreplaceable source of vitamin E and polyunsaturated fat acids the share of persons which consumed this product 3-6 times a week made 50.8 %. According to the results of the interview men consumed vegetable oil more often than women (65.0 % against 36.8 %).

The research showed that 77.0 % of the population consumed sugar every day. The share of the persons using sugar seldom or never made 15.3 % and it was revealed that women consumed sugar more often than men (86.2 % against 68.0 %).

Within the limits of the research consumption of drinks such as tea, cocoa, coffee cereal drink, aerated drinks, fruit-and-vegetable juice, vitamin drinks was studied.

The majority of the respondents (98.0 %) consumed tea every day. Any differences in consumption of tea by men and women were not revealed. About half of the interviewed people (46.8 %) answered that they consumed coffee cereal drink daily and only 32.7 % never

consumed coffee. Coffee consumption in men was higher than in women (55.3 % against 38.4 %). Concerning aerated drinks more than half of the interviewed population (65.3 %) preferred not to drink them at all. Fruit-and-vegetable juice and vitamin drinks daily consumed 21.4 % and seldom drank them – 31.0 % of the respondents.

Thus, the results of application of frequency analysis method are the following:

- Frequency of consumption of the products that make the basis of healthy food is insufficient:

- Meat is consumed daily only by 72.2 % of the respondents;

- Only 3.2 % of the interviewed population consume fish every day, 48.8 % of the respondents - only 1-2 times a week, 71.8 % consume fish seldom or never;

- Milk is consumed daily by only 47.2 % of the respondents.

- the majority of the respondents consumes bread and bakery products and groats in enough quantity. However, 62.9 % of the respondents don't consume rye bread.

- Potato and fresh vegetables, greens are consumed several times a week by 43.1 % and 39.1 % of the respondents accordingly. Fresh fruit is included in the diet 1-2 times a week by 36.7 % of the respondents.

- Sugar is daily consumed by 77.0 % of the interviewed population. The share of the persons using sugar seldom or never is 15.3 %. Women consume sugar more often than men (86.2% against 68.0 %).

- Tea is consumed daily by 98.0 % of the respondents, 46.8 % of men and women consume a coffee cereal drink, 21.4 % of the respondents consume fruit-and-vegetable juice.

The above-stated results allow us to judge with a certain degree of possibility of deficiency or excess of nutrients, vitamins, minerals.

- the data received in the present research concerning the frequency of meat consumption give us the grounds to make the assumption of sufficient consumption of protein (irreplaceable amino acids), nonsaturated fat acids, iron in food. Low frequency of liver consumption – 76.6 % that is the product very important for healthy food, gives the evidence of possible deficiency of macro- and microcells necessary for normal hematosi.

- Insufficient frequency of milk consumption (according to the research results) allows us to think of possible deficiency of calcium and phosphorus, and insufficient dairy products (kefir, yogurt, cottage cheese, cheese) consumption – of the possible deficiency of the sour-milk bacteria promoting development of normal microflora.

Rare consumption of fruit and dried fruits makes us think of possible deficiency of vitamins (C, , - carotene), mineral substances and organic acids.

• Rare consumption of fish can speak about insufficient receipt of irreplaceable amino acids, calcium, phosphorus which are necessary for normal development of bony tissue and prevention of early development of osteoporosis.

**The conclusion.** It is necessary to continue further scientific researches in such an important branch of medical science as nutriology, and also great work is to be done comprising wide social classes of population and aimed at introduction of modern scientific knowledge in this area.

Life constantly changes but stereotypes live practically during some generations. If a person from the childhood is feed incorrectly, if one is overfeed with sweets and does not pay attention to qualitative food content, then being an adult this person will do the same with his or her own children. And he or she will strongly believe that it does not bring any harm to the descendants.

But if by means of government mass media programs, at schools, at secondary and higher educational institutions the correct stereotypes of food necessary for health is constantly repeated (using the method of advertisement influencing conscious and subconscious of a person) then it will only be possible to improve the health state of the nation as a whole.

Table 1

**Frequency of Some Food Consumption**

Food products	In % of all the interviewed population (n=248)			
	Every day	Several times a week	1-2 times a week	Seldom or never
Bread, rye	9.7	8.7	19.0	62.9
Bread, wheaten	87.9	6.5	2.8	2.8
Vegetables fresh, greens	15.7	37.9	28.6	17.7
Fruit, fresh	13.3	25.8	31.5	29.4
Fruit, dried (comprising dogrose)	1.6	3.6	17.3	77.4
Juice of fruit and vegetables, vitamin drinks	21.4	19.8	27.8	31.0
Beef	72.2	20.2	6.5	1.2
Pork	10.1	15.7	26.6	47.6

Foal meat	14.5	16.5	22.2	46.8
Liver	-	4.8	18.5	76.6
Poultry (of the 1 <sup>st</sup> category)	15.3	20.6	18.1	46.0
Fish, lake	1.2	19.0	48.8	31.0
Fish, river	3.2	10.9	23.8	62.1
Fish, freshly-frozen	1.6	7.7	19.0	71.8
Sausage, half-smoked	34.3	19.0	25.0	21.8
Sausage, boiled	33.9	21.4	25.8	19.0
Milk (0.5-2.5 % fat content)	23.0	21.0	14.9	41.1
Milk (3.2% fat content)	13.7	8.1	20.2	58.1
Milk ( more than 6% fat)	0.4	1.6	8.9	89.1
Kefir, imported	1.6	10.1	17.3	71.0
Kefir, local	5.6	15.3	24.6	54.4
Yogurt, imported	1.2	8.5	18.5	71.8
Yogurt, local	3.6	9.7	19.8	66.9
Cottage cheese	7.3	15.3	19.0	58.5
Cheese	26.2	15.7	31.0	27.0
Soured cream	21.4	20.6	23.4	34.7
Butter	61.7	16.5	10.1	11.7
Oil, vegetable	37.5	50.8	8.1	3.6
Egg	21.8	26.2	26.6	25.4
Sugar	77.0	4.0	3.6	15.3
Confectionary (cookies, corn flakes)	39.1	22.6	20.6	17.7
Tea	98.0	-	-	2.0
Cocoa, coffee	46.8	8.5	12.1	32.7

drink (cereal)				
Drinks, aerated	5.6	5.2	23.8	65.3
Sweets (chocolate, caramel)	28.6	22.6	25.8	23.0
Nuts	3.2	7.7	19.0	70.2
Crisps (fried potato)	4.8	6.0	13.7	75.4
Elk meat	-	0.8	4.4	94.8
Reindeer meat	0.4	1.2	3.6	94.8
Salamat (flour porridge)	0.4	0.8	15.7	83.1
Kyorchakh (whipped milk cream)	37.1	14.9	19.0	29.0
Hare meat	0.4	1.6	6.9	91.1
Suorat (soured milk)	9.3	19.4	29.0	42.3
Byyrpakh (soured cow milk drink)	-	0.8	5.6	93.5
Kymys (soured mare milk drink)	-	0.4	3.2	96.4
Blood sausage (khaan)	-	2.8	39.5	57.7
Pluck (is)	0.4	3.6	32.7	63.3
Fritters	0.8	19.4	47.2	32.7
Baakhyla (waffle)	0.4	5.6	31.0	62.9

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#### **Summary**

**Research objective** – to study an actual food intake and food habits among inhabitants of Megino – Kangalassky region. **Materials and methods:** the estimation of an actual food intake was made by method of individual interviewing of respondents according to standards of WHO international program on the integrated prevention of noninfectious diseases – CINDI. In work the special questionnaire adapted for the survey of population according to local conditions, developed in the Russian Federation by the Institute of Food of the Russian Academy of Medical Sciences (Moscow, 2004) was used. **Results of research:** insufficient consumption of meat, fish, milk and dairy products, vegetables, fruit is revealed. **The conclusion:** insufficient consumption of the basic foodstuff leads to deficiency of the main macro- and micronutrients.

#### **Ключевые слова:**

**Keywords:** an actual food, frequency method, foodstuff, food stereotypes

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**Pavlova K.K., Trifonova E.A., Gotovtseva L.V., Pavlov F.V.,  
Maksimova N.R., Filippova R. D., Stepanov V. A.**

### **Clinical features of gestosis in the Yakut population**

The problem of preeclampsia pregnant - one of the most urgent in modern obstetrics, as preeclampsia is the most common and serious complications of pregnancy. The article presents the results of clinical and laboratory examination of women whose pregnancy was complicated by gestosis of different severity.

**Keywords:** pregnancy, preeclampsia, the Yakut population

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**INFLUENCE OF STANDARD RISK FACTORS ON DEVELOPMENT OF NSAIDs -  
INDUCED GASTRIC AND DUODENUM ULCERS IN PATIENTS OF THE VARIOUS  
ETHNIC GROUPS LIVING IN YAKUTIA**

**A.P. Fedotova, L.G. Chibyeva**

Dependence of gastroduodenal ulcers revealing in patients of the indigenous and non-indigenous nationalities taking non-steroidal anti-inflammatory drugs (NSAIDs) on risk factors of NSAIDs – gastropathy was estimated. It is revealed that the risk of development of ulcers in patients of the indigenous nationality increases at taking of non-selective NSAIDs, aspirin and cardiovascular pathology. Smoking and taking of glucocorticoids do not increase risk of development of ulcers in patients of non-indigenous nationality.

**Keywords:** risk factors, gastric ulcer, non-steroidal anti- inflammatory drug gastropathy.

*Introduction*

Erosive -ulcerous lesions of gastroduodenal zone and their dangerous complications (bleedings, perforation), caused by taking of non- steroidal anti-inflammatory drugs (NSAIDs), are a serious medico-social problem. To predict development of NSAIDs – gastropathy is possible due to the so-called risk factors revealed at the analysis of retrospective researches data of the big groups of patients with this pathology [5, 8, 9, 15]. Presence of similar factors

associates with augmentation of risk of serious complications from a part of gastrointestinal tract (GIT) at population level. According to the data of epidemiological researches, the ulcerous anamnesis, advanced age (65 years and elder), and also concomitant taking of low doses of aspirin, anticoagulants and glucocorticoids (GC) are major factors of risk of GIT dangerous complications at NSAIDs taking [4]. Value of risk factors for development of endoscopic ulcers in the conditions of Yakutia has not been studied.

**The purpose** of the present research was the assessment of frequency of ulcers revealing in rheumatic patients in the various ethnic groups living in Yakutia, taking NSAIDs, depending on presence of risk factors of non-steroidal anti-inflammatory drug gastropathy.

#### *Materials and methods*

261 patients with various rheumatic diseases, passed through esophagogastroduodenoscopy (EGDS), were investigated. Patients took NSAIDs not less than 1 month before EGDS. All patients have been divided into 2 groups.

The 1st group - 131 patient of indigenous nationality (Yakuts): the mean age was 53, 82 years (range, 19 - 82 years).

The 2nd group-128 patients of non-indigenous nationality (the persons of other nationality who have arrived at various times from Russian Federation regions) from 20 till 84 years (mean age – 59.80 yrs). The interrelation of men and women in the 1st group was 1:2.4; in the 2nd - 1:3. Mean age of women of the 1st group – 55.41 yrs, the 2nd - 61.78 yrs. Mean age of men accordingly – 49.95 and 53.84 yrs.

88.5 % of patients of the 1st group have osteoarthritis, 8.5 % - rheumatoid arthritis, ankylosing spondylitis, 3.0 % psoriatic and reactive arthritis. 95.4 % of patients of the 2nd group took NSAIDs because of osteoarthritis, 4.6 % - rheumatoid arthritis.

In the 1st group there were 26 patients senior 65 years (19.8 %), in the 2nd one - 53 (41.4 %).

Criteria of an exception from research were presence of rheumatic disease at which the digestive tract lesion is one of characteristic clinical manifestation (system scleroderma, Sjögren's syndrome, Behchet's syndrome, system vasculitis).

For object in view achievement complaints, the anamnesis of patients, results of overall clinical researches are studied, in all cases EGDS is made. EGDS was held under the practical standard with use of modern models of endoscope Olympus gif-10, gif - 20. As now there is no rating scale of EGDS data, specific for gastroduodenal damages induced by NSAIDs taking, the standard assessment of a state of mucosa of the gastrointestinal tract upper portion has been made.

Reliability of distinctions of quantitative parameters was estimated by means of the Student t-test.

#### *Results and discussion*

Gastric and-or a duodenum ulcers have been revealed in 11.4 % of patients of 1<sup>st</sup> group and 15.6 % of patients of 2nd group which were taking NSAIDs. In both groups ulcers are found in 80 % of women and 20 % of men. The specified fact is in full conformity with the data of statistical researches which testify to domination of women at the disease [1]. In patients of both groups ulcers were mainly localized in a stomach. In 1st group of patients in 86.7 % of cases ulcers of antrum and only in 13.3 % duodenum bulbus are found. In 2nd group gastric ulcers are revealed in 55 % of cases, in the others (45 %) - duodenum bulbus. Essential distinctions between groups on localization of ulcer depending on sex have been revealed: in the indigenous men and women gastric ulcers were met in 100 and 83.3 % accordingly, and in the non-indigenous patients - in women gastric ulcers are found more often (62.5 %), than duodenal, in men, on the contrary, duodenum ulcers (75 %) dominated.

In research groups 26.7 and 30 % of all revealed gastroduodenal ulcers accordingly is the share of persons senior 65 years. Thus in patients of 1st group ulcers of only gastric localization are found, and in 2nd group - gastric and duodenal ulcers have been revealed equally often.

According to the literature, peptic gastroduodenal ulcers induced by NSAIDs taking, generally appeared at advanced age, more often in women, affect mainly stomach, not duodenum [11, 16].

On number of ulcerous lesions in both groups patients with the single ulcers (75 and 93.8 % accordingly) prevailed. About 91.7 % of patients of 1st group and 56.3 % of 2nd group had the dimension of ulcers <10mm, and 8.3 and 43.8 % accordingly - > 10mm. The dimensions of ulcerous defect in stomach surpassed the dimensions of duodenal ulcers.

#### **The factors influencing development of erosive-ulcer damages of the upper departments of a gastrointestinal tract:**

**Age of patients.** Mean age of patients in which ulcerous damages of stomach and duodenum have been found, was 55.13 years in 1st group, in 2nd group – 58.80 years.

Frequency of revealing of ulcers in various age groups is presented on fig. 1, from which it is visible that the number of patients with this pathology increases in 1st group among individuals from 18-35 years till 50-64 years, and in 2nd group - from 18-35 years till 65 years and senior. In patients of 1st group at the age of 50-60 years frequency of gastroduodenal ulcers occurrence has made 15.7 %, and at the age till 50 years – 3.2 %. In 2nd group of patients senior 65 years frequency of ulcerous damages of stomach and duodenum was authentically higher, than in younger: 41.4 and 39.8 % accordingly ( <0,001).

The data obtained by us confirm that the age is one of the most important factors influencing development of NSAIDs -induced ulcers [2, 4, 7, 9].

**The ulcerous anamnesis.** Presence of the ulcerous anamnesis (ulcer revealed earlier according to EGDS) 7.6 % of patients of 1st group and 18 % of 2nd group have noted. Ulcers in the patients of 1st group who did not have the ulcerous anamnesis, were met authentically more often (11.6 %), than in persons with the ulcerous anamnesis (10 %) (p<0,001). In 2nd group gastroduodenal ulcers in patients with the ulcerous anamnesis were met almost in 2 times more often, than in not having it: 26.1 and 13.3 % accordingly ( <0,05).

**NSAIDs selectivity.** The overwhelming majority of patients – 68.2 and 77.2 % accordingly took not selective NSAIDs (n- NSAIDs) while 31.8 and 22.8 % of patients took selective inhibitors of cyclooxygenase (COG-2). The doubtless leader is Diclofenac - it was taken by 64.7 and 70.9 % of patients accordingly. Unfortunately, the investigated more safe selective inhibitors (COG-2) used significantly rarely. Patients of the 1st group most often took Meloxicam (22.3 %), the 2nd group – Nimesulide (20.3 %). Selective inhibitors (COG-2) took accordingly 9.1 and 16.7 % of patients with the ulcerous anamnesis. Frequency of revealing of ulcers in patients of both groups was authentically lower at taking of s-NSAIDs, than n-NSAIDs. So, among the patients who are taking selective NSAIDs, this pathology has been revealed in 12.5 % of patients of both groups, and among taking n- NSAIDs - in 18.4 and 29.8 % accordingly ( <0,001).

Our data confirm modern representation that the lower selectivity of a drug concerning COG-2 the higher probability of development of GIT pathology at its application.

**Application of glucocorticoids (GC).** 7.6 % of patients of the 1st and 5.5 % of patients of the 2nd group took NSAIDs in a combination with GC (mainly low doses which are not exceeding 10 mg in Prednisolone equivalent). In the patients of both groups combining NSAIDs use with GC, ulcers have been found authentically less often (10 and 14.3 %), than in the patients who were not taking NSAIDs in a combination with GC (11.6 and 15.7 %) ( <0.05).

Thus, concomitant GC use did not influence frequency of revealing of gastric and DD ulcers in the patients of both groups.

**Application of cytotoxic drugs.** NSAIDs taking with cytotoxic drugs (mainly Metotrexat in a dose from 5 to 15 mg/week) combined 11.5 and 4.7 % of patients accordingly. Authentically high is frequency of ulcerous damages of stomach and DD mucosa in the patients of the 1st group taking NSAIDs only, in comparison with those who took NSAIDs in a combination with Metotrexat (12.1 and 6.7 %) ( <0.05). In the patients of the 2nd group who were taking NSAIDs

with cytotoxic drugs, gastric and DD ulcers have been revealed authentically more often (16.7 %), than in the patients taking NSAIDs only (15.6 %) (  $<0.05$ ).

Thus, our data has not confirmed a role of cytotoxic drugs in formation of gastric and / or DD ulcers in the indigenous patients.

**Application of antiaggregate aspirin doses.** The part of patients took aspirin in low, antiaggregate doses (21.4 and 21.9 % accordingly). Gastric and / or DD ulcers have been revealed in 7.9 % of patients of the 1st and 25 % of the 2nd group which were taking NSAIDs in a combination with low doses of aspirin that was authentically higher, than among the patients who were not receiving concomitant therapy by this drug - 9.7 and 13 % accordingly (  $<0,001$ ).

Value of aspirin application as the serious risk factor considerably raising probability of development of a gastrointestinal bleeding and endoscopic ulcers is of no doubt [5,9,18].

**Concomitant diseases.** The concomitant pathology is diagnosed for 36.6 % of patients of the 1st group and 43 % of the 2nd from which 50 % are due illnesses of blood circulation system. Gastric and / or DD ulcers appeared authentically more often in the patients of both groups having concomitant diseases (14.6 and 16.4 % accordingly), than in not having them (9.6 and 15.1 % accordingly) (  $<0,05$ ).

Frequency of a combination of erosive-ulcer lesions of gastroduodenal zone and arterial hypertension is from 3.4 % [3] to 50 % [13, 14], and on own supervision - 17.6 and 19.8 % in investigated ethnic groups.

Gastric and / or DD ulcers have been revealed in 20.8 % of patients of the 1st group with blood circulation diseases that was authentically higher, than in the patients who did not have these concomitant diseases (9.3 %). In the 2nd group ulcers of stomach and DD mucosa in 28.6 % of cases accompany cardiovascular diseases that also is authentically higher than in the persons who did not have pathologies of cardiovascular system (12 %) (  $<0,001$ ).

Results of our research confirm the literature data which testify that erosive-ulcerous changes of gastroduodenal mucosa in 20-30 % of cases accompany such cardiovascular diseases, as ischemic heart disease, hypertension and system atherosclerosis [12].

**Smoking.** Smoking patients were rather a few – 9.2 % and 9.4 % accordingly, however among men of both groups this percent was considerably higher – 15.8 and 26.5 %, while among women - only 6.5 and 4.1 % accordingly. Ulcerous gastroduodenal lesions have been revealed in 25 and 16.7 % of smoking patients of the 1st and 2nd groups accordingly. In non-smoking patients gastric and DD ulcer are found in 10.1 and 15.5 % accordingly. There was no authentic difference in frequency of occurrence of ulcers in smoking patients of both groups: 25 and 10.1 %; 16.7 and 15.5 % (  $p > 0.05$ ).

Smoking, as risk factor of NSAIDs gastropathy development, potentiating ulcerous action of NSAIDs, has not proved to be true.

### **Conclusion**

The risk of NSAIDs- induced ulcers development in the indigenous patients increases at use of non-selective NSAIDs, concomitant use of aspirin in low doses and presence of cardiovascular pathology.

Smoking and combined GC application do not increase risk of gastroduodenal ulcers development in the non-indigenous patients.

In the indigenous patients who are taking NSAIDs, ulcerous lesions of stomach mucosa are formed for one decade earlier, than in the non-indigenous.

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**K.E. Turekanov E.O. Moseev N.V. Indeev**

**The successful reconstructive surgery with a high scar strictures hepatico-choledochal in a district hospital.**

According to the literature - most of cicatricial strictures of hepatic ducts arise when intraoperative injury during cholecystectomy. The incidence of this complication is according to different authors from 0.8 to 3% in conventional and laparoscopic cholecystectomy, respectively.

This article is an example of a successful surgery for cicatricial stricture choledochal in conditions of central district hospitals.

**Keywords:** scar stricture, obstructive jaundice, surgery.

According to the literature - most of cicatricial strictures of hepatic ducts arise when intraoperative injury during cholecystectomy. According to various authors after laparoscopic operations, the number of injuries in connection with features increased from 0,3 to 3% in comparison with traditional cholecystectomy - 0,1 - 0,8%.

One factor is the growing number of laparoscopic operations in relation to the traditional method, according to some authors in the present rate of laparoscopic cholecystectomy has risen to 80%. One of the causes of strictures were damaged by the imposition of clips, coagulation choledochal injury and other causes. Not identified during surgery and not eliminated in time lead to complications in subsequent stricture and the appearance of jaundice, cholangitis and biliary cirrhosis bringing suffering to the patient.

Diagnosis and treatment of such patients requires special methods of research competence of the specialist, possessing experience in surgical interventions in this category of patients, the appropriate level of anesthesia and intensive care services.

Operation of such a level should be made in specialized centers - is unique.

But, given the desire of his patient's complete trust, limited financial capacity to travel to treatment centers, we have made in the area such a complicated reconstructive surgery successfully.

What should give details of medical history 1543.

Patient K.N.N. 53. Pensioner. Admitted to the surgical department, "Municipal Lensk CRH" Republic of Sakha (Yakutia) 30.03.2009.

Complaints on admission for the presence of yellow skin, sclera, itchy skin, pain in the right upper quadrant, fatigue, weight loss.

From the history of the disease - considered herself a patient since November 2008. In the history in 2007. underwent surgery laparoscopic cholecystectomy in Ufa. Was discharged home in satisfactory condition. During the year, the patient felt satisfactory, then came the jaundice and pain. The patient was under the supervision of a therapist and received conservative treatment for chronic hepatitis B without success.

Objective data - the patient malnutrition, skin icteric coloration with traces of scratching. Sclera yellow. Respiratory system was normal cardiovascular system: the borders of the heart is not enlarged, muted tones, rhythmic. Pulse 80 beats a minute. A/D -140/80 mmHg.

Locally: Language is bright red and dry. Stomach is not distended, palpable soft, painful in the right upper quadrant. The liver performs at 3-5cm from under the costal arch, heavy, painful. Spleen were not palpable.

The patient was hospitalized with a preliminary diagnosis - postcholecystectomical cider. Scar choledochal stricture, obstructive jaundice, biliary cirrhosis.



In the ward the patient had made a general clinical examination. At the same ulterior revealed anemia, leukocytosis, high erythrocyte sedimentation rate, hyperbilirubinemia in 1,5 times.

The department patients underwent ultrasound study - in this case revealed the expansion of intrahepatic duct and symptom «shotgun». In the city of Mirniy produced computed tomography, in which revealed increased hepatikoholedohal to 14mm and intrahepatic ducts. State after laparoscopic cholecystectomy. Scar choledochal stricture.

To clarify the extent of the stricture - patients underwent percutaneous, transhepatic, puncture of the hepatic duct under ultrasound with X-ray study permeability, which also made it the first time in CRH.

In this case revealed a high obstruction at the gate of the liver due to compression of the lumen hepatikoholedohal metal clips.

After the diagnosis and pre-infusion, the patient detoxification operation was performed - Top - median laparotomy. Overlay bihepatiko - eyunoanastomosis off on a loop of small intestine by Roux, on cross-changeable transhepatic drainage. Drainage above and subhepatic spaces. Duration of operation 4 hours 5 minutes.

The postoperative period respectively severity of the operation.

After surgery at 6 days was made X-ray control study of anastomosis - anastomosis is consistent. The wound healed primarily. Sutures were removed on day 10. The patient was discharged home to outpatient observation to 22sutki with transhepatic drainages, after learning their care. In the subsequent 6 months.

patients underwent a change of transhepatic drainage. During the period of observation condition satisfactory effects of cholangitis and jaundice have been identified, the patient put on weight.

Later made a change perforated transhepatic drainage in frame, to the exclusion of bile loss and infection of biliary tract manifestations of cholangitis. The patient was observed in 1.5 years, then left for permanent residence in the city of Ufa. Currently, when communicating over the phone - good condition.

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**Chichahov D.A.****Standartizing of procedural sedation in pediatric practice**

The number of diagnostic and therapeutic procedures done outside of the operating room and the intensive care unit has increased substantially in recent years. In parallel, the management of acute pain and anxiety in children undergoing therapeutic and diagnostic procedures has developed considerably in the past two decades. The primary goal of procedural sedation and analgesia is the safe and efficacious control of emotional distress and pain. The availability of non-invasive monitoring, short-acting opioids and sedatives has broadened the possibilities of sedation and analgesia in children in diverse settings. While most of these procedures themselves pose little risk to the child, the administration of sedation or analgesia may add substantial risk to the patient. This new guidelines the current status of sedation and analgesia for invasive and noninvasive procedures in children providing an evidencebased approach to several topics of importance, including patient assessment, personnel requirements, equipment, monitoring, and drugs.

**Keywords:** anesthesiology, sedation, children.

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### Features of Clinical Picture of Viliuisk Encephalomyelitis at the Present Stage

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**Resume:** The author gives classification of VE and examples of clinical cases of spastic-paretic and demented-paretic forms of VE. At present some changes in severity of VE development in patients are revealed. Lately clinical manifestations of VE have changed a little to ease. Primary chronic forms of VE without acute phase are found out.

**Keywords:** Viliuisk Encephalomyelitis (VE), spastic-paretic form (SPF), demented-paretic form (DPF).

In the permanent loci of Viliuisk Encephalomyelitis (VE) the contingent of patients is revealed with encephalopathy of unclear genesis, organic neurologic microsymptoms ( NMS) that are typical for clinical authentic VE cases [1]. Such state of health of the group of VE risk

usually found out at prophylactic medical examinations of the population is designated by abbreviation « NMS». During long study and treatment of VE patients it became clear that gradual formation of the nuclear VE syndrome is possible in a smaller part of VE patients without more authentic acute period of illness. It is rather difficult to carry out complex differential diagnostics by practical neurologists at places and consequently examination of the patients in specialized neurologic clinic is required. When encephalopathy of unclear etiology is observed in a patient except for residual, posttraumatic, dyscircular then the fact of contact with typical VE patient and area of residing are of special significance. In the course of life atherosclerotic changes of vessels of brain or some other age disorders can develop in a person that only complicates diagnostics of typical VE. When the typical syndrome of authentic VE expressed in dysarthria, dementia and spastic tetraparesis is vividly formed in a patient it can appear that the further treatment is ineffectual because of irreversible changes of neurodegenerative phase of VE.

The typical for VE are spastic-paretic and demented-paretic forms. For VE diagnostics we were concerned with such clinical displays as disorders of cerebral nerves, speech frustration, dementia and movement disorders.

Spastic-paretic form of VE clinically shows itself in cerebral nerves lesions (III, IV, VII, XII pairs), decrease of memory, movement disorders (paresis, paralyzes of different severity).

Demented-paretic form of VE is clinically manifested in disorders of cerebral nerves (III, IV, VII, XII pairs), bulbar affections, dementia (memory test), movement disorders (paresis, paralyzes of different severity).

In 1964 A.I. Vladimirtsev [2] on the basis of clinical examination, observation and treatment of VE patients improved previous classifications of VE where he introduced for the first time such forms of chronic VE as demented-paretic and spastic-paretic and described separate syndromes that are characteristic of the given pathology (Table 1).

In 1985 A.I. Vladimirtsev described for the first time and distinguished between typical and out-patient forms of VE in his dissertation thesis «Clinical-epidemiological Observations in the Loci of Viliuisk Encephalomyelitis».

So called out-patient forms of VE are more often registered in relatives and the nearest environment of VE patients. Diagnostic criterion of the out-patient VE form is neurologic microsymptoms. We certain the symptoms that are characteristic for the out-patient VE form: they are lesions in III, IV, VII, XII pairs of cerebral nerves. As it was already noted the out-patient VE forms are diagnosed in comparative aspect to typical VE forms.

Expressed pathomorphosis of typical VE forms has revealed lately some tendency towards mildness of VE course, the number of acute VE cases decreased, the social adaptation of VE patients has become longer. For illustration of demented-paretic forms of VE the description of clinical VE cases are given below.

### **Clinical example 1.**

The patient G., yakut by nationality, was born in 1943 in the village of Chochu in Viliuisk region where she had been living up to 1953. Since 1959 she constantly lived in the town of Viliuisk. She worked as nursing orderly in children's hospital of Viliuisk. The diagnosis: **Chronic Viliuisk encephalomyelitis, demented-paretic form.** The invalid of II group since 1973. At the age of 5 she had measles, right otitis and in 1951 she suffered trachoma. The beginning of VE was acute in May 1972 (at the age of 29). On the 24-th of May appeared the acute symptoms of respiratory virus infection: headache in temporal and frontal areas, dizziness, cold, cough, nausea and vomiting during a week, general indisposition, expressed general



weakness. During 10 days she could not even get up from her bed. Body temperature was 38-39° within 20 days and then it became subfebrile and remained so till September 1972. She was treated in therapeutic department of the central regional hospital in Viliuisk. She left the hospital in June 1972 but she still had dizziness, somnolence till September 1972 and headache - till 1975 (for 3 years). She was treated during 14 days at the neurological department of Viliuisk hospital. In August 1972 weakness in lower extremities appeared. She was sent to the encephalitic department of the republican hospital in Yakutsk (from 18 November 1972 till 24 February 1973 - 98 days). The neurologic status in 1973: Consciousness was kept. Intellect was not lowered. Memory was lowered. Palpebral fissure was D> S. Movements of eyebulbs were free. Convergence was weakened at the left. Anisocoria, eyes pupils were S> D. Mandibular reflex was active. Hearing was not lowered. Dizziness was moderate, changeable. The soft palate was mobile. Uvula was straight. Pharyngeal reflex of the palate was lowered. Tongue was slightly moved to the right, fibrillation of tongue muscles was not present. Taste was kept. Swallowing was normal. The right nasolabial fold was smoothed. Active and passive movements in extremities were full. Contractures were not present. The lower right symptom of Bare was outlined. Gait was spastic, slightly slowed down. In a month dynamics usual gait was marked. In Romberg position was steady. Coordination tests were carried out satisfactorily. Skin abdominal reflexes were absent. Tendon reflexes were increased with wide zones in arms D> S, knee reflexes were high, slightly asymmetrical. Ankle reflexes were high, on the right were more vivid, with clonus of feet. Hoffmann's pathological reflexes, Rossolimo's reflexes were strongly expressed. Feet flexory pathological signs were present, D=S. Muscles tonus was slightly increased according to the mixed type, up to the 1-st degree in legs. Fasciculation was absent. Acute neuroinfection (VE) with cerebral arachnoiditis were differentiated. According to data of PEG from 18 December 1972: **Diffuse atrophy of cerebral hemispheres of brain.** Clinical analysis was carried out and the diagnosis was made: Subacute stage of VE.

In 1975 in neurologic status increase of symptoms was registered: tendon reflexes were more expressed, extensive pathological signs were marked, flexory signs of all the group were increased in feet up to 4+. Gait remained normal.

**In 1979** - expressed dysarthria, indistinct speech, rough decrease of memory, euphoria, typical spastic-paretic gait. Tonus in extremities was increased, pyramidal - mixed, strong increase of reflexes with slight asymmetry, clonus of feet. Symptoms of dynamic ataxia were slightly expressed. Pathological extensive and flexory groups were caused in feet.

**In 1984r** - the clinical symptoms were still increasing: dysarthria, indistinct speech, it was difficult to communicate with the patient. Weakness of convergence was more expressed at the left. The right nasolabial fold was smoothed. There was deviation of tongue to the right. Tonus in extremities was increased up to III degree mixed in legs and up to the I degree in hands. Force was lowered to 3 points in hands and legs.

**In 1999** - the state of the patient was stable without increase of the complex of symptoms.

**In 2002** - without increase of the complex of symptoms.

Thus, the given clinical example demonstrates at first gradual increase of expressiveness of complex of typical VE syndromes, then stabilization of these symptoms, moderate dementia within the limits of psycho-organic a syndrome, slow increase of dysarthria, absence of bulbar symptoms and also movement disorders without increase of spasticity and rigidity.

Clinical features of spastic-paretic VE forms are shown in the example 2.

**Clinical example 2.**

The patient S., yakut by nationality, was born in 1950 and lived in the village of Njurbachaan in Njurba region. She worked as a nurse in the kindergarten of Njurbachaan. The diagnosis: **Chronic VE, spastic-paretic form**. The invalid of II group since 1990. She denies the acute onset of disease. In 1975 (when she was 25 years old) there was the episode of her suffering of sleeplessness during 2 months. In 1980 (at the age of 30) weakness in legs appeared and she went to a neurologist in Njurba because of this weakness and was treated there with the diagnosis: lumbar osteochondrosis. In 1987 (at the age of 37) at prophylactic medical examination by a neurologist rough organic neurologic symptoms were revealed and the patient was sent to encephalitic department of Yakutsk republican hospital. She was taken to the encephalitic department for the first time in 1987. Since 1988 was treated annually in specialized VE clinic. Gradual increase of spasticity in legs was observed that allowed in 1990 to prove the diagnosis of chronic VE, spastic-paretic form. R of brain in 1998 in comparison to 1995: **CT symptoms of cerebral atrophy of the mixed type**. According to clinical data of the same period there were initial signs of psycho-organic syndrome, increasing dysarthria, lower spastic paraparesis.

The neurologic status in 1998: Palpebral fissure was D> S. Convergence was weakened at the both sides. The right nasolabial fold was smoothed. Pharyngeal reflex was lowered. Speech was dysarthric. Tongue was straight, atrophic at sides. Muscles of shin were asymmetrical (hypotrophy of muscles at the right). There was fasciculation in calf muscles of feet at mechanical irritation. Gait was spastic-paretic. Skin abdominal reflexes were absent. Tendon and periosteal reflexes in arms were D> S with widening of reflexogenic zones. Hoffmann's pathological hand reflexes and Rossolimo's reflexes were expressed. Knee reflexes were high, D> S. Ankle reflexes were strong, at the right side they were higher with clonus at both sides. Feet flexory pathological signs of Rossolimo, Zhukovski, Bekhterev were present at both sides. Reflexes of Babinski, Chaddock were present, D> S. Reflexes of oral automatism were expressed. Tonus of muscles was high in legs according to the mixed type. Hypesthesia in feet and shins was according to socks type.

**In 1998-2002** the state of the patient was stable without increase of the complex of symptoms.

**In 2005-2008** increase of symptomatic complex, highly expressed spasticity of lower extremities, pathological signs of extensive and flexory group were caused in legs. Tonus in arms and especially in legs was high and of mixed type.

Thus, the clinical example 2 of spastic-paretic form of VE shows the same complex of symptoms as demented-paretic form but without dementia.

Lately clinical features of VE have changed a little. If in 1960s acute and rapid progressive VE forms prevailed then during the last 20 years moderate, slowly progredient forms of VE with long periods of remission are more frequently observed in patients. Primarily chronic forms of VE omitting acute phase of illness have become more frequent at present.

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Table 1

The author	Year	Classification
Vladimirtsev A.I.	1964	Chronic stage, forms: a) demented-paretic b) spastic-paretic c) syndrome of long infectious psychosis d) syndrome BAS e) cerebellar f) parkinsonian-hyperkinetic g) diencephalic h) pseudo-neurotic.

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### **The ovarian functional state of the women with tubal-peritoneal infertility**

**Summary:** 100 women of the active reproductive age with tubal-peritoneal infertility and 30 women of the same age without fertile malfunction were examined. Assessment of ovarian reserve was performed on the content of Follicle-Stimulating Hormone (FSH), Inhibin B, Anti Muller Hormone (AMH) in the blood serum, according to the data of echoscopy of ovaries and Doppler studies of stromal vessels. It was found, that, in patients with infertility of tubal-peritoneal genesis, ovarian reserve is diminished. Parameters of ovarian reserve reflect the functional state of women's ovaries and the most reliable marker of ovarian reserve is the level of AMH.

**Keywords:** Infertility, ovarian reserve, Inhibin B, Anti Muller Hormone.

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Infertility is one of the most important problems of modern medicine. The infertile marriages rate in Russia exceeds 15 %, that, according to the data of the World Health Organization, is a critical level [3]. The tubal-peritoneal factor occupies the first place in the structure of main reasons of infertility (40-72 %) [6, 7, 9].

The widespread use of methods of assisted reproductive technologies in the treatment of various forms of female and male infertility necessitates the search of reliable markers to estimate the functional state of the reproductive system. Diagnostics of the functional state of

the ovaries before the beginning of therapy allows to choose treatment strategy, dose of preparations and to determine indications for IVF adequately (T.A. Nazarenko and others, 2008).

In clinical practice, the concept of ovarian reserve is widely used. Despite the considerable amount of research works, the significance of different parameters for determination of the functional state of ovaries still is not fixed [3]. The value of FSH, Inhibin B, AMH, ultrasound characteristics of ovaries for ovarian reserve estimation [4] are under discussion.

**Research objective:** To study the ovarian functional activity of the native women of the North with tubal-peritoneal infertility for determining treatment tactics, including methods of assisted reproductive technologies.

### **Materials and methods**

100 native women of the North with tubal-peritoneal infertility (the main group) were completely examined. The levels of FSH, LH (Luteinizing Hormone) were determined on days 2 – 3 of the menstrual circle, the Progesterone level – on days 20-22 of the period, using competitive Enzyme-Linked Immuno-Sorbent Assay (ELISA) method by means of test systems, produced by "Hema-Medina" Co., Moscow. The levels of Inhibin B and MH were determined on days 2 – 3 of the menstrual cycle by the ELISA method, using commercial sets of "DSL" Co., USA.

At ultrasound research we defined the shape and sizes of uterus, its structure, the average sizes of the M-echo. When researching ovaries, we measured their sizes, volume, estimated the state of the follicular apparatus and Doppler sonographic imaging.

Based on the results of the perspective analysis of the content of FSH, Inhibin B, H, Progesterone and three-time echographic monitoring during the menstrual circle, two subgroups were made up: 1 subgroup – 65 women with tubal-peritoneal infertility without ovarian malfunction, 2 subgroup - 35 women with ovarian dysfunction. The comparison group included 30 native women of the North without reproductive malfunction.

### **Results and discussion**

The age of examined women of the both groups ranged from 22 to 39 years old and on the average, was  $30,7 \pm 0,7$  years in the main group,  $29,7 \pm 5,2$  ( $p > 0,05$ ) in the comparison group.

The middle age of women of subgroups 1 and 2 was  $29,9 \pm 0,5$  and  $31,6 \pm 0,9$  years old accordingly.

All women of the main group complained of infertility. The duration of infertility in the subgroup 1 was  $4,9 \pm 0,4$  years, in the subgroup 2 –  $7,09 \pm 0,6$  years ( $< 0,05$ ). Gynecologic diseases were observed in the main group, being there 3,6 times more often ( $p < 0,01$ ). Sexually transmitted infections were 2,6 times more often in the main group than in the comparison group ( $< 0,05$ ). Chronic inflammatory diseases of the pelvic organs can disrupt the ovarian function, leading to enhanced follicular atresia, due to activation of anti-inflammatory cytokine cascade [8].

The content of FSH in the blood serum of women with tubal-peritoneal infertility on days 2-3 of menstrual cycle was higher than in the group of women without fertile dysfunction ( $10,3 \pm 0,4$  IU/ML vs  $7,6 \pm 0,3$  IU/ML;  $< 0,05$ ) (tab.). In the group of women with ovarian malfunction the value of FSH reached  $11,7 \pm 1,0$  IU/ML ( $< 0,001$ ). According to some authors, the FSH content, being higher than 10 IU/ML, indicates diminished ovarian reserve [2]. However, some experts consider, that a moderate increase of FSH at the relatively young age is not necessarily an indication of early ovarian ageing and this fact should be taken into account when advising these patients [10,11,12].

The content of LH in the blood serum of women of the comparison group at the early follicular phase was  $5,9 \pm 0,4$  IU/ML, that had no significant difference with its content in the blood serum of women of the 1st and 2nd subgroups ( $4,6 \pm 0,2$  IU/ML,  $4,4 \pm 0,4$  IU/ML;  $> 0,05$ ). These results coincide with the ones of other researchers [15]. In women without reproductive dysfunction, the Progesterone content was  $51,0 \pm 5,1$  nmol/l, that did not differ from that of women from the main group and the subgroup with normal ovarian function ( $p > 0,05$ ). In the blood serum of the women of the subgroup 2 the Progesterone content was 2,2 times lower, than in the comparison group ( $< 0,01$ ). The basal level of Estradiol in the blood serum of women of examined groups and subgroups did not differ significantly.

For a better understanding of the functional state of the ovaries the measurement of Inhibin B and H was important. Women of the senior reproductive age or young patients with diminished ovarian reserve had not enough antral and growing follicles and, accordingly, had low concentration of Inhibin B. As Inhibin B regulates the hypophysis secretion of FSH, determining the content of Inhibin B allows to estimate the ovarian function more precisely, than FSH measuring [5]. At the same time, some experts consider that Inhibin B is not very informative as compared with FSH, because it has direct correlation dependence with the latter. Trying to assess the prognostic value of Inhibin B, we analysed its content in the compared

groups. In the group of women without fertile disorder the content of Inhibin B did not differ from the one of women with tubal-peritoneal infertility ( $64,5 \pm 6,7$  pg/ml and  $59,6 \pm 6,2$  pg/ml accordingly;  $p > 0,05$ ), that confirms the opinion of other authors about little informative value of Inhibin B as an early marker of the diminished ovarian reserve. However, the decline of Inhibin B was detected in the subgroup of women with ovarian dysfunction ( $47,8 \pm 4,4$  pg/ml;  $< 0,01$ ) as compared with the group of women with normal ovarian function and the comparison group ( $66,0 \pm 3,0$  pg/ml,  $64,5 \pm 6,7$  pg/ml accordingly). Therefore, we think that the measurement of its content in the blood serum can be used in the algorithm of examination of women with infertility of tubal-peritoneal origin.

AMH is of the greatest interest in the estimation of ovarian reserve and reproductive potential of women. AMH is one of the most significant regulators of female reproductive function, that reflects the growth of follicles from the primordial pool stage to the stage of large antral follicles [2]. When analyzing the AMH content in the blood serum, lower indicators ( $1,9 \pm 0,1$  ng/ml) were obtained in the group of women with tubal-peritoneal infertility as compared with the group of women without fertile malfunction ( $2,5 \pm 0,3$  ng/ml;  $< 0,05$ ). The lowest content of AMH was observed in the group of women with ovarian dysfunction ( $1,3 \pm 0,2$  ng/ml;  $< 0,01$ ), indicating the decrease of the primordial follicles pool amount. Thus, it confirms the opinion of other experts about the importance of determining the level of AMH as the best marker showing the diminution of ovarian reserve.

The hemodynamics state in the stroma of ovaries was studied three times: in the early follicular phase, in the preovular period and in the period of the maximum growth and activity of the corpus luteum. In the preovular period the Resistance Index (RI) of the gynecologically healthy women was  $0,47 \pm 0,05$  s.u. in the right ovary,  $0,48 \pm 0,05$  s.u. - in the left ovary,  $0,42 \pm 0,050$  s.u.,  $0,43 \pm 0,06$  s.u. - in the period of the maximum growth and activity of the corpus luteum respectively, and was lower ( $< 0,05$ ) as compared with RI of infertile women during the same periods of the menstrual cycle, that characterizes the best hemodynamics in the ovarian stroma. Animals studies confirmed that increase of the blood supply to the ovaries is the determining factor in selection of the dominant follicle [13]. According to some authors, the decrease of the ovarian blood supply, detected by Colour Doppler Mapping, serves as an earlier marker of diminished ovarian reserve, than increase of the FSH level. Poor ovarian blood supply can, in its turn, lead to the resistance of the ovary to stimulation and to ovarian failure [1].

In women with ovarian dysfunction the average number of antral follicles in the early follicular phase was  $5,7 \pm 1,5$  in the right ovary and  $4,8 \pm 1,7$  in the left ovary, and was less than the ones in women with normal ovarian function and without reproductive disorders ( $< 0,05$ ). It

was found, that the availability of less than 5 antral follicles in an ovary is an unfavorable prognostic sign of the ovarian reserve. According to a number of authors, the reduction of the number of antral follicles is the best indicator of the ovarian extinction, after determining the AMH content in the blood serum[16].

### **Pregnancy rate in the examined groups**

We carried out the comparative analysis of pregnancy rate among women of the main group. In the subgroup of women without ovarian dysfunction 21 (32,3 %) women got pregnant, including: 11 (52,3 %) patients - after the course of combined therapy (antibacterial, anti-inflammatory and physiotherapy), 8 (38,1 %) women - after laparoscopic surgery, 2 (9,5 %) women - after IVF and Embryo Transfer (ET). In the IVF program 5 women from this group took part.

In the subgroup of women with ovarian dysfunction 4 (11,4 %) patients achieved pregnancy, including: 2 women - after the course of combined treatment, 1 patient – after laparoscopic surgery and 1 woman – after IVF with ovum donation. In the IVF program 4 women participated.

Thus, in the group of women without ovarian dysfunction the pregnancy rate was 2,8 times higher.

### **Conclusions**

In women with infertility of tubal-peritoneal origin, the state of ovarian reserve is worsening; the time for realisation of reproductive plans is shortening. The basic principles of treatment of tubal-peritoneal infertility lie in the integrated approach, taking into account the functional state of the ovaries.

Parameters of ovarian reserve (the content of FSH, Inhibin B, AMH, number of antral follicles) reflect the functional state of the ovaries.

The most reliable marker of the ovarian reserve state is the AMH level.

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Table

## Parameters of ovarian reserve

Groups	The levels of hormones			Number of antral follicles	
	FSH (IU/ML)	H (IU/ML)	Ingibin	Right ovary	left ovary
Main (n=100)	10,3±0,4 <0,05	1,9±0,1 <0,05	59,6±6,2	5,07±1,5	4,9±1,7
Subgroup: 1 (n=65)	8,9±0,2	2,2±0,1	66,0±3,0	5,1±1,5	5,1±1,6
2 (n=35)	11,7±1,0 -2<0,01	1,3±0,2 -2<0,01 1-2<0,01	47,8±4,4 -2<0,01 1-2<0,05	5,02±1,6 2<0,05	4,6±1,8 -2<0,05 1 2<0,05
Comparison (n=30)	7,6±0,3	2,5±0,3	64,5±6,7	5,7±1,2	5,6±1,1

– the differences between the main group and a comparison group; -2 - between the comparison group and a subgroup 1 1-2- between the subgroups 1 and 2.