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Influence of the element status on weight of a body of Extreme North residents

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The resume: Results of one-stage researches of unorganized of Yamal residents at the age of 20-59 years are presented. Influence of chemical elements on an index of weight of a body in the conditions of high widths is presented. The chemical elements influencing formation of superfluous weight of a body and adiposity are defined.

Keywords: chemical elements, unorganized population, the Extreme North, index of weight of a body.

Introduction. Adiposity is a superfluous adjournment of fat in an organism, meets at 20-40 % of the population of the developed countries. Along with it there is almost same group of persons, having excess weight, but yet not reached degree of adiposity [14,15].

This problem is actual for the Extreme North residents. In the conditions of high a latitude etiological factors of development of infringement of a metabolism can become both exogenous and endogenous to feature. To exogenous to factors of superfluous weight of a body and adiposity at of Yamal residents, probably, residing in biogeochemical is province. The high maintenance in iron water (23 maximum concentration limits) and manganese (6 MCL) [2,5] depends on the nature. Besides it, the element structure of environment in district changes at the expense of technogenic influence of the oil and gas industry. For oil presence at it of such metals as vanadium and nickel is typical. All components of oil can contain on the surface of the water. There is a probability of their receipt in fresh underground waters [7].

To endogenous to factors of superfluous weight of a body and adiposity, probably, adaptable reorganisation at migrants. So, at Extreme North residents the metabolism in an organism passes with “carbohydrate and protein” on “protein and fat” [4,10].

The combination exogenous and endogenous factors of a chemical homeostasis lead to high prevalence of superfluous weight of a body and adiposity among unorganized to population of Yamal. The standardized indicator of prevalence of superfluous weight of a body in territory of Yamal-Nenets autonomous region has made: Nadym – 24,5 %, the item of Nyda – 33,6 %, the item Tarko-Sale – 39,9 %, the item of Muzhi – 35,7 %, the item of Se-Jaha – 31,4 % [3].

Persons with superfluous weight of a body and adiposity suffer arterial hypertension, a metabolic syndrome, an ischemic heart trouble, diabetes mellitus of II type, a syndrome apnoe in the sleep, many kinds malignancy, illnesses of the locomotor apparatus is more often [1,10,14,15]. Therefore studying of the reasons of occurrence of superfluous weight of a body and adiposity in the conditions of high widths has one of the important problems of northern medicine.

With an urgency of the above-stated an objective of this research was studying of influence of concentration of chemical elements on indicators of an index of weight of a body among unorganized population of Yamal-Nenets autonomous region at the age of 20-59 years.

Materials and research methods. For object in view performance conducted population-based studies among unorganized population of Yamal at the age of 20-59 years of both sexes. Sample was formed in a random way. From-cliques has made 78,0 % from list structure of inhabitants. In total 1511 persons are surveyed. Middle age of the surveyed persons has made $40,7 \pm 12,9$ years. Northern experience anaborigine has made $23,3 \pm 14,2$ years.

The research report included: anthropometry, selection of hair from an occipital part of a head. Calculation of a growth -weight index of Kettle was made

$$IK = \text{weight} / \text{growth}^2$$

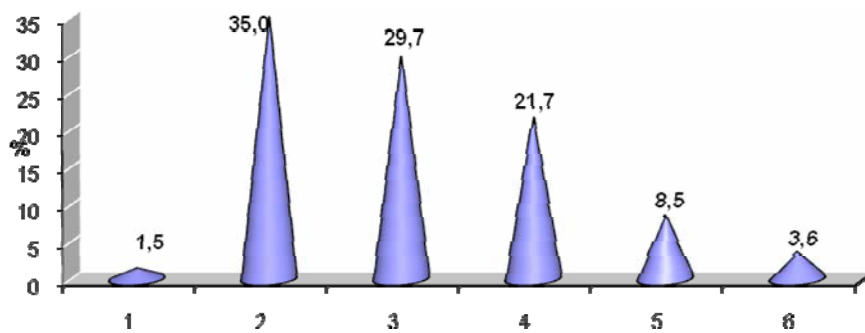
Following criteria of an estimation - to 18,5 lack of body weight are used; from 18,5 to 24,9 normal weight; from 25,0 to 29,9 superfluous weight of a body; from 30,0 to 34,9 obesity I cr.; from 35,0 to 39,9 obesity of II item; above 40,0 obesity of III item [9].

Definition of chemical elements (Fe, Zn, Cu, Mn, Ni, Co, Cd, Pb and Sa) in hair was spent with use of the modern analytical equipment based on principles of nuclear absorption «Spectr AA-50F», firms "Varian" (Australia), with - public methodical recommendations [9]. Results were compared rather regional standard indicators [6].

The statistical analysis was spent with program use "Statistica-6". As distribution of random numbers in most cases differed from holes-malnogo, as a measure of the central tendency the

median, distributions – interquartile scope served. Comparisons of three independent groups were spent with method application Kraskel - Wallis. Pair comparisons were spent by a method the God-send-uitni and χ^2 . The analysis of interrelation of signs paid off with the help of factor tetrachoric correlation (r); the sign contribution was defined on an indicator phi (ϕ) [12].

Results and discussion. The analysis of types of weight of a body on an index of Kettle has shown that prevalence of deficiency of weight of a body the superfluous weight of a body in 29,7 % of cases, adiposity of 1 degree in 21,7 % of cases, adiposity of 2 degrees in 8,5 % of cases, adiposity of 3 degrees in 3,6 % of cases (drawing 1) has made 1,5 % of cases, normal weight of a body in 35,0 % of cases.



1 - deficiencies of weight of a body, 2-normal weight of a body, 3-superfluous weight of a body,
4-adiposity 1 items, 5-adiposity 2 items, adiposity 3 items

Pic. 1. Prevalence of types of weight of a body on an index of Kettle in unorganized population of the Far North at the age of 20-59 years.

The analysis of the element status (ES) is carried out at various types of weight of a body (picture 1). So, at deficiency of weight of body ES it is characterized by surplus Ni and deficiency Ca, Pb. The element status at normal weight of a body, adiposity of 1 and 2 degrees characterized surplus Ni in a combination of deficiency Co, Ca, Pb. For persons with superfluous weight of a body deficiency Co, Ca, Pb is characteristic. At adiposity of 3 degrees ES it is characterized by deficiency Co, Cd, Ca, Pb. Hence, accumulation of chemical elements and the element status of the Extreme North residents depend on weight of a body.

Considering that on accumulation Ca, Co, Cd, Ni in an organism of northerners influence an index of weight of a body, the detailed statistical analysis of the given elements is carried out. The comparison group takes persons with normal weight of a body. Prevalence of deficiency a macrocell of Ca in population reached 86,3 % of cases. At persons with insufficient weight of a

body the greatest is revealed concentration by Ca in an organism that on 17,7 % above ($U=1407,50$, $Z=2,76$, $p=0,005$, Mann-Whitney), than at persons with normal weight of a body. At persons with superfluous weight of a body concentration of Sa more low on 2,6 % ($U=22071,0$, $Z=-2,12$, $p=0,03$, Mann-Whitney) in comparison with persons with body holes-malnoj in weight.

At persons with adiposity of 2 degrees concentration of Sa on 3,9 % more low ($U=53207,0$, $Z=-3,72$, $p=0,0002$, Mann-Whitney) in comparison with persons with normal weight of a body. The interrelation between prevalence of deficiency of Sa and prevalence of adiposity of 2 degrees at tendency level ($r=0,44$, $\chi^2=5,43$, $p=0,02$) is found. The contribution of deficiency of Sa to development of adiposity of 2 degrees reaches 13,0 % ($\phi=0,126$, $p=0,02$). Statistical distinctions concentration an element between ожирениями 1,3 degrees and normal weight of a body are not revealed. Hence, with increase in an index of weight of a body depth of deficiency Ca increases. Deficiency of Ca at northerners influences development of superfluous weight of a body, adiposity of 2 degrees.

Prevalence of deficiency within the surveyed population reaches 58,3 % of cases. At persons with superfluous weight of a body concentration With in 1,9 times more low ($U=105032,5$, $Z=-3,11$, $p=0,001$, Mann-Whitney) in comparison with persons with normal weight of a body. Between-du prevalence of deficiency With and prevalence of superfluous weight of a body the weak interrelation ($r=0,19$, $\chi^2=11,92$, $p=0,0005$) is revealed. The contribution of deficiency With in development of superfluous weight of a body reaches 12,0 % ($\phi=0,118$, $p=0,0005$).

At adiposity of 1 degree concentration With on 12,5 % ($U=79493,00$, $Z=-2,07$, $p=0,04$, Mann-Whitney) in comparison with persons with normal weight of a body. Between it is prevalence deficiency With and by prevalence of adiposity of 1 degree it is found a weak relationship ($r=0,21$, $\chi^2=11,82$, $p=0,0005$). The contribution of deficiency With in development of adiposity 1 reaches 13,0 % ($\phi=0,127$, $p=0,0005$).

At adiposity of 2 degrees concentration with in 2,3 times more low ($U=29427,50$, $Z=-2,52$, $p=0,01$, Mann-Whitney) in comparison with persons with normal weight of a body. Between prevalence deficiency With and prevalence of adiposity of 2 degrees the weak interrelation ($r=0,21$, $\chi^2=7,16$, $p=0,007$) is revealed. The contribution of deficiency With in development of adiposity of 2 degrees reaches 11,0 % ($\phi=0,112$, $p=0,007$).

At adiposity of 3 degrees concentration With in 4,5 times more low ($U=11665,00$, $Z=-2,30$, $p=0,02$, Mann-Whitney) in comparison with persons with normal weight of a body. Between prevalence deficiency With and prevalence of adiposity of 3 degrees the weak

interrelation ($r=0,25$, $\chi^2=5,65$, $p=0,02$) is revealed. The contribution of deficiency With in development of adiposity of 3 degrees reaches 11,0 % ($\varphi=0,106$, $p=0,02$).

Therefore, with increase in weight of a body prevalence and depth of deficiency microcell Co increases. Deficiency with at northerners influences development of superfluous weight of a body and adiposity.

Prevalence of deficiency Cd in population makes 43,7 % of cases. At excess weight of a body concentration Cd in twice more low ($U=104769,5$, $Z=-3,27$, $p=0,001$, Mann-Whitney) in comparison with persons with normal weight of a body. Between prevalence of deficiency Cd and prevalence of superfluous weight of a body the weak interrelation ($r=0,20$, $\chi^2=12,91$, $p=0,0003$) is revealed. The contribution of deficiency Cd to development of superfluous weight of a body reaches 13,0 % ($\varphi=0,131$, $p=0,0003$).

At adiposity of 1 degree concentration Cd in 2 times more low ($U=74708,50$, $Z=-3,45$, $p=0,001$, Mann-Whitney) in comparison with persons with normal weight of a body. Between prevalence of deficiency Cd and prevalence of adiposity of 1 degree the weak interrelation ($r=0,22$, $\chi^2=12,29$, $p=0,001$) is revealed. The contribution of deficiency Cd to development of adiposity 1 reaches 14,0 % ($\varphi=0,136$, $p=0,001$).

Statistical distinctions of concentration Cd between obesity 2,3 degrees and normal weight of a body are not revealed. Thus between prevalence of deficiency Cd and prevalence of adiposity of 3 degrees the interrelation tendency ($r=0,40$, $\chi^2=13,99$, $p=0,0002$) is revealed. The contribution of deficiency Cd to development of adiposity 3 reaches 18,0 % ($\varphi=0,177$, $p=0,0002$). Hence, with increase in an index of weight of a body depth de-fitsita Cd increases. Deficiency Cd in an organism of aborigines of Yamal influences development of superfluous weight of a body and adiposity of 1 degree.

Prevalence of superfluous concentration Ni in population has made 50,0 % of cases. At persons with adiposity of 2 degrees concentration Ni in 18 times above ($U=29161,50$, $Z=2,71$, $p=0,007$, Mann-Whitney) in comparison with persons with normal weight of a body. Statistics distinctions of concentration Ni between superfluous weight of a body, obesity 1,3 degrees and normal weight of a body are not revealed. Thus, superfluous accumulation Ni in an organism of northerners influences on развитие adiposity of 2 degrees.

The received results of research on accumulation with in organism Yamal residents it will be agrees with V.G.Rebrov's data which has defined participation of an element in activation of the enzyme participating in an exchange of fat acids [13]. Deficiency From northern population leads to infringement of an exchange of fat acids that, in turn, leads to development of superfluous weight of a body and further to adiposity.

Thus, results of research allow to make a number of conclusions:

- The element status influences formation of superfluous weight of a body (deficiency Ca, Co, Cd and surplus Ni); adiposity of 1 degree (deficiency With, Cd); adiposity of 2 degrees (deficiency Ca, Co, surplus Ni); adiposity of 3 degrees (deficiency With, Cd);
- Accumulation of chemical elements of Sa, Co and Cd decreases with increase in an index of weight of a body;
- A risk factor of development of adiposity at the Yamal population is deficiency of Ca,
- Results of the study is especially helpful when the organization of individual and population-based preventive measures in respect of overweight and obesity.

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DIAGNOSTICS AND RESULTS OF SURGICAL TREATMENT OF ISCHEMIC HEART DISEASE OF YOUNG PEOPLE

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The resume

Research objective – to study the peculiarities of the disease activity and possibility of surgical treatment of an ischemic disease (IHD) of patients of young age.

Materials and methods. 95 patients with IHD younger 45 years areexamined, the control group was made with people older than 50. Objective research, an electrocardiography (electrocardiogram), echocardiography (EhoCS), angiocardiology are made to all patients included in the research. According to indications done the surgical operation is performed. Statistical processing of the investigated material was by programmer Statistika 6.0.

Results and discussion. Among IHD 45 patient younger 45, males dominate, with increase in level of atherogenous lipids and level triglycerides in particular in comparison with patients of the senior age groups. Tendency to dilatation cavities of the left ventricle (LV) and decrease in the general contractile ability of myocardium is a characteristic feature for IHD patients of young age at ischemic remodeling. The endovascular technique of a straight line