mune response will help in assessing the immune status of the population, and will also be useful for predicting possible deviations, manifested by the development of possible pathologies that may appear in the future. In addition to the above, we suggest that the line presented in Figure 1 should have a reference form that should be determined for optimal assessment and interpretation of the immune status of the population.

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E.Z. Zasimova, A.S. Golderova, E.D. Okhlopkova, E.P. Kudrin, A.I. Yugova, N.A. Dmitriev

BIOCHEMICAL PARAMETERS OF BLOOD OF MAS WRESTLER STUDENTS DURING THE TRAINING PERIOD

DOI 10.25789/YMJ.2023.81.29

УДК 616-092.11; 796.071

The purpose of this work was to evaluate the biochemical parameters of blood in the mass-wrestler students during the training period. 28 students of the NEFU named after M.K. Ammosov, indigenous nationality of the Republic of Sakha (Yakutia), including 17 athletes - wrestlers, took part in the survey on the basis of informed voluntary consent. The biochemical parameters of blood aspartate aminotransferase (AST), alanine aminotransferase (ALT), lactate dehydrogenase (LDH), creatine kinase, alkaline phosphatase, gamma-glutamyltransferase (GGT), glucose, total cholesterol, HDL cholesterol, LDL cholesterol, VLDL cholesterol, triglycerides, uric acid, urea, creatinine, total protein, albumin by enzymatic method. Calculated indicators were determined: the de Ritis coefficient (AST/ALT), the index of muscle tissue damage (CPK/AST) and the atherogenicity coefficient. According to the results of the study, the excess of normal indicators of CPK, SCHF and the muscle damage index (CPK/AST) of more than 10 units was revealed.

Keywords: mass wrestlers, biochemical parameters, CPK, AST, ALT.

ZASIMOVA Ekaterina Zakharovna – physician of exercise therapy and sports medicine, head of the medical and rehabilitation department of the sports and recreation complex of the Institute of Physical Culture and Sports of the NEFU. M.K. Ammosov, ekazas15@yandex.ru; **GOLDEROVA Aytalina Semyonovna** – MD, Professor of the Department of Public Health and Preventive Medicine, M.K. Ammosov NEFU Medical Institute., hoto68@mail.ru; **OKHLOPKOVA Elena Dmitrievna** – Ph.D., senior researcher Laboratory of Biochemical and Immunological Research, Yakut Scientific Center for Complex Medical Problems, elena_ohlopkova@mail.ru; **KUDRIN Egor Petrovich** – PhD, deputy head of the department, associate professor, M.K. Ammosov NEFU, kudrinep@mail.ru; **YUGOVA Arina Ilyinichna** – senior lecturer of the Department of Physical Education of the Institute of Physical Education and Sports of M.K. Ammosov NEFU, arina-yugova@mail.ru; **DMITRIEV Nikolay Aleksandrovich** – senior lecturer of the Department of Physical Education of the Institute of Physical Education and Sports of M.K. Ammosov NEFU, dmitrievsvfu@mail.ru

Introduction. The ability to accurately quantify the physiological effects of exercise on the human body is crucial to understanding recovery needs and to ensure adequate rest before re-training. The use of biomarkers can improve the ability of trainers to assess the recovery period after training and to establish the intensity of subsequent training in the most effective way [6]. The study of the effect of physical exertion on the activity of intracellular enzymatic profiles specific to certain tissues and organs provides additional information not only about the condition of muscles, but also about its biochemical adaptation to the training process of athletes [5]. Analyzing the dynamics of enzymes under the influence of physical exertion, it is possible to vary exercises of different nature and intensity in such a way as not to cause destructive changes in the body systems [5]. In mas-wrestling, athletes, as a rule, perform exercises for a large number of repetitions to develop strength and muscular endurance of the arms, while often using the "to failure" method. However, the inept use of this method leads to excessive local acidification of the muscles of the hands, which ultimately negatively affects the development of strength and muscular endurance of the hands [2].

The aim of the study was to evaluate the biochemical parameters of the blood of the mass–wrestlers during the training period.

Materials and methods. The survey was conducted on the basis of in-

formed voluntary consent by 28 young students of the M.K. Ammosov NEFU of indigenous nationality of the Republic of Sakha (Yakutia), average age 21.06 ± 1.63 years, of which 17 athletes (sport "Mas-wrestling"), 11 students who are not athletes attending physical education classes twice per week (control group). The study was conducted in full compliance with the ethical recommendations of the Helsinki Declaration of the World Medical Association. Studies of blood biochemical parameters were carried out in the laboratory of the Federal State Medical University "YANC KMP" in conditions of constant quality control. Blood sampling for the study was carried out in the morning on an empty stomach from the ulnar vein. Activity of aspartate aminotransferase (AST), alanine aminotransferase (ALT), lactate dehydrogenase (LDH), creatine phosphokinase (CK), alkaline phosphatase (ALP), gamma-glutamyltransferase (GGT), glucose levels, total cholesterol, HDL cholesterol, LDL cholesterol, VLDL cholesterol, triglycerides (TG), uric acid The analysis of urea, creatinine, total protein, albumin was carried out by the enzymatic method on an automatic biochemical analyzer "Labio200" of the company "Shenzhen Mindray Bio-Medical Electronics" (China) using reagents "Analyticon" (Germany). Calculated indicators were determined: the de Ritis coefficient (AST/ALT), the index of muscle tissue damage (CPK/AST) and the atherogenicity coefficient. Statistical analysis of the data obtained was carried out using the IBM SPSS Statistics 23.0 software package. The descriptive analysis data are presented in the table in the form of Me (median), Q1 and Q3 (quartiles 25 and 75%). When comparing quantitative indicators of groups, the significance of differences in abnormal distribution was assessed using the Mann-Whitney U criterion. Correlation analysis of the data was carried out using the Spearman method. The results were considered statistically significant at the values of the achieved significance level $p < 0.05$.

Results and discussion. The biochemical parameters of the blood of the examined students are presented in Table.

A comparative analysis of the levels of biochemical parameters of students - mas-wrestlers with the control group revealed significant differences in the levels of AST ($p<0.01$), LDH, CPK, GGT, HDL-C and de Ritis coefficient ($p<0.05$). The biochemical parameters of the blood of students - mas-wrestlers are in the range of normal values, except for the levels of CPK and alkaline phosphatase. The average values of CPK exceed the physiological norms in both groups of the examined, but in the group of students - mas-wrestlers, an excess of more than 2.5 times is noted. The ALP level was high in half of the students-maswrestlers, which was reflected in the average value. VLDL-C is below the normal range in both groups, HDL-C is below normal in the control group and at the lower limit of normal in student mas-wrestlers. The coefficient of atherogenicity was increased in the control group due to a decrease in the level of HDL-C. AST is a characteristic of thermogenesis, ALT-gluconeogenesis, de Ritis coefficient (AST / ALT) - the ratio of cata- and anabolic metabolic fluxes, GGT-indicator of tissue feeding, ALP-regulator of membrane flows and phosphate potential level (macroerg reserve, power of bioenergetic processes), LDH-regulator of blood pH and redox processes, CK-enzyme "stress" [4].

CPK activity is a biochemical marker regularly analyzed by coaches and sports researchers. It should be emphasized that the activity of this enzyme in the blood of athletes does not always increase immediately after exercise. An increase in CPK activity is often observed during recovery [8]. The peak of CPK is reached 24 hours after the end of training, and CPK activity may remain elevated for 48-72 hours [7]. ALP regulates the content of phosphates in the blood. The higher the level of alkaline phosphatase in the blood, the greater the power of bioenergetic processes and the rate of transmembrane flows [4]. Blood ALP activity is a well-known diagnostic marker of bone mineralization and pathological disorders. Changes in ALP activity after exercise may be useful for assessing early symptoms of some vitamin deficiency in the diet of athletes [8]. Diaz et al. [9] described a correlation between ALP activity and daily intake of vitamin B6 and niacin.

With different intensity of metabolic processes, the predominance of cata- and anabolic metabolic pathways can be judged by the de Ritis coefficient (AST / ALT), the adaptive range of which ranges from 1.2 to 1.6, its reference value is 1.5. In our study, the de Ritis coefficient was below the normal range in the control group of students due to the high value of ALT compared to AST, which indicates the predominance of anabolic processes. For students - mas-wrestlers, this indicator is in the normal range.

During life, ALT and AST are in reciprocal ratios. In the process of skeletal

Biochemical parameters of blood, Me (Q25; Q75)

Indicator, reference values	Students-maswrestlers (n=17)	Control group (n=11)	p
LDH, (225-450 U/l)	428.0 (372.504; 478.50)	364.00 (306.04; 417.0)	0.02
CPK, (< 190 U/l)	285.0 (173.50; 700.50)	168.00 (93.0; 224.0)	0.02
ALP, (< 258 U/l)	257.0 (201.5; 343.0)	225.0 (185.0; 268.0)	0.13
TG, (0.5-1.7 mmol/l)	0.65 (0.55; 1.04)	0.93 (0.51; 0.93)	0.40
GGT, (11 – 50 U/l)	23.0 (18.50; 24.50)	26.0 (23.0; 33.0)	0.02
ALT, (< 30 U/l)	24.0 (19.0; 26.0)	20.0 (14.0; 28.0)	0.43
AST, (< 40 U/l)	31.0 (23.5; 40.0)	21.18±5.87	0.01
de Ritis coefficient, AST / ALT (norm 1.3 - 1.5)	1.29 (1.02; 1.82)	1.0 (0.69; 1.06)	0.02
Index, CPK/AST (c.u.)	14.28 (7.18; 18.52)	6.06 (4.89; 11.79)	0.07
Uric acid,	292.0 (254.50; 329.0)	258.0 (226.0; 319.0)	0.37
(men 268-488 μmol/l)	5.67 (5.07;6.78)	5.14 (4.59; 6.19)	0.37
Urea, (5 - 12.1 mmol / l)	105.0 (95.5; 108.5)	98.0 (92.0; 103.0)	0.20
Creatinine, (50 - 120 μmol/l)	4.90 (4.80; 5.40)	5.0 (5.20; 5.50)	0.24
Glucose, (3.3 - 5.5 mmol/l)	75.40 (72.30; 77.65)	76.20 (72.30; 77.70)	0.78
Total protein, (75 - 85 g/l)	43.40 (42.85; 44.75)	44.70 (43.10; 46.30)	0.17
Albumin, (38 - 42 g/l)	3.97 (3.62; 4.32)	4.10 (3.66; 4.92)	0.48
Cholesterol, (3.6-6.5 mmol/l)	0.89 (0.74; 1.12)	0.63 (0.53; 0.84)	0.01
HDL cholesterol, (0.78-2.2 mmol/l)	2.59 (2.24; 3.12)	2.99 (2.53; 3.66)	0.28
LDL-C, (1.68-4.53 mmol/l)	0.34 (0.25; 0.47)	0.42 (0.23; 0.73)	0.57
Ka, (< 3)	3.0 (2.6; 3.35)	3.10 (2.70; 3.90)	0.458

muscle hypertrophy, in obesity or during pregnancy, ALT activity predominates in this pair. And, vice versa, during intense muscle loads, fasting, fever, during aging or against the background of cachexia, the activity of another transaminase, AST, dominates [4]. With chronic physical activity of moderate and submaximal power, a gradual increase in the activity of enzymes in the blood is observed: CC, LDH, AST, ALT, lactic acid content. Correlation analysis showed that the CPK/AST index has a strong positive relationship with the level of LDH (0.657; p=0.000), and a weak one with ALT (0.432; p=0.022). The de Ritis coefficient had a strong direct correlation with LDH (0.585; p=0.001) and CPK (0.502; p=0.006). Hyperenzymemia can be considered as a "functionally optimal" (adaptive) reaction in response to changes in the living conditions of the organism [1]. Depending on the direction of training loads, the release of the enzyme into the blood from the cell can be due to various reasons, the main of which are mechanical damage to the muscles induced by physical activity and metabolic stress caused by the formation of free radicals during training. A significant increase in enzyme activity against the background of rest after exercise acts as a marker of overtraining [3].

Conclusion. The results of the study indicate that students - mas-wrestlers are characterized by high values of CPK and ALP. An increase in CPK and muscle damage index (CPK / AST) more than 10 c.u. e. in student mas-wrestlers, it can be explained by mechanical damage to muscle fibers when exposed to large volumes of training load. High levels of alkaline phosphatase may be associated with an increase in the power of metabolic processes or a deficiency of certain vitamins in the diet of athletes. Control of the biochemical parameters of the blood of athletes is an important marker for identifying the current functional state of the body.

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CLINICAL CASE

DOI 10.25789/YMJ.2023.81.30

УДК 616.314.21

T.V. Alekseeva, I.D. Ushnitsky, I.S. Pinelis, A.V. Yurkevich, M.I. Solovyova

CLINICAL CASES OF UPPER JAW CONSTRICTION IN CHILDREN AND ADOLESCENTS DUE TO SEVERITY OF CONNECTIVE TISSUE DYSPLASIA

The problems of improving complex medical and social rehabilitation of children and adolescents with connective tissue dysplasia due to its degree of severity (DCT) have not been completely solved up to the present time. At the same time, insufficient information on the diagnosis of dentition anatomical changes depending on DCT severity has been identified in the research. Thus, we present clinical cases of upper dentition cconstriction in children and adolescents with connective tissue dysplasia at various degrees of severity, taking into account the arch height of the hard palate. The **purpose of the research** is to present clinical cases with pronounced upper dentition constriction in children and adolescents with different severity of connective tissue dysplasia based on the clinical and biometric studies. **Discussion**. We've obtained high values of the sum of the four upper incisors width, characterized as macrodentia in the examined children and adolescents with DCT, which has a direct impact on the deformation of the maxillary dentition. Thus, constriction of maxillary dental arches in mild DCT is 19,32+1,47%, moderate - 22,39+0,72 and severe - 28,52+1,70%, which have significant differences (p<0,05), and the average is at the level of 23,41+0,54%. A certain pattern of increased frequency of upper dentition constriction depending on DCT severity has been established. **Conclusion**. The research clinical results characterize local DCT manifestations of the maxillary dental row in the form of incisor macrodentia as well as its constrictions where the tendency of increasing the incidence

ALEKSEEVA Tatyana Vasilievna – head of children's dental department Yakutsk Specialized Dental Center, tanina2708@gmail.com, **USHNITSKY Innokenty Dmitrievich** – MD, Professor, head of department of children's therapeutic, surgical, orthopedic dentistry, M.K. Ammosov North-Eastern Federal University, incadim@mail.ru; **PINELIS Iosif Semenovich** – Professor, Academician of the Russian Academy of Natural Sciences, Chita State Medical Academy, pinelis1@mail.ru; **YURKEVICH Alexander Vladimirovich** – MD, Professor, head of Orthopedic Dentistry, Far Eastern State Medical University of the Ministry of Health of Russia, dokdent@mail.ru; **SOLOVYOVA Marianna I.** – PhD (Biology), Associate Professor of the Institute of Natural Sciences, North-Eastern Federal University, email: cmi79@mail