In the analysis of individual clinical forms, a significant decrease in the frequency of the major allele (Arg/753) and an increase in the prevalence of the mutant allele (Gln/753) are established, both with sero-resistant and with latent forms of syphilis. The risk of disease development in residents of Gln/753 with early latent syphilis was 8.1 (CI: 2.23–29.4), with late latent – 7.46 (CI: 1.92–23.0), with sero-resistant it increased dozens of times – 65.8 (CI: 19.1–227.1).

Patients of all groups showed a decrease in the frequency of occurrence of the homozygous genotype by the dominant allele (Arg/Arg). Whilst, only in the group with serous-resistant syphilis a significant increase in the prevalence of the homozygous variant of the genotype by a rare allele (Gln/Gln) was determined.

The relative risk of disease development in residents of the homozygous genotype of the polymorphism TLR2 – 753Arg/Arg (rs5743708) was extremely low. In carriers of the heterozygous genotype Arg/Gln with early latent syphilis was 2.97 (CI: 0.26–34.1), with late latent syphilis – 2.13 (95 % CI: 0.13–35.6), with sero-resistant – 6.81 (95 % CI: 0.76–60.8). The highest probability of a syphilitic process development was in homozygotes by a mutant allele Gln/Gln. With early latent syphilis, the odds ratio was 10.2 (95 % CI: 1.16–88.5), with late latent – OR=9.8 (95 % CI: 1.03–93.2), with sero-resistant – OR=17.9 (95 % CI: 1.21–146.3).

Conclusions. Thus, it can be assumed that the carriage of the minor allele Gln/753, as well as the heterozygous (Arg/Gln) and homozygous (Gln/Gln) by a rare allele of genotypes, have predictive properties for the development of syphilitic infection. The highest degree of association of the genotypes 753 Arg/Gln and 753 Gln/Gln is determined with the development of sero-resistant syphilis.

References

1. Petruccioli E., Scriba J. T., Petrone L., Hatherill M., Cirillo D. M. [et al.] Correlates of tuberculosis risk: predictive biomarkers for progression to active tuberculosis. *European Respiratory Journal*. 2016;48:1751-1763. doi: 10.1183/13993003.01012-2016
2. Medvedev A. E. Receptor Polymorphisms, Inflammatory and Infectious Diseases, Allergies, and Cancer *J. Interferon Cytokine Res.* 2013;33(9):467-484. doi: 10.1089/jir.2012.0140
3. Biyikli O. O., Baysak A., Ece G., Oz A. T., Ozhan M. H. [et al.] Role of Toll-Like Receptors in Tuberculosis Infection. *Jundishapur J. Microbiol.* 2016;9(10):e20224. Published: Oct 2016. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5136443/. doi: 10.5812/jjm.20224
4. Ahmad-Nejad P., Denz C., Zimmer W., Wacker J., Bugert P. [et al.] The presence of functionally relevant toll-like receptor polymorphisms does not significantly correlate with development or outcome of sepsis. *Genet. Test Mol. Biomarkers.* 2011;15:645-651. doi: 10.1089/gtmb.2010.0258
5. Bustamante J., Tamayo E., Flórez S., Telleria J. J., Bustamante E. [et al.] Toll-like receptor 2 R753Q polymorphisms are associated with an increased risk of infective endocarditis. *Rev. Esp. Cardiol.* 2011;64(11):1056-1059. doi: 10.1016/j.rec.2011.02.027

About authors:

Barycheva Lyudmila Yurievna, DMSc, Professor, Head of the Department of Immunology; tel.: +79187405484; e-mail: for_ludmila@inbox.ru

Minasyan Milana Mikhailovna, MD, Assistant of the Department of Immunology; tel.: +79280072808; e-mail: m.milana84@mail.ru

Chebotarev Vyacheslav Vladimirovich, DMSc, Professor, Head of the Department of Dermatovenereology and Cosmetology with APE Course; tel.: +78652475355; e-mail: sgmakvd@mail.ru

Odinets Alexey Vasilievich, CMSc, Associate Professor of the Department of Dermatovenereology and Cosmetology with APE Course; tel.: +79624498959; e-mail: odinets1@yandex.ru

UDC 616.518.52:616-01-08
DOI – https://doi.org/10.14300/mnnc.2017.12093
ISSN – 2073-8137

THE PLACE OF EVALUATION VASCULAR RIGIDITY IN PROCESS OF STUDENT'S HEALTH SCREENING

Evsevyeva M. E. [1], Fursova E. N. [1], Eremin M. V. [2], Koshel V. I. [1], Baturin V. A. [1], Shchetinin E. V. [1]

[1] Stavropol State Medical University, Russian Federation
[2] Stavropol regional clinical hospital, Russian Federation

МЕСТО ОЦЕНКИ СОСУДИСТОЙ РИГИДНОСТИ В ПРОЦЕССЕ СКРИНИНГА СТУДЕНЧЕСКОГО ЗДОРОВЬЯ

М. Е. Евсевьева [1], Е. Н. Фурсова [1], М. В. Ерёмин [2], В. И. Кошель [1], В. А. Батурин [1], Е. В. Щетинин [1]

[1] Ставропольский государственный медицинский университет, Российская Федерация
[2] Ставропольская краевая клиническая больница, Российская Федерация

Cardio-ankle vascular index (CAVI) has a high prognostic significance for development of cardiovascular events. However, its values in the young population are quite vague still. In 149 students (55 boys, 94 girls) from 17 to 22 years old were assessed the vascular wall by indicators of CAVI using the device Vasera VS-1500 (Fukuda Denshi, Japan). Percentile analysis showed that the 95th percentile for boys at R-CAVI and L-CAVI was 7.1 and 7.2, and for

the girls on these indicators is 6.8 and 7.0, respectively. The results of comprehensive analysis of values of CAVI index showed that half of boys and half girls are placed in interval from 5.0 to 5.9 units. Bearers of the specified indicator at the level above 7.0 among boys and girls identified of 10.5 % and 3.1 %, respectively. Among 55 boys individuals with high level of CAVI-R were 6 (10.9 %) people and CAVI-L – 7 (12.7 %). These young men had differed vascular age at 40–44 years. Among them met the person with the presence of traditional RF (smoking, family history) and not traditional RF (CTD). Thus our data is expedient to take into account during medical examination of students, which in recent years grow at the bases of various universities of the Russian Federation, including StSMU.

Keywords: vascular stiffness, young age

Кардио-лодыжечный васкулярный индекс отличается высокой прогностической значимостью в отношении развития сердечно-сосудистых событий. Однако его значения у молодого контингента достаточно не определены до сих пор. У 149 студентов (юношей – 55, девушек – 94) в возрасте от 17 до 22 лет оценивали состояние сосудистой стенки по показателям Cardio-AnkleVascularIndex (CAVI) с помощью аппарата Vasera VS-1500 (Fukuda Denshi, Япония). Анализ показал, что 95-я персентиль для юношей по R-CAVI и L-CAVI составила 7,1 и 7,2 , а для девушек – 6,8 и 7,0 соответственно. Половина юношей и девушек укладывались по уровню индекса CAVI в интервал от 5,0 до 5,9 ед. Носителей же указанного показателя на уровне 7,0 среди студентов и студенток было выявлено 10,5 и 3,1 % соответственно. Среди 55 юношей высокий уровень CAVI-R оказался у 6 (10,9 %) человек и CAVI-L – у 7 (12,7 %). Эти юноши отличались сосудистым возрастом на уровне 40–44 лет. Среди них встречались лица с наличием как традиционных факторов (курение, отягощённая наследственность), так и не вполне традиционных факторов риска (ФР) по типу ДСТ или вообще без всяких ФР. Таким образом, представленные данные целесообразно учитывать при проведении студенческой диспансеризации.

Ключевые слова: сосудистая ригидность, молодой возраст

The system of regular preventive examinations of students in the health centers and/or student ambulatoryclinics [2, 5] looks quite promising in the framework of possible approach to solving the problem of reduction the high cardiovascular (CV) mortality of the population in Russian Federation. For implement such preventive technology,it is necessary to develop reasonable screening, aimed not only at assessing the profile of important risk factors (RF), but also at the identification of asymptomatic changes of the target organs in youngers. Pathogenetic continuum of basic CV diseases (CVD) at this age corresponds to a very early preclinical changes of target organs, including the loss of vascular wall elastic properties in the framework of the so-called syndrome of EVA, which reflects the development of early vascular aging [6]. In a young age there is real chance of effective inhibition of the CVD development and actual prevention of adverse outcomes. Such prophylaxis appears to be most effective, although delayed for the future. But the diagnostic stage of the youth prevention as the initial element of the clinical examination developed not enoughobviously.

Objective: to evaluate the identification of cases of increased vascular aging among young adults in connection with various RF.

Material and Methods. There are 149 students (55 boys, 94 girls),aged from 17 to 24 years was at the Student's Health Center of StSMU in the framework of the prevention project «The University of Healthy Life-Style». It was assessed the condition of the vascular wall using the device Vasera VS-1500 («Fukuda Denshi», Japan), which allows to estimate stiffness by such indicator as Cardio-Ankle Vascular Index (CAVI) left (L) and right (R). The uniqueness of this indicator is its independence from the level of current blood pressure (BP), acting on the wall at the time of registration of the pulse wave. The method is based on phonocardiography (PCG), definition II heart tone and plethysmography, registered pulse wave through the cuff s on the shoulder and popliteal arteries on both sides. This device contains to the subsequent transforming function, thatallows to assess a fundamentally new stiffness parameter. Dueto comprehensive questionnaire survey and antropometria it was also assessed profile of the main cardiovascular risk factors, as well as the external signs of connective tissue dysplasia (CTD) [1, 3]. Groups were formed by gender. Determined gender features of results of the step-by-step analysis in terms of distribution of boys and girls in levels of the index CAVI and characteristics of percentile analysis, taking into account gender. It was conducted individual profile analysis of the RF in students with values of CAVI, equal or exceeding the 95th percentile. The data were processed using the statistical software package «STATISTICA 10» (StatSoft, USA).

Results and Discussion. Percentile analysis showed that the 95th percentile for boys at R-CAVI and L-CAVI was 7.1 and 7.2, but for the girls this indicators was 6.8 and 7.0, respectively. It is noteworthy that for all levels of percentile analysis of the index R-CAVI forboys and girls were lower compared to the levels of L-CAVI. Specifically, significant difference of the discussed parameter between the left and right extremities was observed in girls. But the differences did not reach the reliable level.

The results of astep-by-step analysis of values of CAVI index showed that half of boys and half of girls are placed on the level of this index in the frequency interval from 5.0 to 5.9 units. Still almost a quarter of the surveyed persons of both sexes corresponds to the interval from 6.0 to 6.9. Carriers of this indicator at the level of 7.0 among boys and girls identified 10.5 % and 3.1 % respectively, and among young men is 3.3 times more compared to girls.

Special attention should be paid to the results of the individual evaluation profile FR in individuals, whose performance CAVI exceeded 95 %. Of the 55 youths persons with CAVI level equal to it or greater than it in the CAVI-R was six (10.9 %) people and in CAVI-L was seven people (12.7 %). These young men vascular age at 40–44 years was differed. It is interesting to note that among them there were the persons with the presence of traditional and not quite traditional risk factorstype of CTD or even without any FR. Among carriers of premature aging it was revealed a 21-years old young man with index CAVI-R 7.7 and CAVI- L 7.9. He had such significant FR as smoking and started to smoke at the age of 11–12 years old (1–1.5 packs of cigarettes a day). But despite this the boy still stopped smoking after described vascular screening because of the strong motivational impact of the survey process (dynamic control after six months). Another case concerns a 24-years oldyoung man with the presence of CAVI-R 7.6 and CAVI-L7.8, which had a relatively favorable profile of traditional RF, but he is characterized by presence

of numeroussigns of CTD [1, 3] in the form of the corresponding phenotype (the number of external stigmas more than 10), the propensity to keloid scars, four pneumothoraxes in his history (removed the upper lobe of the right lung) and mitral valve prolapse. Among the other five people in two casesit was identified heredity, burdened by the early development of CV diseases. The other three young people had no any RF, besides increased vascular rigidity, reflecting the presence of the syndrome EVA.

Presented data confirm the idea about the feasibility of angiological screening among the active population, starting at a young age. The results indicate the presence of accelerated vascular aging every tenth-ninth representative students. Experts attribute the emergence of the EVA syndrome with modern lifestyle associated with the widespread use of fast food, smoking, physical inactivity, high stress level of loads, deteriorating environmental conditions, etc [6]. Therefore, it is advisable to intensify the implementation of the system of diagnostic screening for the timely detection of early vascular aging by the type of EVA syndrome among young adults. The same approach is shared by Chinese researchers who performed a 26-year prospective study of vascular stiffness parameters in terms of the shoulder-ankle index at 4623 school pupils aged 6–15 years living in one of the industrialized areas of China [4]. The authors also emphasize the greater propensity of the vascular wall to the accelerated aging in boys compared to girls.

Conclusions. Our results show that in addition to the traditional RF the constitutional hereditary characteristics of the organism may contribute to increasing of the stiffness properties of the vascular wall. This requires a differentiated approach to the interpretation of results of instrumental angiological screening in connection with the entire data set of the objective status of each subject. Only such individual approach to the interpretation of screening data will then allow to create personalized program of preventive measures directed to effective correction of the manifestations of the EVA syndrome among young people.

References

1. Druk I. V., Nechaeva G. I., Oseeva O. V., Pomorgajlo E. G., Maksimov V. N. [et al.] Personalized assessment of risk of development of unfavourable cardiovascular manifestations in young patients with connective tissue dysplasia. *Cardiology*. 2015;55(3):75-84. doi: 10.18565/cardio.2015.3.75-84
2. Evsevyeva M. E., Eremin V. A., Eremin M. V., Galykova I. Yu., Chudnovskiy E. V., Rusidi A. V. The student's health center: the main activities at the present stage. *Preventive Medicine*. 2013;16(1):8-12.
3. Eremin M. V., Evsevyeva M. E., Koshel V. I. Heredity connective tissue diseases and student's medical examination: aspects of screening diagnosis. *Medical News of North Caucasus.* 2016;11(2):351-353. doi: 10.14300/mnnc.2016.11075
4. Chu C., Dai Y., Mu J., Yang R., Wang M. [et al.] Associations of risk factors in childhood with arterial stiffness 26 years later: the Hanzhong adolescent hypertension cohort. *J. Hypert*. 2017; 35, Suppl.1:10-15. doi: 10.1097/HJH.0000000000001242
5. di Chiara A., Vanuzzo D. Does surveillance impact on cardiovascular prevention? *Eur. Heart. J.* 2009;30(9):1027–1029. doi: 10.1093/eurheartj/ehp025
6. The ESC Textbook of Preventive Cardiology. Ed. by Gielen S., De Backer G., Piepoli M., Wood D., Jennings C., Graham I. Oxford University Press, 2016.

About authors:

Evsevyeva Maria Evgenyevna, MD, PhD, Professor, Honored Doctor of RF, Head of the Department of Faculty Therapy, Head of the Student's Health Center; tel: +79283154687; e-mail: evsevieva@mail.ru

Fursova Elena Nikolaevna, MD, Physician of the Student's Health Center; e-mail: elenka85.08@inbox.ru

Eremin Mikhail Vladimirovich, MD, PhD, Physician; e-mail: eremin2007@mail.ru

Koshel Vladimir Ivanovich, MD, PhD, Professor, Head of the Department of Otorhinolaryngology with the course of PDE; e-mail: lorfpdo@stgmu.ru

Baturin Vladimir Aleksandrovich, MD, PhD, Professor, Head of the Department of Clinical Pharmacology with course of PDE; e-mail: innova@stgmu.ru

Shchetinin Evgeny Vyacheslavovich, MD, PhD, Professor, Vice-Rector for Scientific and Innovative work, Head of the Department of Pathological Physiology; e-mail: firstpro@stgmu.ru

UDC 61:796.071:613.72
DOI – https://doi.org/10.14300/mnnc.2017.12082
ISSN – 2073-8137

ATHLETE FOLLOWED BY HEALTHCARE PROFESSIONALS

Vershinin E. G., Delaru V. V., Muravieva N. A.

Volgograd State Medical University, Russian Federation

ПРОБЛЕМАТИКА МЕДИЦИНСКОГО СОПРОВОЖДЕНИЯ СПОРТСМЕНОВ

Е. Г. Вершинин, В. В. Деларю, Н. А. Муравьева

Волгоградский государственный медицинский университет, Российская Федерация

Questionnaire of 120 sports medicine physicians is to ascertain sports medicine doctors' views on athlete healthcare issues. Insufficient medical coverage provided for athletes (25.0 % of respondents underlined its insufficiency, 43.4 % respondents pointed out some lacks in it); ex-athlete regular medical check-up problems (49.2 % of respon-