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THE EFFECT OF EXAM STRESS ON AGE DYNAMICS OF VEGETATIVE INDICATORS OF CHOLERIC STUDENTS

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ВЛИЯНИЕ ЭКЗАМЕНАЦИОННОГО СТРЕССА НА ВОЗРАСТНУЮ ДИНАМИКУ ВЕГЕТАТИВНЫХ ПОКАЗАТЕЛЕЙ СТУДЕНТОВ-ХОЛЕРИКОВ

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Abstract. The aim was to find out the effect of the higher nervous activity on the post-exam autonomic nervous system indicators during the emotional stress of the exam process in students with a choleric temperament type of the age limit of 17 (1st year). Physiological indicators of different states of excitement and temperament type were first studied in the experiment. In order to comprehensively assess the effect of emotional stress on students of different ages and courses, we measured arterial pressure and the number of heart beats per minute, which are the main hemodynamic indicators. The research was conducted 2 months before the exam, 30 minutes before the exam and 30 minutes after the exam. Before starting the research, the temperament types of the young people were studied after the nervous examination. The situational anxiety of young people with different temperament types was determined by post-test scores in three different situations: on regular days, before the exam and after the exam. The results of the conducted research show that there are differences in the activity of the autonomic nervous system in students of different ages. The analysis of the results of the hemodynamic changes that we obtained from the effect of exam stress on groups also shows that the autonomic index of the credo is in a state of dominance of the sympathetic tone on an ordinary day and before the exam. The characteristics of the autonomic nervous system after the exam have a direct effect on the adaptation of a person. An increase in the level of the agitation process caused by one or another influence of ASF temperament types indicates the exacerbation of the credo's vegetative index in all groups. An increase in the level of excitement correlates with an increase in the activity indicators of the sympathetic branch of the autonomic nervous system.

Аннотация. Целью работы было выяснить влияние высшей нервной деятельности на послеэкзаменационные показатели вегетативной нервной системы при эмоциональном

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напряжении экзаменационного процесса у студентов с холерическим типом темперамента возрастного ограничения 17 лет (1 курс). В эксперименте впервые были изучены физиологические показатели различных состояний возбуждения и типа темперамента. С целью комплексной оценки влияния эмоционального напряжения на студентов разных возрастов и курсов мы измеряли артериальное давление и количество ударов сердца в минуту, которые являются основными гемодинамическими показателями. Исследование проводилось за 2 месяца до экзамена, за 30 минут до экзамена и через 30 минут после экзамена. Перед началом исследования после нервного обследования были изучены типы темперамента молодых людей. Ситуативную тревожность молодых людей с разными типами темперамента определяли по посттестовым баллам в трех разных ситуациях: в обычные дни, перед экзаменом и после экзамена. Результаты проведенного исследования показывают, что существуют различия в деятельности вегетативной нервной системы у студентов разного возраста. Анализ результатов гемодинамических изменений, полученных нами от воздействия экзаменационного стресса на группы, также показывает, что вегетативный индекс кредо находится в состоянии доминирования симпатического тонуса в обычный день и перед экзаменом. Состояние вегетативной нервной системы после экзамена оказывают прямое влияние на адаптацию человека. Повышение уровня процесса возбуждения, вызванное тем или иным влиянием типов темперамента АЧС, свидетельствует об обострении вегетативного индекса кредо во всех группах. Повышение уровня возбуждения коррелирует с увеличением показателей активности симпатического отдела вегетативной нервной системы.

Keywords: choleric, emotional stress, temperament, autonomic nervous system after exam.

Ключевые слова: холерик, эмоциональное напряжение, темперамент, вегетативная нервная система после экзамена.

The problem of excitement in psychology is complemented by a number of social and socio-psychological factors, increasing interest in it. In modern society, intensive social, political and technological changes are taking place, which intensify personality disorders, increase the demands placed on a person, and increase the feeling of uncertainty and excitement in a person [9. etc. 3]. Thus, the symptom of anxiety is the most widespread mental phenomenon. The range of manifestations from the range of excitement varies from adaptive excitement to neurotic excitement, to pronounced mental states of endogenous origin, accompanied by anxiety disorders. This shows that these symptoms occur both in everyday life in most ordinary people and in patients of general therapeutic and psychiatric diseases [8].

The feeling of excitement among high school students currently remains the main factor affecting the quality of life of young people, as well as the qualitative mental and emotional development of young people's personality [3].

Among adolescents with high arousal, the ratio between the processes responsible for affect and inhibition is observed to be disturbed. The imbalance in a person's sense of harmony has an emotional nature, which can now be corrected by transmitting information and exerting pressure from society and social groups [1].

The aim of the study was to determine the changes in vegetative indicators due to the influence of the examination process in 17-year-old choleric students, depending on the typological characteristics of the nervous system.

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Materials and methods

The students participating in the research were practically healthy, they joined the research on a voluntary basis. Experiments on those students were carried out taking into account the proposal of the Bioethics Committee of the European Convention (Strasbourg, March 18, 1986).

In order to study arterial blood pressure during all tests, on a normal day, before and after the exam, systolic arterial pressure, diastolic arterial pressure and the number of heartbeats in 1 minute were recorded by the N.S. Korotkov method using a manometer pressure device (Turkey) Microlife BP 3BTO-2 from the automatic brachial area. Vegetative tone was determined based on the results of these obtained indicators. That is, vegetative tone was calculated based on Kerdon's vegetative index

Research results and their dimtahandan sonracussion

On an ordinary day, in 17-year-old choleric students, blood pressure is 111.0±4.8 mmHg, diastolic arterial pressure is 76.0±3.5 mmHg, the number of heart beats in 1 minute is 91.2± 91.2 after the exam. 4.7 was the emphasis. the vegetative index of credo, calculated based on the indicators obtained on a regular day, was 17. At this time, before the exam, sell 7.2% or 8 mm.c.milk. rising to 119.0±2.2 ($p<0.05$) mm.c. column, diastolic arterial pressure 7.2% or 5.5 mm.c. rising to 81.5±1.6 ($p<0.05$) mm.c.milk. has arrived accordingly. In that group of students, the number of heart beats in 1 minute increased by 5.7% or 5.2 units to 96.4±6.1 ($p<0.05$) (Figure).

Credo's vegetative index, calculated based on the hemodynamic indicators obtained before the exam, was =16. The analysis of the results of hemodynamic indicators obtained from the effect of exam stress by groups shows that systolic arterial pressure after the exam decreased by 2.1% ($p<0.05$), diastolic arterial pressure by 1.4% after the exam compared to the usual school day. Meanwhile, the number of heart palpitations decreased by 8.7% ($p<0.05$) after the exam. Vegetative index of credo, calculated based on hemodynamic indicators, shows the superiority of the usual day and before the exam.

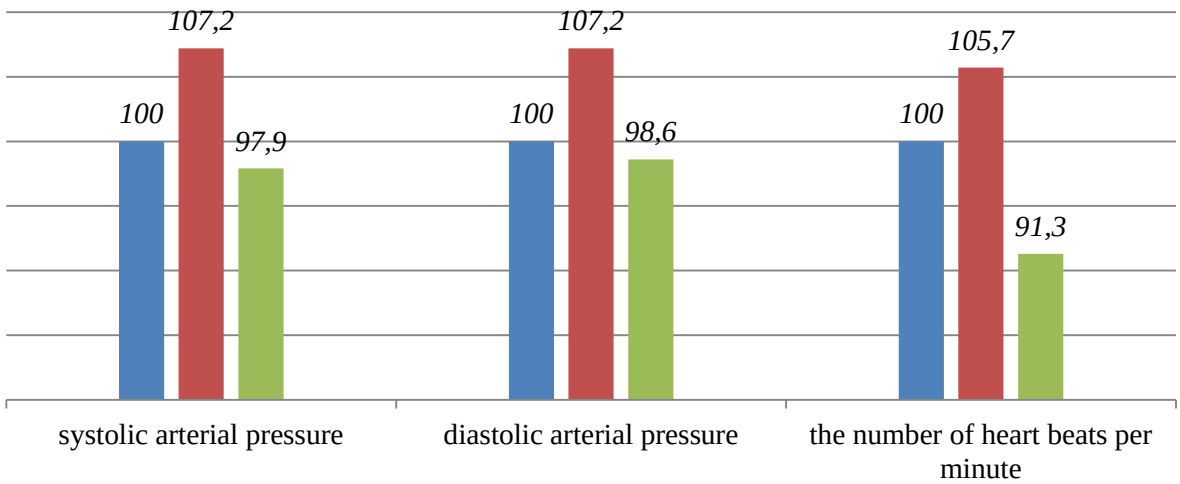

Figure. Comparison of the dynamics of heart rate and blood pressure in 17-year-old choleric students due to emotional stress during the exam after the exam (%)

After the exam, the systolic arterial pressure significantly decreased from before the exam to after the exam and was 108.7±4.2 ($p<0.05$) mm.c.milk. is, meanwhile, the diastolic arterial pressure further decreased (8.1%), i.e. it decreased to the normal daily level, i.e. 74.9±1.8 mm.c. The number of heartbeats in 1 minute decreased to the pre-exam level compared to the post-exam level (13.6%) and came close to the normal daily level, corresponding to 83.3±2.5 ($p>0.05$) heartbeats. According

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to the noted hemodynamic indicators, Credo's vegetative index was =10, which indicates that the systolic pressure is still in a state of dominance, as in other groups. It should be noted that we compared the results obtained from the study by groups. due to the effect of exam stress, it changes in two phases. so the systolic arterial pressure increased after the exam compared to the usual day. This indicator is 7.2% less than before the exam.

Although the diastolic arterial pressure indicator tends to return to the normal daily level after the examination, certain differences are still not detected. However, its indicator is much lower (8.1%) than the level before the exam. Credo's vegetative index, calculated based on hemodynamic indicators, shows that it is superior in all three cases. Credo's vegetative index proves this superiority of sympathetic tone. There is an honest change in the number of heart beats per minute. The changes in situational and personal arousal level after this examination indicate that the tone of the somatic nervous system has an advantage over the autonomic nervous system indicators.

In those students, there are certain differences between temperaments and age periods in the number of heartbeats before and after the exam, and the number of atolic and diastolic arterial pressure after the exam, that is, there are sharp increases and decreases between these indicators. The dynamics of changes in hemodynamic parameters during the examination characterizes the tense state of the regulation mechanisms of the blood-vascular system after the examination [4-6].

In the CNS, there may be an acceleration of the retardation processes, the development of the body's pre-defense reactions and the full activation of the adaptive processes. According to the vegetative indicators and the Kerdo index, the advantage of SSS was observed in students, which is the result of how important the exam is for young people, the responsible approach to the exam and the activity of adaptation processes [2].

It is known that the increase in the activity of the sympathetic branch of the thymus after cardiovascular surgery activates the adaptive response of the hypothalamus-pituitary-adrenal gland after surgery. The results of the research show that there are differences in the activity of the autonomic nervous system in students of different ages. The analysis of the results of the hemodynamic changes we obtained from the effect of exam stress on groups also shows that the autonomic index of credo is in the state of dominance of the sympathetic tone during the normal day and before the exam [7].

Conclusion

1. Although Credo's autonomic index shows the predominance of the sympathetic tone of the autonomic nervous system on a normal day and after the exam, this indicator is in the predominance of the parasympathetic tone before the exam.

2. After the exam, students' autonomic indicators tend to return to their usual level due to the removal of the stress factor, the main reason for which is the decrease in autonomic nervous system tone associated with fatigue.

3. The vegetative index of students' credo after the exam proves that this advantage is sympathicotonia. it shows the superiority of SSS throughout the post-exam period.

References:

1. Barsukova, E. V. (2016). Vliyanie trevozhnosti na formirovanie lichnosti v sovremennom mire. *Aktual'nye problemy gumanitarnykh i estestvennykh nauk*, (11-3), 17-22. (in Russian).

2. Dmitrieva, N. V. (2004). Elektrofiziologicheskie mekhanizmy razvitiya adaptatsionnykh protsessov. *Fiziologiya cheloveka*, *30*(3), 35-44. (in Russian).

3. Maryakhina, N. N. (2011). Osnovnye trudnosti pervokursnikov i motivy ikh uchebnoi deyatel'nosti. *Vestnik Moskovskogo universiteta. Seriya 20. Pedagogicheskoe obrazovanie,* (3), 107-113. (in Russian).

4. Muzhichenko, M. V. (2016). Vzaimosvyaz' sostoyaniya serdechno-sosudistoi sistemy podrostkov s urovnem trevozhnosti. In *Nauka, obrazovanie i innovatsii: Materialy Mezhdunarodnoi nauchno-prakticheskoi konferentsii. Saratov,* 14-16. (in Russian).

5. Nadezhkina, E. Yu., Novikova, E. I., Muzhichenko, M. V., & Filimonova, O. S. (2017). Vliyanie ekzamenatsionnogo stressa na funktsional'noe sostoyanie serdechno-sosudistoi sistemy i uroven' trevozhnosti u studentov s razlichnymi tipami vysshei nervnoi deyatel'nosti. *Vestnik Volgogradskogo gosudarstvennogo meditsinskogo universiteta,* (2 (62)), 115-118. (in Russian). https://doi.org/10.19163/1994-9480-2017-2(62)-115-118

6. Novikova, I. A., Shlyakhta, D. A., & Baranova, S. V. (2013). Sootnoshenie individual'no-tipicheskikh osobennostei nastoichivosti i svoistv temperamenta studentov. *Vestnik Rossiiskogo universiteta druzhby narodov. Seriya: Psikhologiya i pedagogika,* (3), 22-30. (in Russian).

7. Rustamova, T. V. (2021). Vliyanie ekzamenatsionnogo stressa na vegetativnye pokazateli u 17-21-letnikh studentov s melankholicheskim tipom vysshei nervnoi deyatel'nosti. *Obrazovatel'nyi vestnik "Soznanie", 23*(6), 18-29. (in Russian). https://doi.org/10.26787/nydha-2686-6846-2021-23-6-18-29

8. Pogosova, N. V., Koltunov, I. E., & Yufereva, Yu. M. (2010). Trevozhnye rasstroistva v kardiologicheskoi praktike: sostoyanie problemy. *Rossiiskii kardiologicheskii zhurnal*, (5), 98-102. (in Russian).

9. Strizhius, E. I. (2013). Dinamika trevozhnosti v starshem shkol'nom vozraste: Avtoref. … dis. kand. psikhol. nauk. Moscow. (in Russian).

Список литературы:

1. Барсукова Е. В. Влияние тревожности на формирование личности в современном мире // Актуальные проблемы гуманитарных и естественных наук. 2016. №11-3. С. 111-116.

2. Дмитриева Н. В. Психофизиологические механизмы развития адаптационных процессов в условиях эмоционального стресса // Физиология человека. 2004. Т. 30. №3. С. 35-44.

3. Маряхина Н. Н. Основные трудности первокурсников и мотивы их учебной деятельности // Вестник Московского университета. Серия 20. Педагогическое образование, 2011. №3. С. 107-113.

4. Мужиченко М. В. Взаимосвязь состояния сердечно-сосудистой системы подростков с уровнем тревожности // Наука, образование и инновации: Материалы Международной научно-практической конференции. Саратов, 2016. С. 14-16.

5. Надежкина Е. Ю. и др. Влияние экзаменационного стресса на функциональное состояние сердечно-сосудистой системы и уровень тревожности у студентов с различными типами высшей нервной деятельности // Вестник Волгоградского государственного медицинского университета. 2017. №2 (62). С. 115-118. https://doi.org/10.19163/1994-9480-2017-2(62)-115-118

6. Новикова И. А., Шляхта Д. А., Баранова С. В. Соотношение индивидуально-типических особенностей настойчивости и свойств темперамента студентов // Вестник Российского университета дружбы народов. Серия: Психология и педагогика. 2013. №3. С. 22-30.

7. Рустамова Т. В. Влияние экзаменационного стресса на вегетативные показатели у 17-21-летних студентов с меланхолическим типом высшей нервной деятельности //

Образовательный вестник «Сознание». 2021. Т. 23. №6. С. 18-29. https://doi.org/10.26787/nydha-2686-6846-2021-23-6-18-29

8. Погосова Н. В., Колтунов И. Е., Юферева Ю. М. Тревожные расстройства в кардиологической практике: состояние проблемы // Российский кардиологический журнал. 2010. №5. С. 98-102.

9. Стрижиус Е. И. Динамика тревожности в старшем школьном возрасте: Автореф. … дис. канд. психол. наук. М., 2013. 33 с.

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