соматично здорових дітей дорівнює 4,66±0,03 ммоль/л, що на 0,28 ммоль/л відповідно нижче. Також в них спостерігалося зниження мінералізуючого потенціалу ротової рідини, що вказує на схильність зубів, які прорізалися, до демінералізації емалі і підвищення показників поширеності карієсу. Розподіл дітей за рівнем мінералізуючого потенціалу свідчить про те, що серед дітей з дисбактеріозом кишечника високий його показник мають лише 6,6% дітей, що більше ніж в 2 рази гірше в порівнянні з контрольною групою. Для своєчасного виявлення та запобігання дисбактеріозу у дітей і, як наслідок, стоматологічної патології – карієсу зубів, необхідна співпраця стоматолога і педіатра.

Ключові слова: дисбактеріоз, ротова рідина, діти.

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равен 4,66±0,03 ммоль/л, что на 0,28 ммоль/л соответственно ниже. Также у них наблюдалось снижение минерализующего потенциала ротовой жидкости, что указывает на склонность зубов, которые прорезались, к деминерализации эмали и повышению показателей распространенности кариеса. Распределение детей по уровню минерализующего потенциала свидетельствует о том, что среди детей с дисбактериозом кишечника высокий его показатель имеют только 6,6% детей, что более чем в 2 раза хуже по сравнению с контрольной группой. Для своевременного выявления и предотвращения дисбактериоза у детей и, как следствие, стоматологической патологии - кариеса зубов, необходимо сотрудничество стоматолога и педиатра.

Ключевые слова: дисбактериоз, ротовая жидкость, дети.

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PREVENTION OF AUTONOMIC DISADAPTATION IN SERVICE MEMBERS

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The autonomic nervous system (ANS) is the main regulator of maintaining homeostasis and organism adaptation to changes in the environment. Most often, autonomic dysfunction occurs under the conditions of chronic psychoemotional stress. To prevent emotion dysregulation and stress-related disorders in service members, the state of the autonomic nervous system was assessed by examining 145 military servicemen, considering the initial autonomic tone, autonomic reactivity and autonomic support of the individual. In most subjects there was tension and dysfunction of the ANS, which allowed us to recommend a more thorough study of its three main components in order to identify autonomic disorders and the allocation of these persons to the risk group for psychosomatic pathology.

Key words: autonomic nervous system, service member, tone, stress-associated disorders.

The work is a fragment of the research project "Development of a system of diagnostic, psychocorrectional, treatment, rehabilitation and preventive measures for patients with non-psychotic mental disorders and their family members", state registration No. 0118U001281.

The autonomic nervous system (ANS) is the main regulator of maintaining homeostasis and organism adaptation to changes in the environment. Dysfunction leads to the development of autonomic dysregulation, which is a risk factor for many psychosomatic diseases, such as somatoform autonomic dysfunction, anxiety or panic neurosis, various paroxysmal conditions or stress-associated disorders, irritable bowel or stomach syndrome and others. Most often, autonomic dysfunction occurs under conditions of chronic psychoemotional stress or under certain conditions that lead to the development of physical or sexual impotence, emotional and psychological disorders [4, 6, 8, 12, 14].

In recent years, there has been a significant increase in the development of stress-related disorders in the service members (SM), who are within the anti-terrorist operation (ATO) conditions [1, 9, 10]. In this regard, the SM with signs of autonomic dysfunction most often have difficulties in adapting to the conditions of military service, which is manifested in the violation of military discipline, reduced professional efficiency, harmony of interpersonal relations and social status. In terms of military service, this leads to negative consequences: suicide attempts, conflicts within the military personnel, the unauthorized leaving of a military unit. This fact requires more attention to the state of SM health, which should be put forward to the autonomic state of persons participating in the ATO [5, 6, 7, 9]. Unfortunately, autonomic dysfunction in military conflict is regarded not as pathology but as a clinical normology, which, in our opinion, is not right given that the already low level of functioning should be regarded as preclinical disadaptation conditions.

The purpose of the study was to assess the state of the autonomic nervous system to prevent disadaptation and stress-related disorders in the service members.

Materials and methods. For this purpose, 145 servicemen aged 18 to 37 were examined. All service members underwent a clinical and neurological examination, assessing the autonomic status [2, 3,

13]. History of the present illness was studied in detail. Functional assessment of the ANS state was carried out taking into account its three main components: the initial autonomic tone, autonomic reactivity and autonomic support of the individual's activity.

ANS homeostasis was determined by clinical and electrophysiological parameters that characterize the initial autonomic tone (IAT), autonomic reactivity (AR) and autonomic support (AS) of organs and systems [3, 13]. Cardiointervalography (CIG) was used to determine IAT in addition to special research methods [3, 13]. To assess the ANS reactivity – cardiovascular tests (Prevel's orthostatic reflex and Dagnini-Aschner reflex) [3, 13]. Autonomic support of activity (ASA) was determined using a physical and mental work load test [2, 13, 15]. All ANS studies were performed in the morning, at the same time. Statistical processing was performed using parametric and nonparametric research methods, using Student's reliability with a significance level of $p<0.05$.

Results of the study and their discussion. During the clinical and neurological examination of the SM the following complaints were identified: vertigo (27.9%), syncope (21 %), intolerance to heat (28.9 %) and cold (33.7 %), liability to allergies (29.8%), increased sweating (36.3%), frequent abnormal bowel pattern (27.9 %), nausea (22.1 %), constipation (26.5 %), increased oiliness of the skin (38.7 %), cold hands (42.6 %), warm and wet hands (44.8%). Periodic decrease in working capacity was found in 40%, decrease in attention or inattention – in 38.6%, dyssomnic disorders – in 27% of individuals. Feelings of anxiety, worry, or fear were found in 34% of individuals.

In 74% of individuals were identified manifestations of autonomic dysfunction, which were manifested by distal acrohypothermy, distal and diffuse hyperhidrosis or their combination, tachycardia, hyperthermia, hyperaesthesia or paresthesia in the extremities and others. Signs of autonomic dysfunction at the segmental level were found in 96 people (66%). The number of signs of autonomic dysfunction per serviceman averaged 3.4±1.9. The analysis of the difference in blood pressure in both arms revealed an initial asymmetry, which was unreliable ($p> 0.05$). Given the stress index in subjects aged 18–26 years, eutonia was observed in 58.6±4.1% of cases, vagotonia – in 20.7±3.4%, and sympatheticotonia – in 20.7±3.4%. In 27% there was a significant increase in systolic blood pressure ($p <0.05$). At that time, diastolic blood pressure did not increase ($p <0.05$). As it can be seen in fig. 1 the most common was the initial eutonia (48.3±4.15%; $p <0.001$), in 26.3±3.65% – the initial vagotonia, in 25.4±3.55% there was the initial sympatheticotonia.

In the SM after direct participation in the combat conditions, the vagotonic orientation of the initial autonomic tone was 2 times more common ($p\leq0.02$), especially it was increased in individuals from 25 to 36 years (35%) (fig. 2).

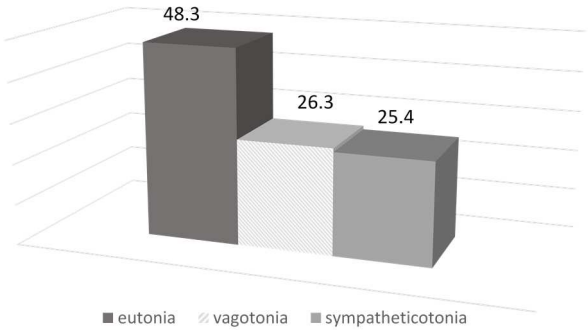

Fig. 1. Comparative diagram of indices (% – the number of subjects) of autonomic tone in the SM

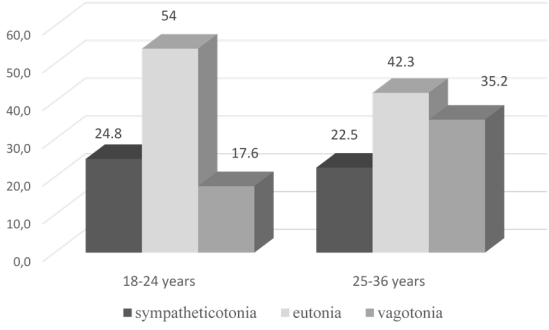

Fig. 2. Comparative diagrams of indices (% – number of subjects) of autonomic tone depending on participation in combat action

Kerdo autonomic index decreased by 19% ($p <0.05$). In the studied persons aged 18–24 years it was 34.1% ($p <0.001$) higher than in persons aged 25–36 years – by 27% ($p <0.05$). Heart rate, respiration rate and Hildebrandt coefficient did not change depending on age ($p> 0.05$). In subjects with sympatheticotonia, along with SI increase above 90 RU, there was a significant increase in A-mode, ARI, AEI and a decrease in ΔX, Mo ($p <0.001$), compared with the same indices in subjects with initial euthonia. In subjects with vagotonia there were inverse relationships, in the form of a decrease in SI (under 30 RU), A-mode, ARI, AEI and an increase in ΔX, Mo ($p <0.001$).

During the study of ECG parameters, it was determined that sinus tachycardia was detected in 62±4.3% of subjects, sinus bradycardia – in 30.3±4.2%, sinus arrhythmia – in 7.7±5.5%, respectively. Cardiac conduction disease in the form of incomplete first-degree AV block was observed in 12.4±2.7%, and incomplete blockade of the right branch of His bundle – in 23.6±4.3%. These manifestations were correlated with clinical manifestations, where the SM showed a tendency to sudden skin redness, increased blood pressure and diffuse hyperhidrosis.

After physical activity and a change in the SM's body position, the heart rate recovery was assessed as satisfactory in 28%, good – in 68%, unsatisfactory – in 4%. Instead, in subjects with vagotonia, there was an increase in the R-R and P-Q intervals, decreased P-wave and increased T-wave, QRST complex expanded for more than 0.38 sec.

The study of autonomic reactivity using the Prevel's orthostatic reflex showed that 58.6±4.1% of individuals had normal AR, 22.8±3.5% had excessive AR and 18.6±3.2% had insufficient AR. (fig. 3).

During the analysis of the orthostatic reflex test absolute values, a significant increase in heart rate (15.5 per minute, p <0.001), increased systolic (10.1 mm Hg, p <0.001) and diastolic (9.9 mm Hg, p <0.001) arterial pressure were determined. After psycho-emotional stress and orthostatic reflex test systolic (by 24.0%, p <0.05) and diastolic (by 19.0%, p <0.05) blood pressure becomes higher in the examined individuals. During the Dagnini-Aschner reflex test, 51.0±4.15 % of individuals had normal AR, 20.7±3.36% had excessive AR, 19.3±3.65 % had insufficient AR, and 9.0±2.38 % had misdirected AR (fig. 3). In total, the parasympathetic Dagnini-Aschner reflex test caused a decrease in heart rate by 7-9 beats per minute in persons aged 18–26 years – p <0.001. The study found no significant differences in changes in heart rate depending on age.

During the study of autonomic support of activity by means of a mental capacity test, in 56.6±4.1% of individuals the normal type was registered, in 17.2±3.1% – an excessive type and in 26.2 ± 3.6% – insufficient type of ASA (fig. 4).

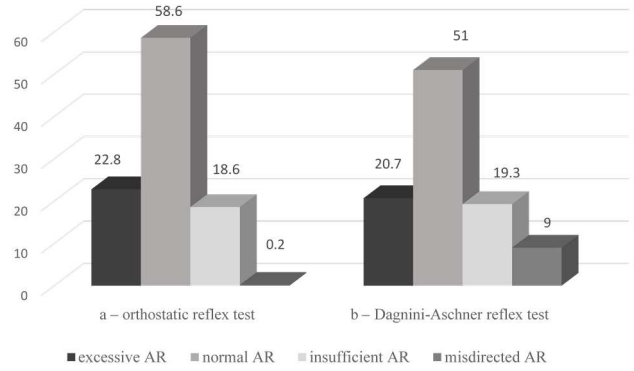

Fig. 3. Comparative diagrams of indices (% – number of examined subjects) autonomic reactivity in individuals aged 18–26 years and 27–36 years.

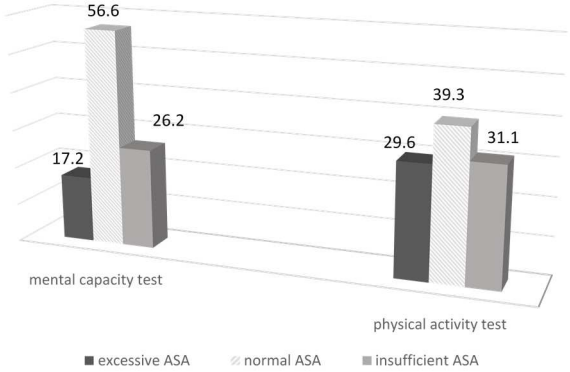

Fig. 4. Comparative diagrams of indices (% – number of examined subjects) autonomic support of activity in individuals aged 18–26 years.

In general, the subjects had a significant increase in heart rate by 15.7 minutes (p <0.001). Age analysis did not reveal a significant difference in the mental capacity test.

During the physical activity test, the normal variant of ASA was observed in 39.3±4.0 % individuals, the excessive variant – in 29.6±3.8 %, and the insufficient variant – in 31.1±3.8 % (fig. 4). As can be seen, during physical activity there is no predominance of one or another variant of ASA (p> 0,05). In general, during this test in persons aged 18-26 years there was a significant increase in heart rate (18.4 per minute, p <0.001), an increase in systolic (9.4 mm Hg, p <0.001) and diastolic (6.1 mm Hg, p <0.001) arterial pressure compared to the initial tone.

It was found that the level of diastolic blood pressure increase in individuals aged 18–26 years was slightly higher (p <0.001), but in individuals aged 27–34 years the diastolic blood pressure increase in the test was significantly higher (p <0.001) than in individuals aged 18–26 years. Other indices during the physical activity test did not depend on age.

Analysis of AR and ASA depending on the initial autonomic tone showed that in persons with initial eutonia during orthostatic test in 81.4±4.6 % of cases there was a normal AR, in 12.9±4.0% of cases – excessive AR and in 5,7±2.8 % – insufficient AR. During the Dagnini-Aschner test, normal AR was observed in 74.3±5.2 % of individuals, excessive AR – in 5.7±2.8 %, insufficient AR – in 11.4±3.8 %, and misdirected AR – in 8.6±3.3 %.

In individuals with initial sympatheticotonia, insufficient AR (59.5±8.1 %, p <0.001) and normal AR (40.5±8.1 %, p <0.001) were most often observed during the orthostatic test. At the same time, there was no excessive AR. The parasympathetic Dagnini-Aschner test in most cases revealed excessive AR (59.5±8.1 %; p <0.005-0.001). In addition, in 24.3±7.0% of cases there was normal AR, in 13.5±5.6% – insufficient AR and in 2.7±2.6% – misdirected AR. In persons with initial vagotonia in the transition to orthostatic position, excessive AR was most often predominant (63.2±7.8%; p <0.01-0.001). In 34.2±7.7 % of cases, there was normal AR and in isolated cases – insufficient AR. The Dagnini-Aschner test was normal in 34.2±7.7 % of individuals, insufficient – in 39.5±7.9%, misdirected – in 15.8±5.9%, and excessive – in 10.5±4.9%.

The study of ASA during a mental capacity test, considering the initial autonomic tone showed that in persons aged 18–26 years with eutonia at rest in 71.4±5.4% of cases there was a normal type of ASA, in 17.1±4.5% of cases – an insufficient type and in 11.5±3.8 % – an excessive one. In persons with initial euthonia during physical activity test, normal ASA was observed in 57.1±5.9% of cases, excessive – in 17.1±4.5% and insufficient – in 25.8±5.2%. At initial sympatheticotonia (mental capacity test), normal ASA was found in 43.2±10.8% of individuals, excessive – in 13.6±5.6% and insufficient – in 43.2±10.8 %. During the physical activity test, normal ASA was registered in 21.6±6.7% of individuals, excessive – in 24.3±7.1% and insufficient – in 54.1±8.2 %. In subjects with initial vagotonia, normal ASA during the mental capacity test was found in 42.1±8.0%, excessive – in 31.6±7.6 % and insufficient – in 26.3±7.1 %. In the physical activity test, it was 23.7±6.9 %; 57.9±8.0% and 18.4±6.3% respectively.

Thus, the obtained data showed that along with the normal type of autonomic tone, half of the service members had vagotonia or sympatheticotonia, which indicated a decrease in the reserve capacity of autonomic regulation and a tendency to disadaptation. These data coincide with the data of other researchers [4, 12]. Especially after the combat condition, vagotonic orientation was 2 times more often in the SM aged 25-36 years (35%), which manifested in various symptoms of autonomic dystonia syndrome with vagotonic predominance. These data are consistent with data from other researchers [4, 8, 9, 10, 11].

The obtained results suggest that the manifestations of the autonomic nervous system dysregulation, which were identified in 74% of service members, can lead to the development of disadaptation, which in turn additionally trigger a cascade of psycho-somatic disorders, which coincides with the data of other scientific studies [4]. This fact suggests that psychoneurological non-training can lead to the formation of stress-associated disorders, so it is necessary to take a more careful approach to determining the autonomic regulation indices, which directly affects the formation of psychoneurological stability to avoid difficulties in their adaptation. All this gives grounds to agree with the conclusions of other authors [9, 10, 12, 13, 15] on the need for a thorough study of the ANS functioning to develop preventive measures for disadaptation occurrence in SM, especially in combat conditions.

Conclusions

1. The study of the ANS functioning revealed that the presence of hypersympatheticotonia mostly indicates intense adaptation, reduced reserve capacity of autonomic regulation, the presence of asympathicotonia or vagotonia indicates unsatisfactory adaptation, which in stressful conditions is usually manifested by syncopal states, vertigo, poor tolerance of physical and psychoemotional stress.

2. Imbalance of the autonomic nervous system increases the risk of disadaptation, especially in combat conditions, which in turn can further trigger a cascade of stress-related disorders. In this regard, for prevention, it is necessary to include in the SM examination by neurophysiological research methods to identify and clarify the nature of possible adaptive and recovery disorders.

3. When recruiting service members, the definition of automatic regulation should be approached in more detailed definition, which will avoid difficulties in adapting not only in the service, but also in combat conditions.

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Реферати

ЗАПОБІГАННЯ ВЕГЕТАТИВНОЇ ДЕЗАДАПТАЦІЇ ВІЙСЬКОВИХ

Кириченко А.Г., Корнацкий В.М, Сердюк В.Н., Абрамов С.В., Огоренко В.В.

Вегетативна нервова система (ВНС) є головним регулятором підтримки гомеостазу та пристосування організму до змін зовнішнього середовища. Найбільш часто вегетативна дисфункція виникає в умовах хронічного психо-емоційного стресу. Для запобігання виникнення дизрегуляції та стрес-асоційованих розладів у військових було проведено оцінку стану вегетативної нервової системи шляхом обстеження 145 військових з урахуванням вихідного вегетативного тонусу, вегетативної реактивності та вегетативного забезпечення діяльності особи. У більшості досліджуваних осіб відзначалися напруженість і дисфункція ВНС, що дозволяє рекомендувати більш ретельне дослідження трьох її основних складових з метою виявлення вегетативних порушень і виділенню цих осіб в групу ризику по виникненню психосоматичної патології.

Ключові слова: вегетативна нервова система, військовослужбовець, тонус, стрес-асоційовані розлади.
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ПРОФИЛАКТИКА ВЕГЕТАТИВНОЙ ДЕЗАДАПТАЦИИ ВОЕННЫХ

Кириченко А.Г., Корнацкий В. М, Сердюк В.Н., Абрамов С. В., Огоренко В. В.

Вегетативная нервная система (ВНС) является главным регулятором поддержания гомеостаза и приспособления организма к изменениям внешней среды. Наиболее часто вегетативная дисфункции возникает в условиях хронического психо-эмоционального стресса. Для предотвращения возникновения дизрегуляции и стресс-ассоциированных расстройств у военных была проведена оценка состояния вегетативной нервной системы путем обследования 145 военных с учетом исходного вегетативного тонуса, вегетативной реактивности и вегетативного обеспечения деятельности человека. В большинстве исследуемых лиц отмечались напряженность и дисфункции ВНС, что позволяет рекомендовать более тщательное исследование трех ее основных составляющих с целью выявления вегетативных нарушений и выделению этих лиц в группу риска по возникновению психосоматической патологии.

Ключевые слова: вегетативная нервная система, военнослужащий, тонус, стресс-ассоциированные расстройства.
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POSSIBILITY OF USING DERMATOGLYPHIC PARAMETERS OF THE MEDIUM AND PROXIMAL FINGER FALANGES OF THE HANDS WITHIN THE REQUIREMENTS OF DVI-INTERPOL

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The study material was the dermatological parameters of the middle and proximal phalanges of the fingers that were obtained from 460 representatives of different ethno-territorial groups of the Carpathian region with the use of Futronic's FS80 USB 2.0 optical scanner, that were subjected to quantitative and qualitative study and processing by one- and multidimensional statistical analysis. The morphological structure peculiarities of the dermatoglyphic parameters of the middle and proximal finger □h□l□ng□s h□v□ b□□n stud□□d; □t □s sugg□st□d t□ us□ "□□m□l□m□nt□r□ classification of skin patterns of middle and proximal phalanges of fingers" (Author's certificate of scientific work No. 74560); □t □s sugg□st□d t□□l□ss f□th□d□rm□t□gl□□hs □f th□m□ddl□ and proximal phalanges of the fingers by the complexity of the morphological structure. Based on the performed research, a separate self-sufficient system of dermatoglyphic identification features was developed, which is able to increase and confirm the reliability of the complex identification examination results according to DVI Interpol criteria.

Key words: forensic medicine, identification of the person, dermatological parameters.

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In international practice, the set of all integrative professional properties related to the identification of persons and the organization of forensic medical examinations, is conditioned and controlled by the international organization ICPO-Interpol, which combined not only intellectual human resources, but also a set of earned identification algorithms adapted to multifaceted catastrophes [1]. It is not superfluous to say that to the methodological approach Disaster Victim Identification (DVI), developed by Interpol, the