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DIAGNOSTIC AND PREVENTION OF DIABETES COMPLICATIONS IN MILITARY SERVICEMEN OF THE ARMED FORCES OF UKRAINE DURING THE FULL-SCALE WAR OF THE RUSSIAN FEDERATION AGAINST UKRAINE IN 2022–2025, A MODERN VIEW OF THE PROBLEM

ДІАГНОСТИКА І ПРОФІЛАКТИКА УСКЛАДНЕНЬ ЦУКРОВОГО ДІАБЕТУ У ВІЙСЬКОВОСЛУЖБОВЦІВ ЗСУ ПІД ЧАС ПОВНОМАСШТАБНОЇ ВІЙНИ РФ ПРОТИ УКРАЇНИ 2022–2025 РОКІВ, СУЧАСНИЙ ПОГЛЯД НА ПРОБЛЕМУ

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Introduction. Diabetes mellitus (DM) is one of the most prevalent chronic diseases, ranking among the leading causes of mortality and disability worldwide [1, p. 56]. This issue is also highly relevant for military medicine [2, p. 42].The specific conditions of military service may significantly increase the risk of developing DM-related complications

in servicemen, necessitating the development of specialized prevention and treatment programs for this patient population [2, p. 46; 3, p. 5385].

Aim. To identify risk factors and characteristics of the clinical course of diabetes mellitus complications among servicemen of the Armed Forces of Ukraine during the full-scale war of the Russian Federation against Ukraine (2022–2025), and to develop effective preventive strategies.

Materials and Methods. The study included 90 servicemen of the Armed Forces of Ukraine who received inpatient treatment for diabetes mellitus at the National Military Medical Clinical Center "Main Military Clinical Hospital" (Kyiv) between 2022 and 2025. The main group consisted of 60 patients – servicemen who participated in combat operations in Eastern Ukraine. The control group included 30 servicemen who did not participate in combat operations. All participants were examined according to a unified study protocol. The reliability of the differences was determined using the Student's test (t) and assessed using the confidence interval (p). Differences were considered significant at $p<0.05$.

Results. The prevalence of type 2 DM was 80.0% in the main group and 70.0% in the control group, whereas type 1 DM was diagnosed in 20.0% and 30.0% of patients, respectively. Patients in both groups developed complications, including nephropathy, retinopathy, angiopathy, and polyneuropathy.

Retinopathy was detected in 53.3% of patients in the main group compared to 26.7% in the control group ($p<0.05$). Nephropathy was diagnosed in 40.0% of patients in the main group versus 20.0% in the control group ($p<0.05$). In the main group, the glomerular filtration rate was significantly lower (75.0±15.0 mL/min) compared to the control group (90.0±10.0 mL/min), indicating the onset of stage I chronic kidney disease.

Polyneuropathy was identified in 75.0% of patients in the main group compared to 40.0% in the control group ($p<0.05$), reflecting a substantial impact of diabetes on the peripheral nervous system, particularly in individuals with long-standing disease.

Among angiopathies, arterial hypertension (50.0%) and coronary artery disease (41.7%) were significantly more frequent in the main group compared to the control group (33.3% and 23.3%, respectively). Myocardial infarction was documented in 16.7% of patients in the main group versus 6.7% in the control group ($p<0.05$), indicating a higher risk of acute coronary events in patients with type 1 and type 2 DM who participated in combat operations.

Heart failure was diagnosed in 33.3% of patients in the main group compared to 16.7% in the control group ($p<0.05$). Mixed-origin encephalopathy occurred twice as often in combatants (30.0%) as in the control group (16.7%) ($p<0.05$).

A more severe disease course in the main group was confirmed by laboratory findings at hospital admission. Fasting blood glucose levels were (11.83 ± 5.87) mmol/L in the main group and (9.26 ± 3.49) mmol/L in the control group ($p<0.05$), indicating poorer glycemic control, possibly due to stress and treatment non-adherence. Glycated hemoglobin (HbA1c) was significantly higher in the main group (8.90 ± 1.64%) compared to the control group (8.24 ± 1.72%), confirming chronic hyperglycemia. Total cholesterol levels were (6.50 ± 1.20) mmol/L in the main group and (5.61 ± 1.68) mmol/L in the control group ($p<0.05$). Increases the risk of cardiovascular complications such as atherosclerosis and coronary artery disease due to cholesterol elevated. Triglyceride levels were also higher in the main group (1.67 ± 1.07) mmol/L compared to the control group (1.29 ± 0.65) mmol/L ($p<0.05$), underscoring the increased risk of myocardial structural changes and acute cardiac events in combat-exposed patients. In the main group significantly more severe carbohydrate and lipid metabolism disorders diagnosted compared to the control group ($p<0.05$).

Prevention of complications in servicemen with DM is a key component of their management. Regular health monitoring, adherence to treatment and dietary recommendations, and patient education in self-monitoring can minimize the risk of both acute and chronic complications. Organizational measures, such as the establishment of specialized medical units and the development of emergency response protocols, are essential for maintaining the health and operational capacity of servicemen with DM.

Conclusions. The results indicate that patients in the main group had a significantly higher risk of developing diabetic complications compared to the control group. This is associated with inadequate glycemic control, longer disease duration, comorbidities, and potentially insufficient treatment effectiveness. Our findings highlight the need to strengthen preventive measures, ensure early diagnosis, and implement individualized treatment approaches for patients with DM to reduce the risk of complications.

To improve patient outcomes, especially among those exposed to chronic stress, it is necessary to provide psychological support, ensure access to healthy nutrition, and educate patients on diabetes-specific dietary principles. The development of individualized treatment regimens tailored to specific living conditions is also essential. These measures will improve glycemic control, reduce the risk of complications, and enhance patients' quality of life.

Bibliography:

1. Колесник Т. Л., Федорова О. П. Вплив стресу на розвиток ускладнень цукрового діабету у військовослужбовців. *Психосоматична медицина.* 2022. Т. 33. № 6. С. 56–63.

2. Танасійчук О. О., Попенко Н. В. Фактори ризику розвитку цукрового діабету в учасників АТО/ООС, особливості клінічного перебігу, діагностики та залежність від них тривалості лікування. *Український журнал військової медицини.* Т. 3. № 1. С. 41–50. DOI: 10.46847/ujmm.2022.1(3)-041.

3. Sushko O, Klumets G, Iskra R. Carbohydrate metabolism and the state of the pro-antioxidant system in the pancreas of rats with experimentally induced diabetes and the release of vanadium citrate. *Int J Pharm Sci Res.* 2018. Vol. 9.(12). P. 5382–5387. doi: 10.13040/IJPSR.0975-8232.9(12).5382-87.