

ASSESSMENT OF THE CARDIOVASCULAR SYSTEM AS A RESULT OF INSTRUMENTAL EXAMINATION IN EMPLOYEES OF UZAVTOMOTORS COMPANY.

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Mamajonova Z.K

Andijan state medical institute.

Annotation

In today's modern world, vehicles play an important role in our lives, and their safe and efficient operation is of paramount importance for the economy and social development of countries. In particular, the activities of long-distance drivers are directly related not only to road safety, but also to the driver's health and working capacity. Therefore, specialists in this field are paying special attention to assessing the health status of drivers in a systematic and accurate manner.

Keywords

driver, UzAvto Motors, electrocardiography, Echocardiography, blood pressure, DBP, SBP, BP.

Research methods: Instrumental tests are a scientific tool that plays an important role in assessing not only the physical condition of the driver, but also his neuro-verbal abilities, reaction speed, attention and stress tolerance. The results of such tests conducted on long-distance drivers working at UzAvto Motors, a large automobile manufacturer in Uzbekistan, are of great importance not only for improving their work efficiency, but also for reducing traffic accidents. This article analyzes the results of instrumental tests conducted on long-distance drivers using the example of UzAvto Motors. At the same time, the main indicators for assessing their health and their impact on the work process are studied, and recommendations that can be applied in practice are developed. Such studies not only help to maintain the health of drivers, but also contribute to increasing safety in the transport sector.

Discussion: The study was conducted among long-distance drivers working at UzAvto Motors. As part of the study, modern instrumental diagnostic methods were used to assess the functional state of drivers. These methods made it possible to identify factors affecting the health of drivers at an early stage, prevent diseases and develop preventive measures.

Several staged methods were used during the examination. First, the electrical activity of the heart was assessed by electrocardiography (ECG). The results of the

ECG were an important source for identifying conditions such as heart rhythm, ischemic changes, and myocardial hypertrophy in drivers. A number of drivers were observed to have sinus tachycardia and arrhythmia elements against the background of a stressful environment and constant fatigue.

In the second stage, arterial blood pressure was measured. This is one of the main vital signs, which is a widely used method for assessing the general physiological state of drivers. According to the results of the examination, a certain part of the drivers had higher blood pressure than normal, which indicates a predisposition to hypertensive disease.

Also, the state of blood flow through the blood vessels was studied using Doppler examination. This method made it possible to assess the level of blood supply to the brain, heart and organs. In some drivers, impaired blood circulation in the femoral arteries was detected, and they were urgently recommended preventive and therapeutic measures.

Echocardiography (EchoKG) was used to examine the anatomical structure and pumping function of the heart. This instrumental examination was important in determining the presence of myocardial hypertrophy, valve problems, and obstructions in the outflow tract of the heart in drivers. According to the results of EchoKG, in some cases, dilation of the heart chambers, mitral regurgitation and impaired diastolic function were noted.

During the study, each result was statistically aggregated and correlated with the driver's age, work experience, daily workload, and health status. This comprehensive approach allowed for a complete and accurate assessment of the drivers' health.

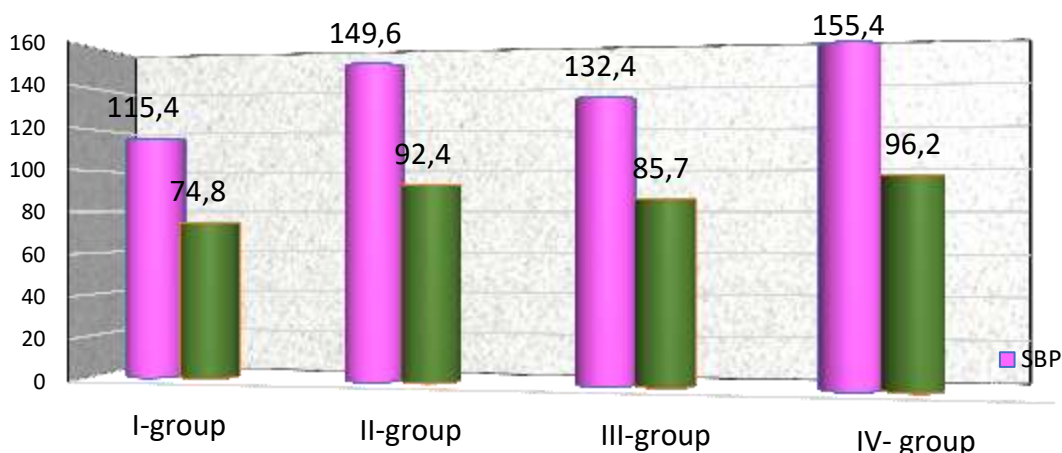
The main method for diagnosing hypertension is currently monitoring blood pressure at work and at leisure (Kobalava Zh.D., 2014; Shevchenko O.P., Ostroumova O.D. et al., 2016). Dynamic monitoring of drivers diagnosed with hypertension for 2 years revealed adequate treatment in 45% and irregular treatment in 65%, respectively. According to the results of the study, 46.4% of patients with hypertension received monotherapy. 25.6% of our patients received combination therapy. The remaining 28% of patients were not regularly taking antihypertensive drugs. Thus, the level of blood pressure at work is more closely related to target organ damage (in particular, CHD) than ambulatory blood pressure and even nocturnal blood pressure. Psychosocial stress has been shown to increase the incidence of CVD and mortality. In addition, cadmium in fuel oil and diesel fuel has a hypertensive effect in drivers. Long-term exposure of workers to carbon disulfide can lead to hypertension through pathogenetic mechanisms such as nephropathy or atherosclerosis. According to the data presented, 54.6% of cases

had stage 1 hypertension, 28.6% had stage 2 hypertension, and 7.8% had stage 3 hypertension. Our scientific research has proven that stage 1 hypertension is the most common in the patients studied. When we analyzed the prevalence of hypertension by age, stage 2 hypertension was found to be 45.4% in patients aged 50-70 years, while stage 1 hypertension was predominant in the group of patients under 50 years. It should be noted that in all groups the frequency of grade 3 hypertension was lower than grade 1-2 ($p < 0.05$). Optimal blood pressure was detected in 12.2% of cases, normal in 17.8% and high-normal blood pressure in 19.6%. The highest prevalence of optimal blood pressure was detected in the group of employees aged 20-29 years ($p < 0.05$).

Among employees who did not have long-distance travel, the prevalence of high-normal BP was 32.4%. The highest prevalence of high-normal blood pressure was observed in the age group of 30-39 years and was 28.5%, but the differences were not significant when compared with other age groups. Isolated systolic arterial hypertension was found in 7.2% of cases in the general population aged 60-69 years. In patients with long-term hypertension, the average BP values were: SBP 155.4 ± 6.8 mmHg, DBP 96.2 ± 3.6 mmHg. In group III, the average BP values were SBP 132.4 ± 5.3 mmHg, DBP 85.7 ± 2.8 mmHg, and in group II, SBP 149.7 ± 8.7 mmHg, DBP 92.4 ± 3.7 mmHg.

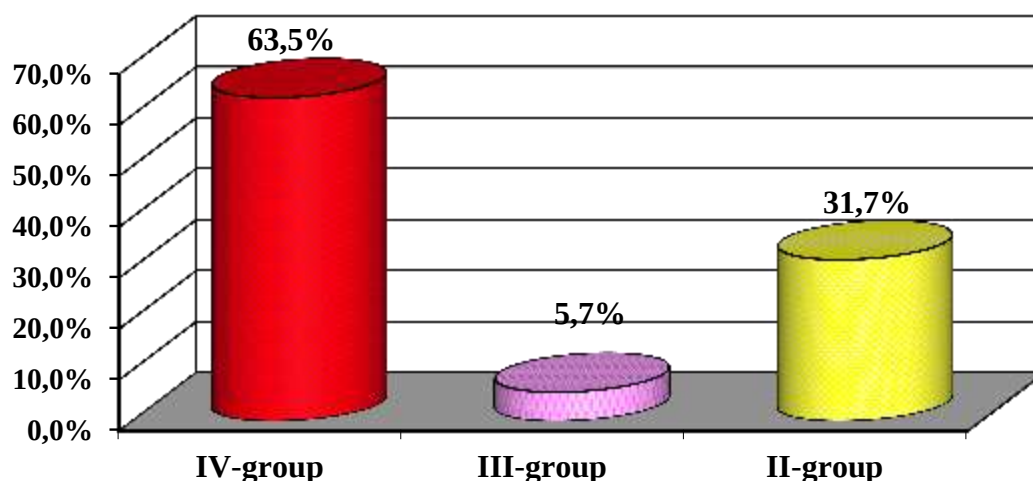
Thus, the average BP values were higher in patients with long-term hypertension than in other groups (Pic. 1).

Therefore, increased BP during work is associated with a higher risk of target organ damage, cardiovascular complications, and death. The nature of cardiac remodeling in the development of HF is determined not only by the level of BP, but also by many neurogenic and humoral mechanisms of cardiovascular regulation, since their synergism is observed in relation to the rate of myocardial remodeling. Studying the geometric changes in the structure of the heart in HF patients and the clinical pathophysiological basis of the identified factors will make a great contribution to the study of the development and progression of cardiac structural changes. According to the results obtained, all subjects underwent echocardiography. Signs of impaired geometric remodeling of the heart structure were as follows: in patients with advanced HF, changes in comparison with other groups were observed (Pic. 2).



Picture 1. Blood pressure indicators in the examined patients ($p < 0.05$).

Echocardiography: In group 1, no changes were detected in echocardiography in 30 subjects. In group 2, signs of CHD were detected in 36 subjects. In group 3, no changes were noted in 24 subjects, while in group 4, this indicator was detected in 84 (63.5%) subjects with CHD + diastolic dysfunction. In addition, 3 post-infarction cardiosclerosis and 50 CHD ($p < 0.001$) were detected in this group. The duration of the CHD, the degree of SBP and DBP are the necessary determinants of the development of geometric models of the structure of the heart in patients. In patients with CHD, the geometric structure of the heart is characterized by the earliest changes. LV remodeling varies with age, duration of the disease, level of SAB and DAB, as well as with the timing and sequence of LV formation. Studies of LV diastolic function have shown that in patients with HF, an increase in LV residual diastolic size, LV residual diastolic volume, LV residual systolic size and LV residual systolic volume was detected at the stage of clinical manifestation, which indicates LV hypertrophy and dilation. In patients in the early stages, the expression of analogous changes is much less pronounced and is expressed in the absence of signs of LV. However, LV diastolic dysfunction is observed already in the initial stage of HF, and cardiac remodeling in patients increases with the development of LV diastolic dysfunction (Pic. 2).



Picture

2. EKG+ECG parameters on echocardiography in groups with GC ($p < 0.05$).

Conclusion: Thus, according to the results of the study, when we analyzed the prevalence of hypertension by age, patients aged 50-70 years had a high prevalence of stage 2 hypertension (45.4%), while stage 1 hypertension prevailed in the group of patients under 50 years of age. Thus, with increasing age, the frequency of both stages of hypertension increased, and these data indicate a relationship between hypertension and BP levels.

LITERATURE:

1. Research Organizing Committee of the ESSE-RF. Project. Epidemiology of cardiovascular diseases in different regions of Russia. The rationale for and design of the study // Profilakticheskaya Medicina. Moscow. 2014. -Vol.16.-№6.-P.27-39.

2. Ray K.K., Motemans S., Schoonen W.M. EU – Wide Cross – Sectional Observational Study of Lipid – Modifying Therapy Use in Secondary and Primary Care: the DA VINCI Study // European Journal of Prevention Cardiology. Berlin. 2020.-P.47.

3. Ridker P.M., Thuren T., Zalewski A., Libby P. Interleukin-1 β inhibition and the prevention of recurrent cardiovascular events: rationale and design of the Canakinumab Anti-inflammatory Thrombosis Outcomes Study (CANTOS) // Am. Heart. J. New York. 2011.-Vol.162.-№4.-P.597-605

4. Stergiou G., Brunström M., MacDonald T., et al. Bedtime dosing of antihypertensive medications: systematic review and consensus statement: International Society of Hypertension position paper endorsed by World Hypertension League and European Society of Hypertension // J Hypertens. Berlin. 2022. -Vol.40. -№10.-P.1847-1858. doi:10.1097/HJH.

5. Satou R., Penrose H., Navar L.G. Inflammation as a regulator of the

renin-angiotensin system and blood pressure. Curr// Hypertens. Rep. New York. 2018.-№20(12)-P.100. DOI: 10.1007/s11906-018-0900-0.

6. Small H.Y., Migliarino S., Czesnikiewicz-Guzik M., Guzik T.J. Hypertension: Focus on autoimmunity and oxidative stress// Free Radic. Biol. Med. New York. 2018. -Vol.12 -№5. -P.104-115. DOI: 10.1016/j.freeradbiomed.2018.05.085.

7. Simone G., Mancusi C., Izzo R., et al. Obesity and hypertensive heart disease: focus on body composition. Diabetol Metab Syndr// 2016.-№8.-P.79. <https://doi.org/10.1186/s13098-016-0193-x>.

8. Simone G., Devereux RB., Izzo R., et al. Lack of reduction of left ventricular mass in treated hypertension: The strong heart study// J Am Heart. 2013.-№2(3). -P.144. <https://doi.org/10.1161/JAHA.113.000144>.

9. Savarese G., Stolfo D., Sinagra G., Lund LH. Heart failure with mid-range or mildly reduced ejection fraction. Nat Rev Cardiol. 2022.-№19.-P.100-116. <https://doi.org/10.1038/s41569-021-00605-5>.

10. Salles G.F., Reboldi G., Fagard R.H., et al. ABC-H Investigators. Prognostic effect of the nocturnal blood pressure fall in hypertensive patients: the ambulatory blood pressure collaboration in patients with hypertension (ABC-H) meta-analysis// Hypertension. New York. 2016.-Vol.67.-№4.-P. 693-700. doi:10.1161/Hypertensionaha.115.06981.

11. Tanase D.M., Gosav E.M., Radu S., Ouatu A., Ciocoiu M. et al. Arterial hypertension and interleukins: Potential therapeutic target or future diagnostic marker?// Int. J. Hypertens. New York. 2019. -Vol.3.-№1.-P.59-83.

12. Turgeon RD., Althouse AD., Cohen JB., et al. Lowering nighttime blood pressure with bedtime dosing of antihypertensive medications: controversies in hypertension – con side of the argument// Hypertension. New York. 2021. -Vol.78. -№3.-P.871-879. doi:10.1161/Hypertensionaha.

13. Tashtemirova I.M. Relationship Of Catecholamine Metabolism Disorders And Lipid Peroxidation Processes In Women With Metabolic Syndrome// European Journal Of Life Safety And Stability. Spain. -Vol.15. 2022.-P.294-298. <http://ejlss.indexedresearch.org/index.php/ejlss/article/view/542/588>