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THE IMPACT OF PERMANENT STRESS CAUSED BY THE WAR IN UKRAINE ON THE STATE OF PATIENTS WITH PORTAL HYPERTENSION DUE TO LIVER CIRRHOSIS

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Summary

The aim of the study was to evaluate the impact of permanent stress and features of medical care in martial law on the indicators of liver function and quality of life of patients with portal hypertension due to liver cirrhosis.

Materials and methods. The study included 37 patients with a confirmed diagnosis of liver cirrhosis complicated by portal hypertension and esophageal variceal bleeding. According to performed interventions all patients were divided into 3 groups: Group 1 – endoscopic band ligation and partial splenic artery embolization; Group 2 – endoscopic band ligation; Group 3 – endoscopic band ligation. The difference between Group 2 and Group 3 patients was that Group 2 patients were in a state of permanent stress due to the war. There were 4 visits with an interval of 1 month. At each time point, the levels of laboratory parameters of functional state of the liver and quality of life using RAND SF-36 questionnaire were evaluated.

Results. Patients in all three groups during the first month showed an improvement in both laboratory indicators of liver function and integrated quality of life. In patients of Group 1 there was a progressive improvement in both the functional status of the liver and quality of life. In Group 2 the lack of any manipulations and maintenance therapy led to a lack of positive dynamics in patients. Staying in a state of permanent stress led to a progressive deterioration in the condition of patients in Group 3 starting from the second visit. Initially, the deterioration affected only the quality of life, but later it also manifested itself as a violation of the indicators of the functional state of the liver.

Conclusions. The cumulative effect of permanent stress in patients with liver cirrhosis complicated by portal hypertension is manifested by an early deterioration in the quality of life with later violations of liver function.

Keywords: liver cirrhosis; portal hypertension; permanent stress; functional state of the liver; quality of life; war in Ukraine

INTRODUCTION

Liver cirrhosis occupies an important place in the structure of the digestive system diseases and continues to be an extremely important health problem in all countries of the world in both socio-economic and clinico-epidemiological aspects [1, 2].

Complications of liver cirrhosis are the most common cause of death in patients with gastrointestinal profile and

occur in at least 40 % of patients. The overall mortality due to liver cirrhosis varies from country to country. Thus, in Europe it ranges from 4.6 per 100,000 inhabitants in Norway, to 103.8 per 100,000 people in Moldova. According to the WHO, the high mortality rate from liver cirrhosis is considered to exceed 25 deaths per year per 100,000 inhabitants, and low – less than 10 cases [3].

The appearance of such a complication as portal hypertension is extremely important for the course of

the disease. In the initial stages of the disease, portal hypertension occurs as a compensatory mechanism, however, with the progression of liver cirrhosis, it acquires the role of a leading pathogenetic link and creates a significant impact on the clinical picture. With increasing portal pressure to 25-30 mm Hg collateral pathways of hemocirculation are widely involved in the process. On the one hand, this prevents a further increase in pressure in the portal system. However, the appearance of anastomoses shunting portal blood through the azygos vein and the left coronary vein of the stomach into the thin submucosal venous plexuses of its cardiac part and the lower third of the esophagus is quite dangerous as it leads to gastrointestinal bleeding.

Esophageal and gastric variceal bleeding occurs in 50-70 % of cases in patients with cirrhosis. Recurrences of bleeding occur in 70 % of patients within the first year after the incident. Mortality in each episode is up to 40 %. Extremely high risk of recurrence of bleeding, especially during the first week, reaching up to 50 %. The risk remains high for up to 3 months after primary bleeding, so such patients require dynamic dispensary monitoring and active tactics of the doctor and patient [4, 5, 6, 7, 8].

Minimally invasive methods to stop and prevent recurrence of esophageal variceal bleeding are quite effective and should come to the fore in the treatment of this group of patients [9, 10].

Unfortunately, in wartime, both doctors and patients face a number of problems that make it impossible to provide full medical care. In such situations, there is a reorientation of the system of health care facilities to provide only emergency medical care. On the one hand, this is due to the large number of wounded military and civilians, on the other – to the saving of resources, which are quite difficult to replenish in the context of disruption of logistics routes in the country. In addition, the loss of medical personnel and the destruction of some hospitals as a result of hostilities, together with forced migration within the country, place an even greater burden on surviving health facilities.

In the case of liver cirrhosis complicated by portal hypertension, in wartime patients receive medical care only in the case of an acute condition – bleeding. Preventive measures aimed at preventing the recurrence of bleeding are not carried out. Such preventive measures include, for example, partial splenic artery embolization, the purpose of which is to reduce the pressure in the portal system [9].

Another problem for the population's health is being in a state of permanent stress. It is known that stress creates a negative impact on all systems and organs of the body [11, 12]. The body's response to stress involves a large number of different factors, such as hormones, neuroendocrine mediators, peptides and neurotransmitters. There is a direct correlation between the duration of stress and the depth of violations of physiological processes in the body.

Thus, the lack of conditions and opportunities for preventive medical care together with patients in a state of permanent stress creates conditions for the development of negative trends in the course of the disease.

THE AIM

The aim of the study was to evaluate the impact of permanent stress and features of medical care in martial law on the indicators of liver function and quality of life of patients with portal hypertension due to liver cirrhosis.

MATERIALS AND METHODS

The cross-sectional single-center study included 37 patients aged 28 to 52 years (41.73 ± 7.28 years) with a confirmed diagnosis of liver cirrhosis complicated by portal hypertension and esophageal variceal bleeding.

The criteria for inclusion in the study were the following:

1. Confirmed diagnosis of liver cirrhosis complicated by portal hypertension.
2. Age from 18 to 60 years.
3. Esophageal variceal bleeding at the time of admission to the hospital.
4. Absence of other urgent conditions at the time of inclusion in the study, in addition to esophageal variceal bleeding.
5. Absence of concomitant chronic pathology at the time of inclusion in the study, which can significantly affect the results of the study.
6. Consent of a potential participant to participate in the study.
7. Adequate assessment of one's own condition and ability to fill in the quality of life questionnaire.

The criteria for non-inclusion in the study were the following:

1. The presence in patients other pathological conditions that affect the pressure in the portal system, except liver cirrhosis.
2. Patients younger than 18 or older than 60 years.
3. Presence of other urgent conditions at the time of inclusion in the study, in addition to esophageal variceal bleeding.
4. The presence at the time of inclusion in the study of concomitant chronic pathology, which can significantly affect the results of the study.
5. Refusal of a potential participant to participate in the study.
6. Lack of adequate assessment of one's condition and/or inability to complete the quality of life questionnaire.

The exclusion criteria were the following:

1. Refusal to continue participation in the study.
2. Non-compliance by the participants with the conditions of the research and the terms of the research stages.
3. Occurrence in the patient during the study of urgent conditions not related to the underlying disease.

4. Manifestation after inclusion in the study of previously undiagnosed comorbidity, which may significantly affect the results of the study.

The basic characteristics of the studied contingent are given in table 1.

Upon admission to the hospital (visit 1), all patients underwent endoscopic ligation of varicose veins. In addition, preventive endoscopic ligation of varicose veins,

potentially dangerous in terms of the possible development of bleeding, was performed. Further treatment in the hospital was carried out in accordance with current Standards and Protocols.

One month after the episode of esophageal variceal bleeding (visit 2), patients were offered partial splenic artery embolization to reduce the pressure in the portal system.

Table 1

Basic characteristics of the studied contingent

Number of participants	37
Age, years	41,73 ± 7,28
Sex, n (%)	
Women	8 (21,6 %)
Men	29 (78,4 %)
Etiology of liver cirrhosis, n (%)	
Hepatitis B	9 (24,3 %)
Hepatitis C	7 (18,9 %)
Alcoholic genesis	21 (56,8 %)
Class of disease by Child-Pugh-Turcotte classification, n (%) and the corresponding number of points	7,76 ± 1,26
Class A	7 (18,9 %), 6,0 ± 0,0
Class B	26 (70,3 %), 7,88 ± 0,77
Class C	4 (10,8 %), 10,0 ± 0,0

Subsequently, 2 more visits were conducted with an interval of 1 month.

Respectively, according to the volume of treatment received, patients were divided into two groups. Group 1 (n=15) included patients who underwent endoscopic ligation of bleeding varices and partial splenic artery embolization. Group 2 (n=15) included patients who underwent only endoscopic ligation of bleeding varices.

Patients in Groups 1 and 2 underwent all 4 pre-war visits in Ukraine.

However, the study also included patients (n=11) in whom the first visit took place before the war and the second on the date after February 24, 2022. Due to the peculiarities of the functioning of health care facilities in wartime, the implementation of these patients' partial splenic artery embolization in a planned manner was not possible, and therefore it was not possible to include them in Group 1. On the other hand, being in a state of permanent stress could affect the studied indicators, and therefore the inclusion of such patients in Group 2 was also excluded.

Thus, it was decided to form Group 3, which included patients in whom visits from the second to the fourth occurred after the war and to investigate in this contingent the effect of permanent stress on liver cirrhosis complicated by portal hypertension.

Since some patients migrated and were either in Ukraine as internally displaced persons or as refugees abroad, additional conditions for further participation

of such patients in the study were the ability to perform laboratory tests on time and to contact a doctor to complete the questionnaire, and assess the quality of life. According to these conditions, Group 3 included 7 patients.

At each time point, the levels of laboratory parameters characterizing the functional state of the liver (total bilirubin, direct bilirubin, alanine aminotransferase, aspartate aminotransferase, γ -glutamyltranspeptidase, alkaline phosphatase, albumin, urea, prothrombin time, international normalized ratio) were evaluated. In addition, the quality of life of patients was assessed using the 36-Item Short Form Survey (SF-36, RAND Corporation).

The obtained data were processed using the statistical software package SPSS 20.0 for Windows. Student's t-test with Bonferroni-Sidak correction and Analysis of Variance (ANOVA) were used to assess differences between parametric quantities. To assess differences between nonparametric quantities χ^2 test, χ^2 test with Yates's correction for continuity and Fisher's paired exact test were used. Wilcoxon T-test was used to compare the quality of life between groups. Mann-Whitney U-test was used to assess the dynamics of changes in quality of life within one group. Multivariate analysis of variance (MANOVA) was used to determine the effect permanent stress on pigment metabolism, the state of the liver enzyme system, protein metabolism and the state of the hemostasis system. A p-value of less than 0.05 was considered statistically significant.

RESULTS

No patients in Group 1 had a recurrence of bleeding throughout the study period. At the same time, in Group 2 there were 3 (20.0 %) cases, and in Group 3-2 (28.6 %) cases of recurrence. The statistical significance of the differences was not confirmed ($p>0.05$).

It should also be noted that in all groups there was a change in the class of the disease according to the classification of Child-Pugh-Turcotte. Thus, in Group 1, a change in the class of the disease occurred in 12 (80.0 %) patients, and in all with a decrease in class. Class change from

C to A was observed in 1 (6.7 %), from C to B – in 1 (6.7 %), and from B to A – in 10 (66.7 %). In Group 2, a decrease in the class of the disease occurred in 7 (46.7 %) patients: from C to B – in 1 (6.7 %), from B to A – in 6 (40.0 %). In Group 3, changes in the class of disease occurred in 5 (71.4 %) patients but had a slightly different nature. The decrease in class from B to A was in 2 (28.6 %) patients. Another 2 (28.6 %) patients had a decrease in class from B to A followed by a return to class B, and in 1 (14.3 %) a decrease in class from C to B followed by a return to class C.

The dynamics of changes in the studied laboratory parameters is shown in fig. 1.

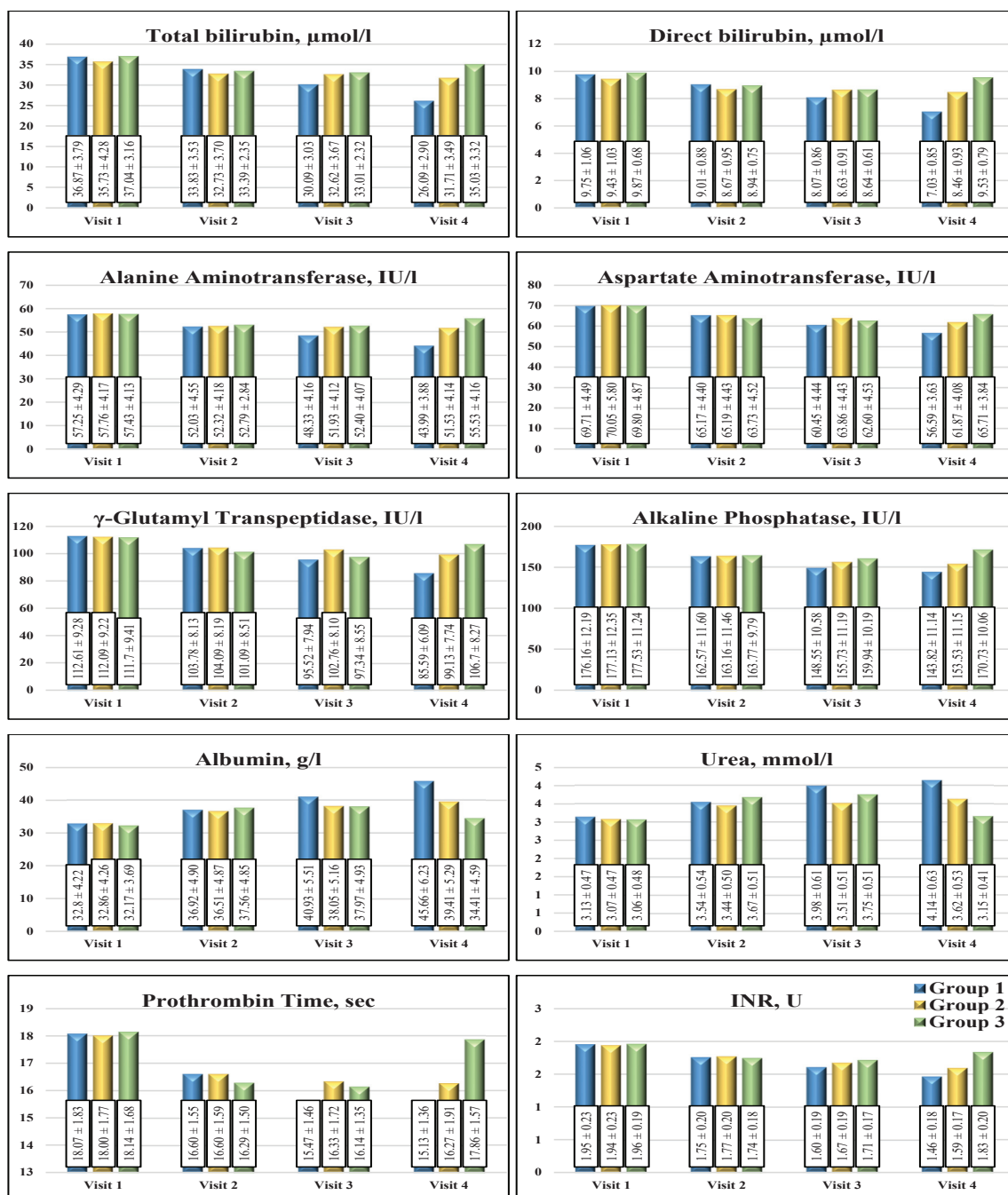


Figure 1. Dynamics of changes in laboratory parameters of the functional state of the liver in the studied contingent

As can be seen from fig. 1, the dynamics of changes in all studied laboratory parameters within each group had a similar trend.

In Group 1 there was a significant ($p < 0.05$) improvement in all studied indicators over time. The improvement was progressive and had a statistically significant increase ($p < 0.05$) at each subsequent time point relative to the previous one.

In Group 2, the dynamics of the studied laboratory parameters was somewhat different. Thus, a significant ($p < 0.05$) improvement in all indicators took place between the first and second visits. In the future, although there was slight negative dynamics in the levels of all studied indicators, but the statistically relevant significance of these changes could not be proved ($p > 0.05$). At the same time, despite the presence of such negative dynamics, all indicators on both the third and fourth visits remained significantly ($p < 0.05$) better than the initial values.

In Group 3, the dynamics of changes in all studied indicators as a whole repeated that in Group 2. Thus, there was a significant ($p < 0.05$) improvement of all studied indicators at the second visit, compared with the first. Subsequently, there was a deterioration in all indicators compared to the values at the second visit. However, it should be noted that if at the third visit there was

a significant ($p < 0.05$) difference from the first visit, then at the fourth visit this reliability was lost ($p > 0.05$). Although at the fourth visit the values of all studied laboratory parameters were slightly better than the initial data, but the differences were not statistically significant ($p > 0.05$).

When comparing the levels of the studied indicators between the groups at each individual visit, the following data were obtained. At the beginning of the study, the levels of the studied indicators did not differ significantly between groups ($p > 0.05$). Also, no significant differences between the groups were observed on the second visit. In Group 1 on the third visit, the values of all indicators were significantly ($p < 0.05$) better than the values in Groups 2 and 3. At the same time, statistically significant differences between Groups 2 and 3 were not observed ($p > 0.05$). Exceptions were indicators of the hemostasis system, which at the third visit did not differ significantly between all groups. At the fourth visit, the studied indicators (excluding INR) in Group 1 continued to be significantly ($p < 0.05$) better than similar indicators in both other groups. At this time of the study, there were also significant differences ($p < 0.05$) between the values of the studied indicators in Groups 2 and 3.

The dynamics of changes in integrated indicators of quality of life according to the questionnaire RAND SF-36 is shown in fig. 2.

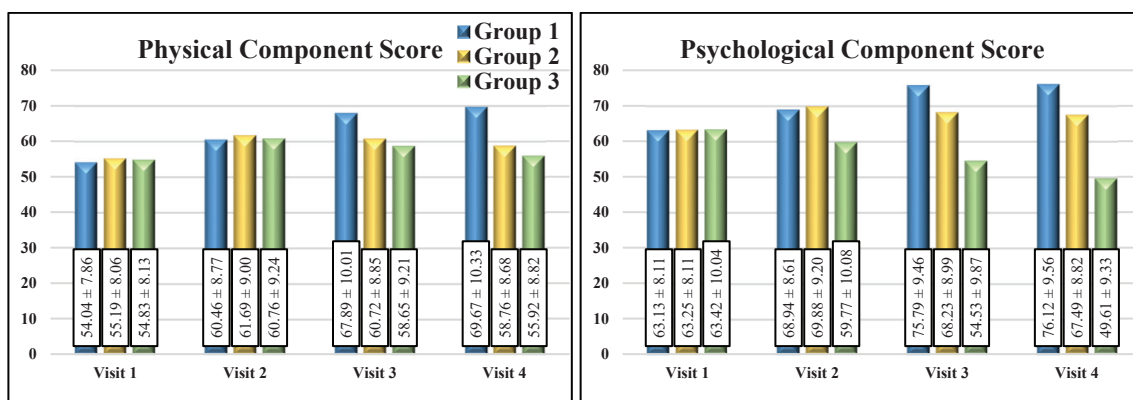


Figure 2. Dynamics of changes in integrated indicators of quality of life in the studied contingent

As can be seen from fig. 2, the dynamics of changes in the physical and psychological component score within each group had a similar trend.

In Group 1, there was a significant ($p < 0.05$) improvement in both studied integrated indicators of quality of life at each subsequent visit, compared with the previous one.

In Group 2, a significant ($p < 0.05$) improvement in both indicators occurred between the first and second visits. In the future, although there was a slight negative dynamics in quality of life, but statistically relevant significance of these changes could not be proved ($p > 0.05$). At the same time, both indicators on both the

third and fourth visits remained significantly ($p < 0.05$) better than the initial values.

In Group 3, at the second visit, there was a significant ($p < 0.05$) increase in the physical component score, compared to baseline. At the same time, the psychological component score showed a tendency to decrease the numerical values relative to baseline, although the statistical significance of the difference between the first and second visits was not proven ($p > 0.05$). Subsequently, there was a decrease in the values of both indicators compared to the values at the second visit. However, at the third visit there was a significant ($p < 0.05$) difference compared to the first visit, and at the fourth visit this

reliability was lost ($p > 0.05$). It should be noted that at the fourth visit, the numerical values of the physical component of health were slightly higher, and the psychological component score – slightly lower than the initial data, but these differences were not statistically significant ($p > 0.05$).

When comparing the levels of the studied indicators of quality of life between the groups at each individual visit, the following data were obtained. At baseline, both physical and psychological component score did not differ significantly between groups ($p > 0.05$). Also, no

significant differences between the groups were observed on the second visit. On the third visit, the values of both indicators were the highest in Group 1, slightly lower in Group 2 and even lower in Group 3. At the same time, statistically significant ($p < 0.05$) differences were observed between all groups. The same picture was observed on the fourth visit, but with an increase in the gap in the numerical values of the studied indicators.

The results of MANOVA at different times of the study are shown in table 2.

Table 2

Influence of permanent stress on individual physiological systems and on a set of integrated indicators of quality of life at different terms of the study (MANOVA results)

Visit	MANOVA results
Pigment metabolism (total bilirubin, direct bilirubin)	
Visit 2	F (2, 19) = 0.771; p = 0.476; Wilk's Λ = 0.925
Visit 3	F (2, 19) = 0.320; p = 0.730; Wilk's Λ = 0.967
Visit 4	F (2, 19) = 4.340; p = 0.028; Wilk's Λ = 0.686
Liver enzymes (ALT, AST, γ -GT, ALP)	
Visit 2	F (4, 17) = 0.274; p = 0.890; Wilk's Λ = 0.939
Visit 3	F (4, 17) = 0.637; p = 0.643; Wilk's Λ = 0.870
Visit 4	F (4, 17) = 5.168; p = 0.007; Wilk's Λ = 0.451
Protein metabolism (albumin, urea)	
Visit 2	F (2, 19) = 0.477; p = 0.628; Wilk's Λ = 0.952
Visit 3	F (2, 19) = 0.530; p = 0.597; Wilk's Λ = 0.947
Visit 4	F (2, 19) = 4.184; p = 0.031; Wilk's Λ = 0.694
Hemostasis system (PI, INR)	
Visit 2	F (2, 19) = 0.115; p = 0.892; Wilk's Λ = 0.988
Visit 3	F (2, 19) = 0.186; p = 0.832; Wilk's Λ = 0.981
Visit 4	F (2, 19) = 4.811; p = 0.020; Wilk's Λ = 0.664
Integral indicators of quality of life (physical and psychological components score)	
Visit 2	F (2, 19) = 52.290; p < 0.001; Wilk's Λ = 0.154
Visit 3	F (2, 19) = 88.270; p < 0.001; Wilk's Λ = 0.097
Visit 4	F (2, 19) = 188.325; p < 0.001; Wilk's Λ = 0.048

As can be seen from table 2, MANOVA was performed only on the second, third and fourth visits, due to the absence of a stress factor at the initial visit. In the study of the effect of permanent stress on pigment metabolism, liver enzyme levels, protein metabolism and hemostasis, the reliability of the dependence increased over time and became statistically significant only on the fourth visit. At the same time, the reliability of the dependence of integrated indicators of quality of life on stress was statistically significant at the second visit and remained so in all subsequent terms of the study.

DISCUSSION

The effects of stress on the body have been studied for a long time. The organic response to stress includes two main components of the stress system, namely the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system [11, 12]. The involvement of glucocorticoids and catecholamines creates an effect on the whole body, including immune cells and their

functional activity. Given this, it becomes clear that stress affects the inflammatory response of the body in general and the liver in particular [13, 14]. There is now a large body of evidence linking the psycho-emotional state to the negative evolution of the liver disease.

As can be seen from the results of our study, patients in all three groups during the first month showed an improvement in both laboratory indicators of liver function and integrated quality of life. A similar trend has been demonstrated in our earlier work [15]. This is due to the appointment of all patients admitted to inpatient treatment for gastrointestinal bleeding of portal origin, a comprehensive treatment aimed at improving not only the functional state of the liver but the patient's condition as a whole.

Subsequently, the lack of any manipulations and maintenance therapy in patients of Group 2 led to a lack of positive dynamics in patients.

In contrast, in patients of Group 1, who underwent partial splenic artery embolization in order to reduce

the pressure in the portal system, there was a progressive improvement in both the functional status of the liver and quality of life. Correction of portal hypertension both medically and surgically can improve the condition of patients, reduce the frequency of recurrence of esophageal and gastric variceal bleeding, delay liver transplantation and reduce overall mortality in this group of patients [16, 17].

The main difference between Group 3 patients and Group 2 patients was that due to the start of hostilities in Ukraine, they were in a state of permanent stress. At the same time, it should be noted the cumulative effect of stress on the body. Thus, in the patients of our study, the effects of stress from the first days of the war manifested themselves in the form of deteriorating quality of life, namely the psychological component score. Already on the third visit, that is 1-2 months after the start of the war, not only the psychological but also the physical components score suffered. Such subjective changes in the physical component of quality of life were not accompanied by objective changes in the functional state of the liver. Significant deterioration of pigment metabolism, liver enzymes, protein metabolism and hemostasis, as well as the impact of permanent stress on these indicators according to MANOVA were demonstrated only on the fourth visit, i.e. 2-3 months after the start of hostilities.

The influence of chronic stress, as well as psychological and mental disorders on the course of chronic liver disease have been previously described in the scientific medical literature [13, 14, 18, 19, 20]. However, if the described studies included individual patients with individual disorders, then the permanent stress in which patients are during hostilities is more widespread. That is why the definition of certain trends in the course of disease during hostilities is quite important both for the development of academic medical science and for optimizing the provision of medical care to patients in case of various emergencies.

CONCLUSIONS

Patients with liver cirrhosis complicated by portal hypertension in a state of permanent stress are characterized by deterioration of the psychological

component of health from the very beginning of the action of stressors, followed by a gradual decrease in the physical component score. The cumulative effect of permanent stress leads to objectification of changes in the physical condition of such patients, which is manifested by the deterioration of the functional state of the liver.

Prospects for future research. In the future, it is planned to add to the comparison a group of patients who were examined in the distant period after the start of the war.

FUNDING AND CONFLICT OF INTEREST

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The authors declare no conflict of interest related to this paper.

COMPLIANCE WITH ETHICAL REQUIREMENTS

Prospective study was approved by the Committee on Bioethics, National Pirogov Memorial Medical University, Vinnytsia, Ukraine (01-5-02/103, June 7th, 2021) and Committee on Ethics, Municipal Non-profit Enterprise «Vinnytsia Regional Clinical Hospital named after M. I. Pirogov of Vinnytsia Regional Council», Vinnytsia, Ukraine (Protocol Nr.3, March 25th, 2021). The Bioethics Committees considered that research will be performed in accordance with the World Medical Association Declaration of Helsinki on the ethical principles for medical research involving human subjects, the Council of Europe Convention on the Human Rights and Biomedicine, relevant laws, orders of the Ministry of Health of Ukraine. Each subject of the study was provided with all details about medical procedures and given the opportunity to discuss any questions with healthcare professionals, and then signed a detailed form of informed consent to conduct the research.

REFERENCES

1. Tsochatzis, E. A., Bosch, J., & Burroughs, A. K. (2014). Liver cirrhosis. *Lancet* (London, England), 383(9930), 1749-1761. [https://doi.org/10.1016/S0140-6736\(14\)60121-5](https://doi.org/10.1016/S0140-6736(14)60121-5)
2. Zhou, W. C., Zhang, Q. B., & Qiao, L. (2014). Pathogenesis of liver cirrhosis. *World journal of gastroenterology*, 20(23), 7312-7324. <https://doi.org/10.3748/wjg.v20.i23.7312>
3. Gross M. (2015). Wenn die Leber den Dienst versagt [Liver cirrhosis and the most common complications: diagnosis and treatment]. *MMW Fortschritte der Medizin*, 157 Suppl 1, 75-79. <https://doi.org/10.1007/s15006-015-2550-3>
4. Buechter, M., Kahraman, A., Manka, P., Gerken, G., Jochum, C., Canbay, A., & Dechêne, A. (2016). Spleen and Liver Stiffness Is Positively Correlated with

- the Risk of Esophageal Variceal Bleeding. *Digestion*, 94(3), 138-144. <https://doi.org/10.1159/000450704>
5. Brunner, F., Berzigotti, A., & Bosch, J. (2017). Prevention and treatment of variceal haemorrhage in 2017. *Liver international: official journal of the International Association for the Study of the Liver*, 37 Suppl 1, 104-115. <https://doi.org/10.1111/liv.13277>
 6. Moctezuma Velázquez, C., & Abraldes, J. G. (2017). Non-invasive diagnosis of esophageal varices after Baveno VI. *The Turkish journal of gastroenterology: the official journal of Turkish Society of Gastroenterology*, 28(3), 159-165. <https://doi.org/10.5152/tjg.2017.16744>
 7. Hernández-Gea, V., Berbel, C., Baiges, A., & García-Pagán, J. C. (2018). Acute variceal bleeding: risk stratification and management (including TIPS). *Hepatology international*, 12(Suppl 1), 81-90. <https://doi.org/10.1007/s12072-017-9804-3>
 8. Tayyem, O., Bilal, M., Samuel, R., & Merwat, S. K. (2018). Evaluation and management of variceal bleeding. *Disease-a-month: DM*, 64(7), 312-320. <https://doi.org/10.1016/j.disamonth.2018.02.001>
 9. Petrushenko, V. V., Hrebenuk, D. I., Radoha, Y. V., Tsyhal'ko, D. V., Melnychuk, M. O., Dorozhynskiy, Y. A., Tatarin, & A. Y. (2018). Prevention of bleeding in patients with portal hypertension syndrome. *Medicini perspektivi*, 23(4), 164-165.
 10. Ishikawa, T., Sasaki, R., Nishimura, T., Aibe, Y., Saeki, I., Iwamoto, T., Hidaka, I., Takami, T., & Sakaida, I. (2019). A novel therapeutic strategy for esophageal varices using endoscopic treatment combined with splenic artery embolization according to the Child-Pugh classification. *PloS one*, 14(9), e0223153. <https://doi.org/10.1371/journal.pone.0223153>
 11. Mariotti A. (2015). The effects of chronic stress on health: new insights into the molecular mechanisms of brain-body communication. *Future science OA*, 1(3), FSO23. <https://doi.org/10.4155/fso.15.21>
 12. Yaribeygi, H., Panahi, Y., Sahraei, H., Johnston, T. P., & Sahebkar, A. (2017). The impact of stress on body function: A review. *EXCLI journal*, 16, 1057-1072. <https://doi.org/10.17179/excli2017-480>
 13. Vere, C. C., Streba, C. T., Streba, L. M., Ionescu, A. G., & Sima, F. (2009). Psychosocial stress and liver disease status. *World journal of gastroenterology*, 15(24), 2980-2986. <https://doi.org/10.3748/wjg.15.2980>
 14. Joung, J. Y., Cho, J. H., Kim, Y. H., Choi, S. H., & Son, C. G. (2019). A literature review for the mechanisms of stress-induced liver injury. *Brain and behavior*, 9(3), e01235. <https://doi.org/10.1002/brb3.1235>
 15. Petrushenko, V. V., Grebeniuk, D. I., Lonskii, K. L., Gladkykh, V. Y., Kedyk, O. O., & Rosha, L. H. (2021). Efficacy of l-ornithine l-aspartate in patients with esophageal variceal bleeding. *World of Medicine and Biology*, 76(2), 112-117. <https://doi.org/10.26724/2079-8334-2021-2-76-112-117>
 16. Townsend, S. A., Karkhanis, S., Tripathi, D., Mueisan, P., Zia, Z., & Elsharkawy, A. M. (2016). Rescue from liver transplantation: TIPSS and thrombectomy successfully treat a case of acute Budd-Chiari syndrome complicated by portal vein thrombosis. *BJR case reports*, 3(1), 20160059. <https://doi.org/10.1259/bjrcr.20160059>
 17. Sauerbruch, T., Schierwagen, R., & Trebicka, J. (2018). Managing portal hypertension in patients with liver cirrhosis. *F1000Research*, 7, F1000 Faculty Rev-533. <https://doi.org/10.12688/f1000research.13943.1>
 18. Nagano, J., Nagase, S., Sudo, N., & Kubo, C. (2004). Psychosocial stress, personality, and the severity of chronic hepatitis C. *Psychosomatics*, 45(2), 100-106. <https://doi.org/10.1176/appi.psy.45.2.100>
 19. Russ, T. C., Kivimäki, M., Morling, J. R., Starr, J. M., Stamatakis, E., & Batty, G. D. (2015). Association Between Psychological Distress and Liver Disease Mortality: A Meta-analysis of Individual Study Participants. *Gastroenterology*, 148(5), 958-966.e4. <https://doi.org/10.1053/j.gastro.2015.02.004>
 20. Choi, J. M., Chung, G. E., Kang, S. J., Kwak, M. S., Yang, J. I., Park, B., & Yim, J. Y. (2021). Association Between Anxiety and Depression and Nonalcoholic Fatty Liver Disease. *Frontiers in medicine*, 7, 585618. <https://doi.org/10.3389/fmed.2020.585618>

Резюме

ВПЛИВ ПЕРМАНЕНТНОГО СТРЕСУ, СПРИЧИНЕНОГО ВІЙНОЮ В УКРАЇНІ, НА СТАН ПАЦІЄНТІВ ІЗ ПОРТАЛЬНОЮ ГІПЕРТЕНЗІЄЮ НА ТЛІ ЦИРОЗУ ПЕЧІНКИ

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Метою дослідження було оцінити вплив перманентного стресу та особливостей надання медичної допомоги в умовах воєнного стану на показники функціонального стану печінки та якість життя пацієнтів з портальною гіпертензією, зумовленою цирозом печінки.

Матеріали та методи. У дослідження було включено 37 пацієнтів з підтвердженим діагнозом цирозу печінки, ускладненого портальною гіпертензією та кровотечею з варикозно розширених вен стравоходу. Відповідно до виконаних втручань усі пацієнти були розподілені на 3 групи: 1 група – ендоскопічне лігування та часткова емболізація селезінкової артерії; 2 група – ендоскопічне лігування; 3 група – ендоскопічне лігування. Різниця між пацієнтами 2-ї та 3-ї груп полягала в тому, що пацієнти 2-ї групи перебували в стані перманентного стресу через війну. Було проведено 4 візити з інтервалом в 1 місяць. У кожний момент часу оцінювались рівні лабораторних показників функціонального стану печінки та якості життя за допомогою опитувальника RAND SF-36.

Результати. У пацієнтів усіх трьох груп протягом першого місяця спостерігалось покращення як лабораторних показників функціонального стану печінки, так і інтегральних показників якості життя. У пацієнтів 1-ї групи спостерігалось поступове покращення як функціонального стану печінки, так і якості життя. У групі 2 відсутність будь-яких маніпуляцій та підтримуючої терапії призвело до відсутності позитивної динаміки у пацієнтів. Перебування в стані перманентного стресу призвело до поступового погіршення стану пацієнтів 3-ї групи, починаючи з другого візиту. Спочатку погіршення стосувалося лише якості життя, але в подальшому проявилось також порушенням показників функціонального стану печінки.

Висновки. Кумулятивний ефект перманентного стресу у пацієнтів з цирозом печінки, ускладненим портальною гіпертензією, проявляється раннім погіршенням якості життя з подальшими порушеннями функції печінки.

Ключові слова: цироз печінки; портальна гіпертензія; перманентний стрес; функціональний стан печінки; якість життя; війна в Україні