

Clinical Research

Evaluation of Quality of Life in Patients with Liver Cirrhosis with Portal Hypertension after Portosystemic Shunt

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Abstract

The quality of life in was analyzed in 248 patients with liver cirrhosis with portal hypertension after portosystemic shunting. All patients underwent decompressive surgery options, in 135 cases - a selective distal splenorenal anastomosis, in 113 cases - different versions of the central decompression. In the study used a questionnaire developed by Younossi ZM et al. (1999) for patients with chronic liver diseases - The Chronic Liver Disease Questionnaire (CLDQ). It is proved that PSS not only does not degrade the quality of life indicator in patients with risk of hemorrhage from esophageal and gastric varices, but also slightly improves the value. In the remote period after the shunting, progressive pathological process in the liver contributes to the development of functional disability of hepatocytes, that in terms of adequate decompression is the main cause of a fatal outcome. This trend was obtained for all parameters of the analysis of the quality of life indicator, with a gradual deterioration of values with increasing of observation period length. Depending on the type of decompression, noted the following features. In patients with the central anastomoses, the range of liver complications was dominated (liver failure, encephalopathy). On the background of selective decompression, in which in the short term is possible to maintain a high residual portal pressure, noted the prevalence of edematous-ascitic syndrome and the development of a hemorrhagic syndrome, even in the functional capable shunt. At the same time, to 6-12 months after the distal anastomosis, hemodynamic reorganization in the portal system generally leads to an increase in the degree of decompression, leveling the rate of specific complications for this type of shunting. IJBM 2012; 2(2):124-127. © 2012 International Medical Research and Development Corporation. All rights reserved.

Key words: *quality of life, liver cirrhosis, portal hypertension, portosystemic shunt.*

Introduction

In modern surgery of portal hypertension (PH), portosystemic shunts (PSS) retains its priorities in terms of

prevention of bleeding from esophageal and gastric varices (EGV) [2, 5]. Regardless of the rules of law and level of surgical service development in different countries, the importance of this intervention remains high. If we consider the role of PSS in countries where the liver transplantation putted on stream, this staged version of the PH correction reduces risk of fatal hemorrhage and thus makes possible to lengthen the waiting period for a donor organ by patients, included into the waiting lists for liver transplantation [1, 3, 4]. In turn, in countries where, for one reason or another, liver transplantation cannot be performed, PSS is the main method of surgical treatment of PH [6, 7].

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Material and methods

To evaluate the quality of life we used a questionnaire developed by Younossi ZM et al. (1999) - The Chronic Liver Disease Questionnaire (CLDQ). CLDQ is the first specific document for evaluation the quality of life, which includes 29 items distributed in the following six domains: abdominal symptoms, fatigue, systemic symptoms, activity, emotional function and worry. The answer of the respondents included seven options, from "all of the time" to "none of the time". Taking into account that in our country the liver transplantation has not yet been performed, the last 29 question (How much of the time during the last 2 weeks have you been concerned about the availability of a liver if you need a liver transplant?) have been excluded from the questionnaire. Thus, patients answered 28 questions, based on the answers to which determined the average score as a whole (maximum 196 points) and in particular based on the answers on the different questions in certain domains (1 to 7 points). Herewith, the higher the score, the better the quality of life. Analysis of the quality of life was performed in 248 patients with liver cirrhosis (LC) after PSS, operated from 2001 to 2010. Distal splenorenal anastomosis (DSRA) was assessed in 135 (54.4%) patients, proximal splenorenal anastomosis (PSRA) was performed in 14 (5.6%) patients, latero-lateral splenorenal anastomosis (LLSRA) in 34 (13.7%), H-shaped splenorenal anastomosis (H-SRA) in 21 (8.5%) and spleno-suprarenal anastomosis (SSRA) in 44 (17.7%) patients. Mean age of patients at surgery was 28.4 ± 4.7 years. According to all 28 questions of the questionnaire maximum total index score was 196. For comparison, the indicator of quality of life in patients with LC in the control group were included 50 patients who were examined on the same principle. It should be noted that for the purity of the experiment control group included healthy individuals of comparable age (27.9 ± 4.2 years), sex and place of residence. In the control group, the average score was 163.1 ± 1.2 .

Results

Analysis of the quality of life of patients before and after PSS is of particular interest. Decompressive effect of shunt interventions directed only to correct complications of PH, and, as any surgery, may exacerbate the functional state of the liver. We analyzed group of 32 patients with LC, in whom quality of life evaluation was performed before and after PSS. In addition, all patients before PSS

up in the last month suffered an episode of bleeding from EGV stopped conservatively. Summary results of the quality of life evaluation showed that before the shunting total scores were significantly lower than a short time after the operation. Of course, this is due not only to decompressive effect of PSS, but also emotional and positive psychological state of patients after operation. However, patients are also attached special importance to the objective characteristics of the improvement of their condition. Regression of the PH syndrome and its complications explained not only the reduction of bleeding from the EGV that in itself is subjective positive effect on the neurological status of patients, but also changes in other estimates of the objective criteria of their own health. In particular, the reduction or disappearance of edematous-ascitic syndrome etiologic factor of which was not only the failure of the protein synthesis in hepatocytes, but also the growing PH. In addition, the decrease in portal pressure has a positive effect on the discomfort associated with a syndrome of splenomegaly, as PSS reduces the size of the spleen. In some cases, patients note other nonspecific improvements, such as for dyspeptic disorders. In general, evaluation of quality of life in the near term after the PSS reliably demonstrated the effectiveness of these interventions not only in terms of prevention of bleeding from EGV, but in the subjective assessment by patients their own health. Thus, if all the necessary conditions for patients at the time of surgery, as well as the adequate recommendations after the intervention, PSS allows to keep the quality of life of patients with LC, which in the future will depend on the degree of progression of the pathological process in the liver. So, if before the surgery average score was 114.1 ± 1.4 , then in terms of 3 months after PSS - 127.5 ± 1.7 , which was significantly ($p < 0.001$) differ from the baseline. In turn, after a 6-month observation period indicator of quality of life decreased to 122.4 ± 1.8 .

Chronic diffuse liver disease explained the gradual deterioration in the quality of life of patients, which reflects the dynamics of reduction of total score at different terms after the PSS. Thus, in terms of up to 3 months after the PSS the CLDQ score was 123.9 ± 1.31 , which was significantly different from control group score level ($p < 0.001$) (Table 1).

Next, reviewed the average score of quality of life indicator on the main domains of the CLDQ questionnaire. In terms of up to 3 months of observation, the lowest scores were obtained for domains: fatigue - 4.0 ± 0.03 ; activity - 4.4 ± 0.03 ; emotional function - 4.2 ± 0.03 and worry - 4.1 ± 0.07 . For all of the presented values the indicators differed from controls with a high degree of confidence ($p < 0.001$).

Table 1

The average CLDQ score at different terms of observation towards to the control group.

Parameter	Control group	3 months	6 months	12 months	3 years	5 years	5 years
Number of patients	50	165	112	94	78	31	21
The average score (M)	163.1 ± 1.20	123.9 ± 1.31	120.1 ± 1.41	116.2 ± 1.01	103.4 ± 1.47	90.9 ± 1.34	85.7 ± 1.41
<i>p</i>	-	0.001	<0.05	<0.05	0.001	0.001	<0.05

In turn, reduction in the relative value of the mean score did not differ significantly in all domains (uniform reduction of the curves to 20.3-25.8% from baseline in terms up to 3 months of observation period to the value in terms over 5 years). However, their true comparison against the control was more pronounced, amounting in terms more than 5 years of observation of 41.0% towards the control by domain "worry" and the with the maximum value of 62.3% towards the control by domain "activity".

Comparative analysis of the quality of life by the physical state evaluation scale (domains: abdominal symptoms, fatigue, systemic symptoms, activity) and psychological status and the subjective perception of health (domains: emotional function, worry) showed that

the progressive deterioration of the quality of life of patients after PSS occurred to the 3-5 years of observation ($p < 0.001$), and in the later terms an average scores in above-mentioned domains were not significantly different from the previous value. In turn, it was found that the factor of psychological stress has a fundamental significance for patients with LC than the factor of physical condition. Thus, in terms of three months after PSS indicators by these scales differed significantly in the direction of smaller values by the emotional condition scale (4.6 ± 0.05 points vs. 4.2 ± 0.05 points, $p < 0.001$). Later, the lack of significant difference is defined only in terms of more than five years of observation (3.2 ± 0.1 vs. 2.8 ± 0.12) (Table 2).

Table 2

The average score on the scales of physical and psychological condition of patients with liver cirrhosis.

Quality of life evaluation scales	Control group	3 months	6 months	12 months	3 years	5 years	>5 years
Physical state evaluation scale	5.9 ± 0.08	4.6 ± 0.05	4.5 ± 0.05	4.3 ± 0.07	3.9 ± 0.05	3.4 ± 0.08	3.2 ± 0.10
<i>p</i>	-	0.001	<0.05	<0.05	0.001	0.001	<0.05
Psychological state evaluation scale	5.8 ± 0.09	4.2 ± 0.05	4.1 ± 0.05	4.0 ± 0.06	3.4 ± 0.06	3.0 ± 0.10	2.8 ± 0.12
<i>p</i>	-	0.001	<0.05	<0.05	0.001	<0.01	<0.05

To evaluate the quality of life of patients, depending on the type of portal decompression, we divided the all patients into the two groups. The first group included 135 patients who underwent selective PSS with DSRA. The second group included 113 patients after the central variants of PSS (34 with LLSRA, 44 with SSRA, 21 with H-SRA and 14 with PSRA)

Regardless of the type of shunt, there was a deterioration of quality of life in the long-term observation period. Thus, in selective decompression an average score on CLDQ was 4.3 ± 0.04 points in terms of 3 months after surgery, and only 3.0 ± 0.06 points in terms of more than 5 years of observation. After the central decompression, these indexes were 4.6 ± 0.06 and 3.1 ± 0.05 points respectively. In fact, for all periods of observation the significant reduce of quality of life level have been noted. It should be noted that in patient with DSRA an average score in the period up to 3 and 6 months of observation

was significantly less ($p < 0.001$), than in patients with the central anastomoses. This can be explained by the fact that selective decompression in these terms may not result in adequate deflation of portal system, that can be accompanied not only slow regression of both EGV and splenomegaly, but such complication as transient ascites or bleeding from EGV despite the presence of a functioning shunt. However, even in period up to one year after the PSS this trend is completely leveled and the quality of life indicators are aligned (Table 3).

It is these questions reflect the higher probability of risk or progression of PE on the background of the central decompression. Therefore, the type of decompression is important for the appropriate scale of CLDQ questionnaire. Therefore, accordingly to the scale of the physical condition, patients after selective decompression have smaller value of quality of life, amounting to 4.5 ± 0.05 points vs. 4.7 ± 0.03 points ($p < 0.001$) in the period up to 3

Table 3

The average score for all questions of CLDQ at different terms of observation after selective and central PSS.

Parameter	3 months	6 months	12 months	3 years	5 years	5 years
Selective decompression						
Number of patients	101	64	54	47	18	12
The average score for all questions (M)	4.3 ± 0.04	4.2 ± 0.05	4.2 ± 0.05	3.7 ± 0.03	3.2 ± 0.06	3.1 ± 0.06
<i>p</i>	<0.001*	>0.05	>0.05	<0.001	<0.001	<0.05
Central decompression						
Number of patients	64	48	40	31	13	9
The average score for all questions (M)	4.6 ± 0.04	4.4 ± 0.05	4.2 ± 0.06	3.6 ± 0.06	3.2 ± 0.05	3.0 ± 0.05
<i>p</i>	<0.001*	<0.01	<0.05	<0.001	<0.001	>0.05
<i>p (to the comparison group)</i>	<0.001	<0.001	>0.05	>0.05	>0.05	>0.05

months. Later, these advantages of central decompression leveled, and up to 1 year of observation period, all indicators appeared to be virtually equivalent. Most clearly, this trend shows the graph of comparative dynamical curve between two groups respect to the control (100%), where, after the central PSS original value was $80.9 \pm 4.2\%$, and after selective one - $76.5 \pm 4.7\%$, while to the first year after surgery, these lines actually merge, forming in terms of more than 5 years after surgery $55.5 \pm 5.4\%$ vs. $55.1 \pm 5.9\%$.

In turn, on a scale of psychological state and subjective perception there was an opposite pattern occurred with higher values in patients with LC after DSRA - 4.3 ± 0.05 vs. 4.0 ± 0.05 points. However, unlike to the physical condition scale, there was no tendency to equalize the indicator of the quality of life by the psychological condition scale. For all endpoints the level of quality of life after DSRA on a scale of psychological state was higher than that after a central shunting, and despite of the relatively small difference between the compared groups with respect to the control ($74.2 \pm 3.8\%$ vs. $69.7 \pm 4.1\%$ - in terms of 3 months and $49.2 \pm 5.7\%$ vs. $46.6 \pm 5.3\%$ - in terms of more than 5 years of observation), these rates differed significantly, indicating a less pronounced manifestation of the syndrome of PE after selective decompression.

Comparative analysis of the quality of life after selective and central shunting showed that on the scale of the general welfare in terms of three months' observation rates actually not differed, amounted $71.8 \pm 5.4\%$ and $70.6 \pm 4.8\%$ respectively. In later terms the level of quality of life was significantly higher after DSRA ($p < 0.05-0.001$), amounted in terms of more than 5 years of observation $51.3 \pm 6.9\%$ vs. $48.1 \pm 7.9\%$ with respect to the maximum (100%). On a scale of general health the indicator in the group after the central PSS was higher at the baseline - $66.6 \pm 4.5\%$ vs. $62.4 \pm 4.9\%$, but in the period to 6 months the pattern still exactly the opposite and in that term the quality of life value was higher in patients after DSRA ($63.7 \pm 3.3\%$ vs. $61.9 \pm 3.1\%$, $p < 0.001$).

Discussion

The study of quality of life in patients with LC and PH after PSS proved that in the context of effective portal decompression and preventing of bleeding from EGV, PSS as palliative surgery for the LC, not only does not degrade the quality of life indicator in patients with risk of hemorrhagic syndrome, but several enhances this value. However, progressive pathological process in the liver contributes to the development of functional disability of hepatocytes that in terms of adequate decompression is the

main cause of a fatal outcome. This trend was obtained for all parameters of the analysis of the quality of life indicator by the CLDQ questionnaire.

The frequency of specific complications after selective and central portal decompression has its own features. Therefore, in central variant of shunting the range of liver complications was dominated (liver failure, PE). In turn, against the selective decompression with possible nearest high portal pressure, it was occurred the marked predominance of edematous-ascitic syndrome and the development of hemorrhagic syndrome, even in the functional capable shunt. At the same time to 6-12 months after DSRA hemodynamic reorganization in the portal system generally leads to an increase in the degree of decompression, leveling the rate of specific complications for this type of shunting. Accordingly, the index of the quality of life in general was slightly higher in patients with central type of shunting, but in the analysis by the scales of the CLDQ questionnaire, it was found that this only applies to domains related to the scale of the physical condition and does not reflect the functional status of hepatocytes with LC after PSS. In addition, for the psychological domain the quality of life index was the best after selective shunting.

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