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Association between the severity of liver cirrhosis with quality of life and its impact on clinical practice

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Abstract

Introduction Liver cirrhosis (LC) has a significant impact in quality of life, and it is frequently linked to loss of a job, mood fluctuations, anxiety, low self-esteem, and despair. Recent LC treatment primarily focuses on clinical manifestations rather than the patient's quality of life. By analyzing quality of life, one can learn about the disease's emotional, physical, and lifestyle effects.

Objectives To find the relationship between quality of life with the severity of liver cirrhosis.

Methods The research was conducted as an observational study with cross-sectional data being collected. The study's participants were recruited from Saiful Anwar Hospital's outpatient and inpatient clinics. The individuals completed a chronic liver disease questionnaire to assess their quality of life, and the Child-Pugh score was used to determine the severity of their liver disease. The data was analyzed using Kruskal-Wallis and the rank Spearman test, with a significance level of 0.05.

Result There were 54 individuals, with an average age of 53.71 years and a male-to-female ratio of 74%. The results showed that there was a significant difference between the Child-Pugh A, Child-Pugh B, and Child-Pugh C groups in all aspects of the chronic liver disease questionnaire ($p = 0.000$). The rank Spearman test revealed a substantial link between quality of life and liver cirrhosis severity ($r: -0.817$).

Conclusion The severity of LC is associated with the quality of life of the patients.

Keywords Liver cirrhosis, Chronic liver disease questionnaire, Quality of life

Introduction

Liver cirrhosis (LC) is still a major problem as it has many consequences due to long clinical course, and it is the final stage of the diffuse progressive liver fibrosis process characterized by distortion of the liver architecture and the formation of degenerative nodules [1, 2].

LC is also a chronic condition that is exhausting patients, families, and medical personnel. Assessment of health-related quality of life (HRQoL) is very important for patients, given that inadequate comprehensive management can reduce survival. HRQoL is a multidimensional aspect that includes psychological, social, and functional aspects of a disease. This assessment is usually carried out by the patient himself and the family, which

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reflects a subjective assessment of the disease and other comorbidities [3].

Until now, several researchers are using various instruments to measure quality of life. It was reported that the quality of life of patients with LC is poor regardless of its etiology. Symptoms such as itching, muscle cramps, sleep disturbances, and gastrointestinal symptoms have been shown to be important in determining the quality of life of LC patients. Quality-of-life instruments in general can compare between groups of patients, but more specific instruments can identify certain characteristic disorders and are considered more responsive [4].

The chronic liver disease (CLD) questionnaire is a specific instrument for assessing the health-related quality of life of all etiologies and all stages of LC. Several studies have shown that the value of this questionnaire can distinguish various levels of chronic disease severity assessed by Child Pugh [3].

Therefore, this study was aimed to determine the relationship between the quality-of-life instrument as assessed by the CLD questionnaire and CP score.

Methods

This study was approved by the Faculty of Medicine Universitas Brawijaya Ethic Committee with ethic number: 90/EC/KEPK/04/2022.

This is an observational study in patients with LC assessed by CLD questionnaire, and the severity of LC was assessed by Child-Pugh (CP) score. Sampling was taken at Saiful Anwar General Hospital (SAGH), Malang, within 3-month period.

The inclusion criteria were patients who had been diagnosed with LC, both new patients who had never received therapy and patients who had already received therapy, and patients who were able to fill out a questionnaire, while the exclusion criteria were LC patients with cognitive impairment, language problem, and incomplete medical data.

Child-Pugh score incorporates variables of ascites, hepatic encephalopathy, total bilirubin, albumin, and INR of the patient. It has the ranging of score as regarded in Table 1. The total of the scoring system is further

classified into Child-Pugh A (5–6 points in total), Child-Pugh B (7–9 points in total), and Child-Pugh C (10–15 points in total). The classification of liver cirrhosis based on this scoring can determine the probability of mortality rate of cirrhosis patients, with class A, B, and C having 10%, 30%, and 70–80% mortality rate respectively [5].

We assessed the perceptions of physical and mental health (e.g., energy levels and mood) and their correlations, including health risks and conditions, functional status, social support, and socioeconomic status [6]. In this study, the assessment used CLD questionnaire instrument which consist of 29 questions about health-related quality of life. The responses of this questionnaire ranges from 1 to 7 in each item, which can mean “all of the time” or “none of the time.”

Baseline characteristics of the subjects are presented categorically in numbers (%). Continuous variables were analyzed for normal distribution using the Kolmogorov-Smirnov test and for homogeneity using the Levene test. Continuous variables are presented as the mean and standard deviation (SD). Mean comparison of CLD questionnaire score in each group of CP score was performed using Kruskal-Wallis. Correlation between each domain of CLD score and CP score was analyzed using Spearman-rank correlation test. The results of the analysis are presented as descriptive table and correlation coefficient. $p < 0.05$ was considered significant. All statistical analyses were performed using Statistical Package for Social Sciences (SPSS) version 26.0 (IBM Corp).

Results

The total number of samples was 54 study subjects who were divided into 3 groups based on CP score. There were 25 samples with CP A score, 15 subjects with CP B score, and 14 subjects with CP C score. Each study subject will be interviewed with a questionnaire to assess the quality of life and underwent the blood tests (Table 2).

Table 3 shows the comparison between CP score and each domain in CLD questionnaire. The mean of CLD questionnaire score of CP A, B, and C were 6.207, 5.06, and 3.485, respectively. The table also shows the mean

Table 1 Child-Pugh scoring table

Criteria	1 point	2 points	3 points
Bilirubin (mg/dL)	< 2	2–3	> 3
Albumin (g/dL)	> 3.5	2.8–3.5	< 2.8
Prothrombin time/INR (s)	< 4	4–6	> 6
Ascites	None	Slight	Moderate
Encephalopathy	None	Grades 1 and 2	Grades 3 and 4

Table 2 Baseline characteristics of study participants

Parameters	Liver cirrhosis severity			p-value
	Child-Pugh A (n = 25)	Child-Pugh B (n = 15)	Child-Pugh C (n = 14)	
Sex				0.903*
• Man (74%)	18	11	11	
• Woman (26%)	7	4	3	
Mean age	54.24	54.8	52.1	0.780+

*Kruskal-Wallis; +one-way ANOVA

Table 3 Comparison between Child-Pugh and CLDQ domain

Domain	Liver cirrhosis severity			p-value
	Child-Pugh A (n = 25)	Child-Pugh B (n = 15)	Child-Pugh C (n = 14)	
Abdominal symptom	6.412	5.64	3.871	< 0.001
Fatigue	5.856	4.293	2.285	< 0.001
Systemic symptom	6.256	5.2	4.742	< 0.001
Activity	6.388	4.84	3.335	< 0.001
Emotional function	6.314	5.18	3.489	< 0.001
Worry	6.016	5.22	3.185	< 0.001
Mean	6.207	5.06	3.485	< 0.001

p was significant if < 0.05, CLDQ chronic liver disease questionnaire

Table 4 Correlation between domain in CLDQ with Child-Pugh score

Domain	Correlation coefficient (r)	p-value	Interpretation
Abdominal symptoms	-0.622	0.000	Strong
Fatigue	-0.768	0.000	Strong
Systemic symptoms	-0.610	0.000	Strong
Activity	-0.681	0.000	Strong
Emotional function	-0.775	0.000	Strong
Worry	-0.577	0.000	Moderate
Mean	-0.817	0.000	Very strong

p was significant if < 0.05, CLDQ chronic liver disease questionnaire

of each domain in CLD questionnaire compared with the severity of liver disease. The higher the CP score, the lower the score of domains in each CLD questionnaire, and it is statistically significant.

Our study shows that there is a negative correlation between domain in CLD questionnaire with CP score, and it is statistically significant (Table 4). The lowest correlation coefficient comes from the domain worry ($r = -0.577$), and the highest correlation coefficient comes from the domain fatigue ($r = -0.768$). The mean of total domain has the highest correlation coefficient ($r = -0.817$)

Discussion

Our study has clearly shown the importance of health quality of life in LC patients, as this study used a specific questionnaire related to the severity of LC. This study results showed that the lower the score on the CLD questionnaire, the higher the severity of LC.

Based on the results, it showed that there was a significant difference in the average score of the overall CLD questionnaire domain between groups. It can be seen from the average overall domain score in the CP

C group which is the lowest and significantly different from the CP A and CP B groups. The results of this study have been supported by another study conducted by Younossi et al. Based on the research conducted by Younossi et al., there were significant differences in the average overall domain score between groups [7]. Another study conducted by Sola in 2012 shows that the physical component decreased with increasing severity of LC, but the multivariate analysis showed that CP was not an independent predictor of the physical component. All subjects in this study had ascites, and ascites is a component of the CP score, that is, ascites may be the cause of decreased quality of life [8].

However, the study conducted by Bao et al. showed different results. In this study, there was a significant difference between CP B and C scores and CP A scores, but there was no significant difference between the CLD questionnaire scores between CP B and CP C, possibly indicating that CLD questionnaire does not focus sufficiently on issues of particular concern to patients with the most significant hepatic decompensation [9].

The results of the Spearman correlation test show that there is a relationship between the domain and CP scores, the higher the domain value, the lower the CP score. In the domain of abdominal symptoms, weakness, systemic symptoms, activity, and emotional function, it showed a strong correlation. A study conducted by Marchesini et al. showed a significant difference in cirrhotic patients without ascites with cirrhotic patients with mild to severe ascites. Ascites is an independent factor related to poor quality of life. Ascites seems to affect quality of life through physical disturbances, at least through gastrointestinal disturbances [10].

As time goes by, when CLD begins to progress to cirrhosis and complications such as ascites, muscle cramps, weakness, and others develop, some people start to report many complaints that have an impact on quality of life. A study conducted in the Netherlands showed that patients with decompensated cirrhosis had a lower quality of life. Interestingly, this study revealed that patients who previously had decompensated LC but then the condition was improved and diagnosed further with compensated LC, for example, patients with ascites who received and successfully managed by diuretic therapy, had the same quality of life as patients with compensated LC. This result showed that improvement of decompensation condition is associated with improved quality of life.

This is the first study that shows the association regarding severity of liver cirrhosis and quality of life, especially in the demographic of patients in the Saiful Anwar Hospital located in Malang in Indonesia, which might add further information regarding epidemiology of liver

cirrhosis in Indonesia, and its risk factors of complications. The inclusion and exclusion criteria were also created in such a way that the issue might be addressed in a novel and valid way. However, there were several limitations. First, the imperfection of the results of the language translation of the CLD questionnaire. Second, the existence of one of the questions in the questionnaire cannot be applied in Indonesia, such as liver transplantation. Third, the number of samples was too small, and the researcher did not include other factors that might affect the quality of life such as income, etiology of LC, and number of drugs consumed. A study by Marchesini et al. shows that the number of drugs consumed represents the comorbidities that accompany these patients, and these comorbidities affect almost all domains. Another study by David et al. also showed that patients with low income had worse physical and mental components of disorders. While research evidence regarding the etiological role of LC in influencing quality of life is still controversial, it has been shown that LC due to hepatitis B infection is associated with a better quality of life than other etiologies, whereas hepatitis C infection and nonalcoholic fatty liver disease have lower quality of life [10, 11].

Conclusion

In this study, it is suggested that there is a possibility that the milder the severity of LC, the better the quality of life. Further study is still needed to confirm our study result which involved a validated CLD questionnaire, a bigger sample number, and several factors taken into count such as the income of the patient and the etiology of LC.

Author contributions

Syifa Mustika: The author contributed to the conception and design of the study or research project, development of the methodology, including data collection and analysis, writing the original draft: Jefry: The author contributed to the collection and analysis of data, generates figures or tables, review & editing of the manuscript. C Rinaldi: the author provided oversight and guidance throughout the research project and help with statistical analysis.

Declarations

Competing interests

The authors declare that there are no financial or personal relationships that could have influenced the research.

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