

Assessment of severity of disease in liver cirrhosis patients

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Abstract

Background: Liver is an interesting organ with high regenerative capacity and complex functions. Cirrhosis is characterized by vascularized fibrotic septa that link portal tracts with each other and with central veins, leading to hepatocyte islands that are surrounded by fibrotic septa and which are devoid of a central vein. We planned the present study to analyse severity of disease in liver cirrhosis patients. **Materials & Methods:** The present study was undertaken with the aim of analysing the severity of disease in liver cirrhosis patients. A total of 50 patients with presence of cirrhosis of liver were enrolled. Complete demographic clinical details of all the patients were obtained. Physical examination was concentrated to detect stigmata of chronic liver disease like clubbing in fingers and toes, central and peripheral cyanosis, presence of spider angioma, telangiectasia, jaundice, collateral veins in abdomen, ascites, level of consciousness, splenomegaly, dyspnoea, peripheral edema, palmar erythema and pleural effusion for underlying etiology. Liver disease was staged according to Child-Pugh's grading. All the results were compiled and analyzed by SPSS software. Chi-square test and one-way ANOVA were used for assessment of level of significance. **Results:** Alcohol was the etiologic factor in 60 percent of the patients while NASH was the etiologic factor in 24 percent of the patients. Hepatitis C was the etiologic factor in 10 percent of the patients. According to child Pugh score grading system, majority of the patients (44 percent) were of severity grade B while 32 percent were of severity grade C. The remaining was of severity grade A. **Conclusion:** Alcohol was the most common etiologic factor of liver cirrhosis in the present study population with Child Pugh Grade B being the most common.

Key words: Cirrhosis, Child-Pugh score

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Introduction

Liver is an interesting organ with high regenerative capacity and complex functions. The liver is also under the great load of conducting various functions for the survival of the host, including detoxification, breakdown of red blood cells and substances, synthesis of proteins and hormones, and storing glycogen, as well as holding a reservoir of blood. Any damage that weakens the functioning of the liver is called liver disease including liver cancer. Liver fibrosis results from the perpetuation of the normal wound healing response resulting in an abnormal continuation of fibrogenesis (connective tissue production and deposition)[1-3].

Histologically, cirrhosis is characterized by vascularized fibrotic septa that link portal tracts with each other and with central veins, leading to hepatocyte islands that are surrounded by fibrotic septa and which are devoid of a central vein. The major clinical consequences of cirrhosis are impaired hepatocyte (liver) function, an increased intrahepatic resistance (portal hypertension) and the development of hepatocellular carcinoma (HCC). The general circulatory abnormalities in cirrhosis (splanchnic vasodilation, vasoconstriction and hypoperfusion of kidneys, water and salt retention, increased cardiac output) are intimately linked to the hepatic vascular alterations and the resulting portal hypertension[4-6].

The etiology of cirrhosis can usually be identified by the patient's history combined with serologic and histologic evaluation. Alcoholic liver disease and hepatitis C are the most common causes in the

Western world, while hepatitis B prevails in most parts of Asia and sub-Saharan Africa. After the identification of the hepatitis C virus in 1989 and of non-alcoholic steato-hepatitis (NASH) in obese and diabetic subjects, the diagnosis of cirrhosis without an apparent cause (cryptogenic cirrhosis) is rarely made. It is important to know the etiology of cirrhosis, since it can predict complications and direct treatment decisions[7-9]. Hence; under the light of above evidence, we planned the present study to analyse severity of disease in liver cirrhosis patients.

Materials & Methods

The present study was undertaken with the aim of analysing the severity of disease in liver cirrhosis patients. A total of 50 patients with presence of cirrhosis of liver were enrolled. Complete demographic clinical details of all the patients were obtained. Written consent was obtained from all the patients after explaining in detail the entire research protocol.

Exclusion Criteria

1. Patients of acute liver illness.
2. Patients with chronic renal failure.
3. Patients with rheumatic heart disease.
4. Patients with collagen disease.
5. Patients with any bleeding disorders.
6. Patients having hepatocellular carcinoma/ any malignancy.

Physical examination was concentrated to detect stigmata of chronic liver disease like clubbing in fingers and toes, central and peripheral cyanosis, presence of spider angioma, telangiectasia, jaundice, collateral veins in abdomen, ascites, level of consciousness, splenomegaly, dyspnoea, peripheral edema, palmar erythema and pleural effusion for underlying etiology. Liver disease was staged according to Child-Pugh's grading.

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Table 1: Child PUGH score grading system

Factor	1 point	2 points	3 points
Total bilirubin ($\mu\text{mol/L}$)	<34	34-50	>50
Serum albumin (g/L)	>35	28-35	<28
PT INR	<1.7	1.71-2.30	>2.30
Ascites	None	Mild	Moderate to Severe
Hepatic encephalopathy	None	Grade I-II (or suppressed with medication)	Grade III-IV (or refractory)

Table 2: Child PUGH score grades

Child Pugh Grade	Points
A	5- 6
B	7- 9
C	10- 15

All the results were compiled and analyzed by SPSS software. Chi- square test and one- way ANOVA were used for assessment of level of significance. P- value of less than 0.05 was taken as significant.

Results

Mean age of the patients was 48.5 years. 70 percent of the patients were males while the remaining were females. 24 percent of the patients were diabetic while the remaining were non-diabetic. Alcohol was the etiologic factor in 60 percent of the patients while NASH was the etiologic factor in 24 percent of the patients. Hepatitis C was the etiologic factor in 10 percent of the patients. According to child Pugh score grading system, majority of the patients (44 percent) were of severity grade B while 32 percent were of severity grade C. The remaining was of severity grade A.

Table 3: Distribution of subjects according to gender

Gender	Frequency	Percentage
Female	15	30
Male	35	70
Total	50	100

Table 4: Distribution of subjects according to Diabetic status

Diabetic status	Frequency	Percentage
Diabetic	12	24
Non-diabetic	38	76
Total	50	100

Table 5: Distribution of subjects according to Aetiology Code

Variable	Frequency	Percentage
Alcohol	30	60
NASH	12	24
Hepatitis C	5	10
Others	3	6
Total	50	100

Table 6: Distribution of subjects according to Child Pugh Score

Child Pugh Score grade	Frequency	Percentage
A	12	24
B	22	44
C	16	32
Total	50	100

Discussion

Liver cirrhosis has a high morbidity and mortality, which is the 14th most common cause of death all over the world. The prevalence of liver cirrhosis may be underestimated, because patients at the early phase of liver cirrhosis are often asymptomatic, and most of patients with liver cirrhosis are admitted due to its related complications. The 1-year mortality of liver cirrhosis varies greatly from 1% to 57% according to the complications. It is necessary to use the prognostic models to identify high-risk patients. Child-Pugh score was firstly proposed by Child and Turcotte to predict the operative risk in patients undergoing portosystemic shunt surgery for variceal bleeding. The primary version of Child-Pugh score included ascites, hepatic encephalopathy (HE), nutritional status, total bilirubin, and albumin[6-9]. Hence; under the light of above evidence, we planned the present study to analyse severity of disease in liver cirrhosis patients.

In the present study, mean age of the patients was 48.5 years. 70 percent of the patients were males while the remaining were females.

24 percent of the patients were diabetic while the remaining were non-diabetic. Alcohol was the etiologic factor in 60 percent of the patients while NASH was the etiologic factor in 24 percent of the patients. Hepatitis C was the etiologic factor in 10 percent of the patients. Puentes JCP et al in their study, assessed the effectiveness of the MELD/Na Score and the Child-Pugh Score for the Identification of Palliative Care Needs in Patients with Cirrhosis of the Liver. Patients were classified according to the Child-Pugh score in Class A (17%), Class B (48.9%), and Class C (34%). The corresponding survival rate was as follows: class A (87.5%), Class B (30.4%), and Class C (31.25%). The MELD/Na score intervals were >9 (2.15%), score 10-19 (46.8%), score 20-29 (27.7%), score 30-40 (19.1%), and score >40 (4.3%). Nearly 51.1% had a MELD/Na score >20 and 48.9% <20. The study revealed that 59.6% of patients died before 12 months. They were end-of-life patients who needed palliative care to reduce the impact of the disease. The Child-Pugh score and the MELD/Na score represent a viable and easy-to-use tool to identify patients in need of palliative care, among those with liver

cirrhosis[10]. In the present study, according to Child-Pugh score grading system, majority of the patients (44 percent) were of severity grade B while 32 percent were of severity grade C. The remaining was of severity grade A. Peng Y et al compared the discriminative ability of Child-Pugh versus MELD score to assess the prognosis of cirrhotic patients. The statistical results were summarized from every individual study. The summary areas under receiver operating characteristic curves, sensitivities, specificities, positive and negative likelihood ratios, and diagnostic odds ratios were also calculated. Of the 1095 papers initially identified, 119 were eligible for the systematic review. Study population was heterogeneous among studies. They included 269 comparisons, of which 44 favored MELD score, 16 favored Child-Pugh score, 99 did not find any significant difference between them, and 110 did not report the statistical significance. Forty-two papers were further included in the meta-analysis. In patients with acute-on-chronic liver failure, Child-Pugh score had a higher sensitivity and a lower specificity than MELD score. In patients admitted to ICU, MELD score had a smaller negative likelihood ratio and a higher sensitivity than Child-Pugh score. In patients undergoing surgery, Child-Pugh score had a higher specificity than MELD score. In other subgroup analyses, Child-Pugh and MELD scores had statistically similar discriminative abilities or could not be compared due to the presence of significant diagnostic threshold effects. Although Child-Pugh and MELD scores had similar prognostic values in most of cases, their benefits might be heterogeneous in some specific conditions. The indications for Child-Pugh and MELD scores should be further identified[11].

Conclusion

Alcohol was the most common etiologic factor of liver cirrhosis in the present study population with Child-Pugh Grade B being the most common.

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