Original Article

Evaluation of Albumin-Bilirubin (ALBI) grade in liver cirrhosis

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Abstract: *Cirrhosis is a condition of liver characterized by the replacement of normal liver tissue by scar tissue due to long term damage by chronic diseases. Early identification and evaluation of the severity of this disease may facilitate timely and proper clinical treatment, thereby reducing mortality.Recently a new grade is introduced, Albumin-Bilirubin(ALBI)grade which is simple, two parameters only, more evidence based and more objective. The purpose of this study was to introduce the ALBI grade in the evaluation of cirrhotic patient.This cross sectional study was conducted at the Department of Laboratory Medicine in collaboration with the Department of Hepatology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka from March 2018 to February 2019. Blood samples were assayed from eighty one diagnosed cirrhotic patients. SPSS version 22 was used for all statistical analysis. Regarding prevalence of cirrhosis, 49.4% had HBV. While distribution ofALBI grade - grade1, grade2 and grade3patients were 28.4%, 34.6% and 37% respectively. This study concluded that the newly developed ALBI grade is better understanding and may be used in cirrhotic patient.*

Key Words:
Cirrhosis of liver,
Albumin-Bilirubin grade

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Introduction

Cirrhosis is defined anatomically as a diffuse process of fibrosis with nodule formation[1].Viruses, alcohol, non-alcoholic steatohepatitis (NASH) and metabolic causes including autoimmune conditions are mainly responsible for cirrhosis[2].

Among patients with chronic hepatitis B, 20-30% and chronic hepatitis C,15% -30% will develop cirrhosis[3].Bangladesh harbours 8.5 million adults with chronic hepatitis B virus infection[4]. HBV contributes to 61.15% cases of cirrhosis of liver in this country. HCV is the second commonest cause of chronic liver disease in Bangladesh[5]. NAFLD(Non-alcoholic Fatty Liver Disease) is also cause cirrhosis in Bangladesh [6].

Diagnosis of cirrhosis is based on blood tests, radiological imaging, endoscopic examination and histopathology. Biopsy is avoided as most of the cirrhotic patient has prolonged prothrombin time that may cause intraperitoneal bleeding [7]. To prevent complications now a day's cirrhosis is diagnosed solely by clinical evidence, radiological imaging, fibroscan of liver and endoscopy of upper gastrointestinal tract.

Recently a new grading is introduced, namely the Albumin-Bilirubin (ALBI) grade that has several advantages than other score[8]. ALBI grade are simple, less expensive, can be done easily even in peripheral laboratory, without the need for special tests. This new score may be a better tool in cirrhotic patients for early management. The aim of this study was to assess the ALBI grade in the evaluation of liver cirrhosis.

Materials and Methods

This cross sectional study was carried out in the Department of Laboratory Medicine and Hepatology, Bangabandhu Sheikh Mujib Medical University (BSMMU) from March 2018 to February 2019. Total 81 diagnosed cases of cirrhotic patients were included in this study. Patients were diagnosed according to history, clinical sign and symptom. Demographic and clinical parameters are collected. The purpose of this research work was explained elaborately to the patient who fulfilled the enrollment criteria. Data were collected from the patient by interview, questions and history sheet of the patient. Then ALBI grade was calculated for each patient.

Data analysis

All data were analyzed using statistical package for social science (SPSS),version-22.

ALBI grade calculation: The ALBI grade was calculated from the following formula -ALBI grade = – 0.085 ×(albumin [g/L]) + 0.66 × log10 (total bilirubin [μ mol/L]) and was classified as- grade 1 (≤–2.60), grade 2(>–2.60 to ≤–1.39) or grade 3 (>–1.39) 8.

Results

This cross sectional study was carried out in the department of Laboratory Medicine and department of Hepatology, BSMMU, Dhaka. The main objective of the study was to assess the ALBI grade in cirrhotic patient of Bangladesh. Among total 81 cirrhotic patients laboratory investigations and ALBI grading were done. Fig-1 showing the Pie diagram about the aetiology of cirrhosis where majority (49.4%) of cirrhotic patients suffer from HBV(Hepatitis B virus).

Table-I shows regarding laboratory findings, range of serum albumin (g/dl) was 1.30 –4.80 and mean ± SD was 3.07±0.90. Serum bilirubin (mg/dl) was 0.20 –29.60 while mean ± SD was 4.15±6.51.Table- II shows regarding ALBI grade, 28.4% patients had grade 1, 34.6% patients had grade 2 and 37.0% patients had grade 3 in total cirrhotic patients.

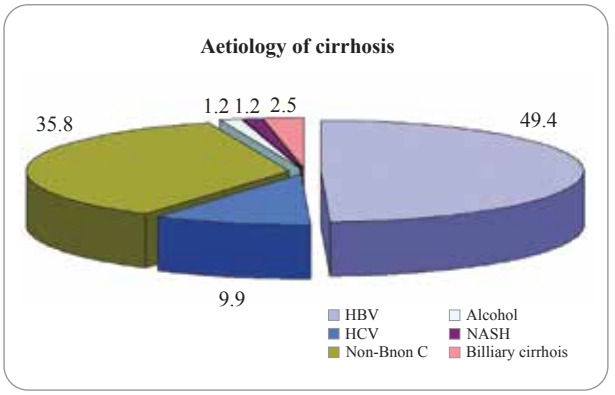

Fig-1: Pie diagram showing aetiology of cirrhosis

Table - I: Laboratory investigations among the study patient (n=81)

Variables	Range	Mean ± SD
Serum albumin (g/dl)	1.30 – 4.80	3.07±0.90
Serum bilirubin (mg/dl)	0.20 –29.60	4.15±6.51

Table – II: Distribution of the study subjects by ALBI (Albumin-Bilirubin)grade(n=81)

ALBI grade	No of the Patient	Percentage%
Grade 1	23	28.4
Grade 2	28	34.6
Grade 3	30	37.0
Total	81	100.0

Discussion

Cirrhosis of liver is a major public health problem worldwide because of its increased mortality and morbidity rates. A total of 81 clinically diagnosed cirrhotic patients were selected from the Department of Hepatology, BSMMU. The study was carried out in the Department of Laboratory Medicine, BSMMU.

In the present study maximum patients had HBV 40 (49.4 %). Others are Non-B Non-C 29 (35.8%), HCV 8 (9.9%), Biliary cirrhosis 2 (2.5%), Alcoholic cirrhosis 1 (1.2%) and NASH (Non alcoholic steato-hepatitis) 1 (1.2%). HBV (Hepatitis B virus) affected more than that of HCV (Hepatitis C virus). HBV is the leading cause of chronic liver disease contributing 61.15 % of liver cirrho-

sis in this country[5]. About 49.22 % were HBV related cirrhotic patient in Bangladesh[9]. So, this finding of the study is nearly consistent with our study.

In the current study, the mean ± SD of laboratory variables like serum albumin (g/dl), serum bilirubin (mg/dl) was found 3.07±0.90, 4.15±6.51 respectively. During assessing prognostic performance of ALBI, among 111 cirrhotic patients the mean± SD of serum albumin (g/dl), serum bilirubin (mg/dl) were found 2.6±0.6, 2.5±2.4 respectively[10]. These findings are nearly similar with our study.

In our study regarding ALBI grade, 28.4% patients become ALBI grade 1, 34.6% ALBI grade 2 and 37.0 % ALBI grade 3 in 81 cirrhotic patients. In the present study most cirrhotic patient was found within the ALBI grade 3. In a study over 689 patients it was observed that 32.8% become ALBI grade 1, 53.5% ALBI grade 2 and 13.7% ALBI grade 3[11]. Evaluating 111 patients of liver cirrhosis by ALBI grade it was found that 3.6% had ALBI grade 1, 34.5% grade 2 and 61.8% ALBI grade 3 which was highest10. Our result corresponds with this study.

According to the present study, observed ALBI grade was easily done by doing accessible routine blood tests for cirrhotic patients and rapidly calculated at bedside. This new grading offers numerous benefits than the other (like Child-Pugh) score. Our data suggests that, the ALBI grade may be done in the evaluation of cirrhotic patient.

Conclusion

This study revealed that the ALBI grade can be done in the evaluation of cirrhotic patient. By estimating simply serum albumin and serum bilirubin tests, ALBI grading rapidly detects short assessment of cirrhotic patient. Therefore, this new ALBI grade may be used in daily clinical practice and will be helpful for clinician for early and better management of cirrhotic patient.

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