Evaluation of Liver Function Among Patients Presented with Hepatocellular Carcinoma

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ABSTRACT

Objective: To determine the liver function assessment in the patients presented with hepatocellular carcinoma.

Methodology: This cross-sectional study was done at the gastroenterology departments of Liaquat University Hospital Hyderabad and Indus Medical College TM Khan. Patients with an age range of 20 to 70 years, both genders, and having hepatocellular carcinoma were included in the study. A 5 mL blood sample was taken from each participant and sent to the hospital diagnostic laboratory to assess the serum bilirubin level and albumin level. The albumin-bilirubin (ALBI) score was used for hepatic function. Data was collected using a self-made research proforma, and it was analyzed using SPSS 26.

Results: A total of 58 cases having HCC were assessed regarding hepatic function. The mean age of the patients was 55.39+12.39 years. Males were in the majority 75.9%, and females were 24.1%. The majority of the patients (72.4%) had child Pugh class C, 12.1% had child Pugh class B, and 15.5% of the cases had child Pugh class A. Elevated bilirubin levels of albumin levels and Alpha-fetoprotein levels were significantly associated to the child Pugh class C (p= <0.05). Most of the cases, 67.3%, had an ALBI score > −1.39, 10.3% cases had ALBI score −2.59 to −1.39, and 22.4% of patients had an ALBI score ≤−2.60.

Conclusion: Severe hepatic dysfunction was observed to be frequently high among patients having hepatocellular carcinoma, as most of the cases had Pugh class C and ALBI stage 3. Due to the extremely small sample size used in this study, the results are not trustworthy.

Keywords: HCC, Hepatic function, Bilirubin, Albumin, ALBI

INTRODUCTION

Hepatocellular carcinoma is a serious health issue and the fourth most common cause of carcinoma-related death throughout the world. Its overall rate of survival is very poor. Only 2% of patients with metastatic hepatic cancer have a 18.4% five-year proportional rate of survival. HCC is frequently caused by cirrhosis, which can be brought on by nonalcoholic steatohepatitis, alcoholism, hepatitis B, or hepatitis C, though its etiology differs globally. An important phase in the viral carcinogenesis of hepatic cancer in patients with cirrhosis. The major pathophysiology for oncogenesis in hepatitis B virus is the integration of its viral genome into the host genome. 60% of occurrences of HCC are caused by viral genome insertions in the human genome's telomerase reverse transcriptase (TERT) promoter regions. HCC development can be predicted by serum liver function evaluation. The albumin-bilirubin (ALBI) score was used for hepatic function. The ALBI score was determined by the following formula: (log10 bilirubin × 0.66)+(albumin × 0.085). The ALBI score was graded as: score ≤−2.60 as ALBI-1; −2.59 to −1.39 as ALBI-2; and score >−1.39 as ALBI-3. Data was collected using a self-made research proforma, and it was analyzed using SPSS 26. T-test was used, and a p-value of <0.05 was taken as significant.

RESULTS

A total of 58 cases having HCC were assessed regarding hepatic function. The mean age of the patients was 55.39+12.39 years, average duration of CLD was 06.52+3.06 years and the average of HCC duration was 2.24+0.75 years. Males were in the majority 75.9%, and females were 24.1%. Out of all, 34.5% of the cases had comorbidities, and 63.8% of the patients had history of ascites. The majority of the patients (72.4%) had child Pugh class C, 12.1% had child Pugh class B, and 15.5% of the cases had child Pugh class A. Table 1

Table 2 shows that elevated bilirubin levels, albumin levels, and Alpha-fetoprotein levels were significantly associated with the child Pugh class C (p = 0.05).

According to ALBI score, most of the cases (67.3%) had a score >−1.39, 10.3% cases had an ALBI score −2.59 to −1.39 and 22.4% patients had ALBI score ≤−2.60. Table 3.

MATERIAL AND METHODS

This was a cross-sectional study and was done at the gastroenterology department of Liaquat University Hospital, Hyderabad and Indus Medical College T. M. Khan. The study duration was one year from April 2018 to March 2019. Patients having an age range of 20 to 70 years, both genders, and having hepatocellular carcinoma were included in the study. Patients having other carcinoma and those who did not agree to participate in the study were excluded. Verbal informed consent was taken in all the cases. After taking medical history and complete clinical assessment, a ml blood sample was taken from each participant and was sent to the hospital diagnostic laboratory to assess the liver function test (LFT). Hepatic cirrhosis severity was taken as per the child Pugh classification. The albumin-bilirubin (ALBI) score was used for hepatic function. The ALBI score was determined by the following formula: (log10 bilirubin × 0.66)+(albumin × 0.085). The ALBI score was graded as: score ≤−2.60 as ALBI-1; −2.59 to −1.39 as ALBI-2; and score >−1.39 as ALBI-3. Data was collected using a self-made research proforma, and it was analyzed using SPSS 26. T-test was used, and a p-value of <0.05 was taken as significant.
discuss the relationship between the mean bilirubin, albumin, and AFP according to C-P class n=58

<table>
<thead>
<tr>
<th>Variables</th>
<th>C-P</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>p-value</th>
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<tbody>
<tr>
<td>Bilirubin</td>
<td>A</td>
<td>9</td>
<td>1.15</td>
<td>0.88</td>
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<tr>
<td></td>
<td>B</td>
<td>7</td>
<td>2.68</td>
<td>1.36</td>
<td></td>
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<tr>
<td></td>
<td>C</td>
<td>42</td>
<td>3.58</td>
<td>3.81</td>
<td></td>
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<tr>
<td>Albumin</td>
<td>A</td>
<td>9</td>
<td>2.18</td>
<td>1.36</td>
<td>0.009</td>
</tr>
<tr>
<td></td>
<td>B</td>
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<td>2.77</td>
<td>0.62</td>
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<tr>
<td></td>
<td>C</td>
<td>42</td>
<td>2.61</td>
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<tr>
<td>Alpha fetoprotein level</td>
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<td>47412.22</td>
<td>35381.80</td>
<td>0.001</td>
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<tr>
<td></td>
<td>B</td>
<td>7</td>
<td>20414.01</td>
<td>34557.33</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>36</td>
<td>33112.94</td>
<td>29624.40</td>
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<tr>
<td>Total</td>
<td>58</td>
<td>54647.57</td>
<td>104146.70</td>
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</tbody>
</table>

C-P= Child Pugh classification

Table 3: Patients distribution according to ALBI score n=58

<table>
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<tr>
<th>ALBI score</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>13</td>
<td>22.4</td>
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<tr>
<td>B</td>
<td>5</td>
<td>10.3</td>
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<tr>
<td>C</td>
<td>39</td>
<td>67.3</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>100.0</td>
</tr>
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</table>

Discussion

Worldwide, hepatocellular carcinoma (HCC) is the second leading cause of cancer-related mortality. It may be the most prevalent malignancy in adult males in Pakistan, and it’s currently on the increase. Pakistan has one of the highest occurrence rates in the world and contributes considerably to the worldwide burden of hepatitis C, which is proven to be a potential risk for hepatocellular carcinoma. In this study, the mean age of the patients was 55.39±12.39 years, and males were in the majority 62.6%. In this study, the mean age of the patients was 55.39±12.39 years, and males were in the majority 62.6%. In this study, the mean age of the patients was 55.39±12.39 years, and males were in the majority 62.6%.

In this study, the majority of the patients 72.4% had child Pugh class C, 12.1% had child Pugh class B, and 15.5% of the cases had child Pugh class A. In the study of Abraham, A et al., 1995, the ALBI score, most of the cases had child Pugh class B and 23 (56.1%) cases had child Pugh class C. In an Indian study by Musunuri B et al. reported that the Child-Pugh group B was the most common, followed by category A in 45.4% and 41% of the individuals, correspondingly. In the study of Choudhry, A et al. reported that the child Pugh class B was most common in 40.2% of the cases, followed by class A 39.2% and class 20.6%. Inconsistently, Mansoor H et al. reported that the most of the patients 84%, had child Pugh class A, followed by 11.5% of cases having child Pugh class B, and 4.3% having child Pugh class C.

In this study according to ALBI score, most of the cases (67.3%) had an score ≤ 1.39, 10.3% of cases had an ALBI score ≤ 2.59 to ≤ 1.39, and 22.4% of patients had an ALBI score ≤ 2.60. On the other hand, in the study of Lescure C et al. reported that the 88 (39.6%) patients with an ALBI score (grade 1), 130 (58.6%) had grade and 4 (1.8%) patients had grade 3. According to the Chen B et al. reported that the model of end-stage liver disease (MELD) score and the Child-Pugh score showed a good correlation with the ALBI score. These findings were also related to this study as the child Pugh class C was significantly liked to ALBI grade 3 (p = 0.009). On the other hand, in the study of Nguyen TT et al. reported that the ALBI grade 1 was found in 39 (35.4%) of the cases, the ALBI grade 2 was in 66 (59.1%) of the cases, and the ALBI grade 3 was in 6 (5.5%) of the cases.

Consistently Zhong CR et al. demonstrated that the overall among 3540 patients, 2445 (69.1%) patients had ALBI score (grade 1), 1086 (30.7%) had grade 2 and 9 (0.3%) patients had grade 3. The selection of the appropriate treatment protocols is significantly influenced by liver function. Although Zhong CR et al observed that, in comparison to the original ALBI grade, the newly proposed maALBI grade offers a substater evaluation of liver function to aid clinical decision-making and more accurately predicts the outcome of patients with HCC. It is generally recognized that a number of scoring systems, such as the MELD and Child-Pugh scores, are available to assess the degree of liver failure and forecast the outcome of patients with chronic liver disease. The ascites, prothrombin time, ascites, serum albumin, and the hepatic encephalopathy are the 5 parameters that make up the Child-Pugh score. The reliability of the assessment could be compromised by the very subjective assessment of ascites and encephalopathy. However, the ALBI score can be easily determined with a simple, non-invasive blood test, and it is independent of ascites. In the study of Mohammadi H et al. observed that, in the context of radioembolization for cases having HCC, usage of the ALBI scoring system to evaluate hepatic function with greater discrimination than the CP classes, and it shows that in this situation, the ALBI grade may be a helpful predictive tool for choosing patients for liver-aimed therapy. This was a very limited sample size study with several other limitations, especially the patients’ survival rate not observed according to ALBI stages. However, the results require confirmation in substantial future multi-center and large-scale studies.

Conclusion

Severe hepatic dysfunction was observed to be frequently high among patients having hepatocellular carcinoma, as most of the cases had child Pugh class C and ALBI stage 3. Pugh class C was also observed to be significantly linked to ALBI stage 3. Due to the extremely small sample size used in this study, the results are not trustworthy. However, further large-scale studies are recommended on such subject.

References

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