

# Positive Predictive Value of MELD Score $\geq 18$ in Predicting in-Hospital Mortality in Cirrhotic Patients with Variceal Bleeding

RIZWAN HAMEED<sup>1</sup>, MUHAMMAD ASIF GUL<sup>2</sup>, FAROOQ MOHYUD DIN CH<sup>3</sup>, YASIR ABBAS ZAIDI<sup>4</sup>, QASIM UMER<sup>5</sup>, SHEHRYAR KANJU<sup>6</sup>

<sup>1</sup>Assistant Professor of Gastroenterology, Nishtar Medical University Multan

<sup>2</sup>Professor of Gastroenterology, Services Institute of Medical Sciences Lahore

<sup>3</sup>Specialty Registrar Gastroenterology Royal Berkshire Hospital NHS Foundation, Reading, UK

<sup>4</sup>Associate Professor of Gastroenterology, Nishtar Medical University Multan

<sup>5,6</sup>Senior Registrar, Nishtar Medical University Multan

Correspondence: Dr. Rizwan Hameed, Email: [Rizi\\_7494@hotmail.com](mailto:Rizi_7494@hotmail.com), Cell No. 03459638080

## ABSTRACT

**Objective:** To determine the positive predictive value of MELD score  $\geq 18$  in predicting in hospital mortality in cirrhotic patients with variceal bleeding.

**Study Design:** Cross-sectional.

**Place and Duration of Study:** Department of Gastroenterology-Hepatology, Shaikh Zayed Hospital, Lahore from 01 April 2013 to 31 March 2014

**Methodology:** Two hundred and fifty patients were selected from the Gastroenterology/Hepatology Emergency Department of Shaikh Zayed Medical Complex, Lahore. Informed consent was taken from each study participants and the participants of acute variceal bleeding were managed according to standard protocol. Blood samples were taken for biochemical testing before setting treatment plan. Study endpoint was patient outcome (alive or expired during hospital admission).

**Results:** There were 141 (56.4%) males whereas 109 (43.6%) females. The mean age was  $49.85 \pm 12.16$  years, mean INR was  $3.02 \pm 1.03$ , mean bilirubin was  $2.42 \pm 0.922$ , mean creatinine was  $2.05 \pm 1.01$  and mean MELD score was  $27.20 \pm 6.61$ . There were 99 (39.6%) deaths

**Conclusion:** Results predict that MELD score  $\geq 18$  gives early indication of acute variceal bleeding, thus helps in managing the warning signs and to increase the life expectancy.

**Key words:** Cirrhosis, End stage liver failure, Variceal bleeding, Hepatitis B and C, Model for end-stage liver disease

## INTRODUCTION

Cirrhosis is the end stage liver damage caused by hepatic diseases and certain infections. Common causes of chronic liver disease include chronic hepatitis B and C and alcohol.<sup>1</sup> Statistical data represents that, cirrhosis is the leading cause of death worldwide and also very much prevalent in Pakistan.<sup>2-5</sup>

Many contributing factors are known till date out of which portal hypertension is appeared to be most potent cause of liver cirrhosis and its related fatal complications. Variceal bleeding is one of the fatal outcome of cirrhosis with high recurrence rate upto 70% and 20% mortality rate.<sup>6</sup> Chances of death is higher during early weeks of bleeding due to renal and hepatic dysfunction and bacterial infections.<sup>7,8</sup>

The Child-Turcotte-Pugh (CTP) classification is mainly used as a prognostic marker in variceal bleeding patients. However, encephalopathy and ascites limits its accuracy. Other markers are considered more reliable such as platelet count, number of blood transfusions and MELD score.<sup>9</sup>

MELD-score helps in indicating alarming signs and helps in figure out chances of mortality among variceal bleeding patients. Results of the study also showed 32% of mortality rate among patients who had MELD score of  $\geq 18$ .<sup>9</sup> On the other hand, study revealed no significant difference in 5-day post-variceal bleeding survival between patients with higher compared with lower MELD scores, however 6 week mortality rate was 46% for patients with MELD score  $\geq 18$ .<sup>10,11</sup>

## MATERIALS AND METHODS

This cross-sectional study was conducted Department of Gastroenterology-Hepatology, Shaikh Zayed Hospital, Lahore from - from 01 April 2013 to 31 March 2014 and 250 patients were enrolled. All admitted cirrhotic patients who had MELD score  $\geq 18$  were included in the present study. Patients with upper gastrointestinal bleeding happened other than variceal bleeding and portosystemic encephalopathy were excluded from the study. Informed consent was designed in both the languages (English and Urdu) for better understanding of the patients. Blood samples were taken for biochemical testing before setting treatment plan. Participants of acute variceal bleeding were managed according to standard protocol.<sup>11</sup> Study endpoint was patient outcome (alive or

expired during hospital admission). The data was entered and analyzed through SPSS-25.

## RESULTS

There were 141 (56.4%) males whereas 109 (43.6%) females (Table 1). The mean age was  $49.85 \pm 12.16$  years, mean INR was  $3.02 \pm 1.03$ , mean bilirubin was  $2.42 \pm 0.922$ , mean creatinine was  $2.05 \pm 1.01$  and mean MELD score was  $27.20 \pm 6.61$  (Table 2). There were 99 (39.6%) deaths whereas 151 (60.4%) patients remained alive (Table 3).

Table 1: Frequency of genders (n=250)

Gender	No.	%
Male	141	56.4
Female	109	43.6

Table 2: Descriptive statistics of the patients

Characteristic	Mean $\pm$ SD
Age	$49.85 \pm 12.16$
INR	$3.02 \pm 1.03$
Bilirubin	$2.42 \pm 0.922$
Creatinine	$2.05 \pm 1.01$
MELD score	$27.20 \pm 6.61$

Table 3: Frequency of outcome (n=250)

Outcome	No.	%
Alive	151	60.4
Deaths	99	39.6

## DISCUSSION

One of the best known and widely published scoring systems of liver disease severity is the Child-Pugh system. Child Turcotte scoring system was later modified by Pugh and termed as Child-Turcotte Pugh (CTP) scoring system. Though this scoring system was derived empirically, it has proven to be a good predictor of outcome in patients with complications of portal hypertension.<sup>12</sup>

MELD scoring system is basically depends upon results of three liver functioning tests that can easily be performed. However, just like CTP score, MELD score can sometime also lead to false results due to laboratory errors. For instance, sensitivity of INR can be affected by the source of thromboplastin used that can lead to misinterpretation of results.<sup>13</sup> Another shortcoming of this method

is that sometimes serum creatinine value can also influence this method. Due to different measurements creatinine value effect the result that can be minimized by using enzymatic method for the evaluation of creatinine level.<sup>14</sup>

In the present study, there were 99 (39.6%) deaths whereas 151 (60.4%) patients remained alive (Table 3). Chojkier et al<sup>15</sup> showed 35% of mortality rate in variceal bleeding patients while another study conducted by Afessa and Kubilis<sup>16</sup> found 21% hospital mortality rate in cirrhotic patients. This variability in mortality rate might be due to different management protocols variceal bleeding but the major cause of higher mortality rate observed in our study is due to the fact that we only included those patients with acute variceal hemorrhage who had a MELD score >18 and these patients are already at higher risk of complications in the form of rebleeding or mortality. In one study the 6 weeks mortality rates in acute variceal bleeding patients that had MELD score >18 was found out to be 46%<sup>10</sup> which is slightly higher but is more in accordance with that observed in our study. The reported positive predictive value of MELD score >18 in that study<sup>10</sup> was 36% which is again similar to the present study.

## CONCLUSION

MELD score  $\geq 18$  gives early indication of acute variceal bleeding thus helps in managing the warning signs and to increase the life expectancy.

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