

## Utility of model of end stage liver disease Sodium score in predicting mortality following acute variceal bleeding in patients with Cirrhosis due to Hepatitis C

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### ABSTRACT

**Objective:** To analyze the utility of model of end stage liver disease sodium scores in predicting mortality following acute variceal bleeding in patients with Cirrhosis due to hepatitis C.

**Study Design:** Descriptive case series

**Place and Duration:** Department of Gastroenterology and Hepatology, Pakistan Institute of Medical Sciences (PIMS), Islamabad from January 4, 2011 to January 4, 2012.

**Methodology:** 240 patients with HCV Cirrhosis presenting with history of haematemesis or melaena due to varices diagnosed on Esophagogastroduodenoscopy (EGD) were enrolled in study. On the first visit, blood samples were sent to hospital lab for serum Bilirubin, Sodium, Creatinine and INR. All these results are verified by pathologist. These patients were scored according to Model for end stage liver disease Sodium (MELD-Na) scoring systems. These cirrhotic patients were followed up for 3 months for rebleeding and mortality by telephonic contacts to patients.

**Results:** Out of 80 patients with MELD-Na score <20, 21.25% patients had re-bleed, 8.75% patient died and 70% patients had no rebleeding or death. In 80 patients with MELD-Na score 21-30, 30% patients re-bleed again from esophageal varices, 21.25% patients suffered mortality and 48.75 patients had uneventful recovery. In 80 patients with MELD-Na score 31-40 30% patients re-bleed, 38.75% patients died and 31.25% patients recovered smoothly.

**Conclusion:** MELD-Na is reliable predictor of mortality and rebleeding in cirrhotic patients presenting with acute variceal bleeding.

**Keywords:** Hepatitis C, Cirrhosis, Varices, Bleeding, model of end stage liver disease sodium, Mortality.

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### INTRODUCTION

Cirrhosis related to chronic hepatitis has become a big menace for third world countries especially in Asia. Situation is no more

different in Pakistan where more than 10 million people suffer from HCV<sup>1</sup>. The majority of these patients are middle aged and would develop cirrhosis related complications over the coming years<sup>2</sup>. Ninety percent of patients with CLD had evidence of HBV, HCV or coinfection. Disease was more severe in patients with coinfection<sup>3</sup>. Cirrhosis is well known to cause ascites, hepatic encephalopathy and variceal bleeding, hepatopulmonary syndrome and sleep apnea syndrome<sup>4</sup>. MELD scoring system incorporates bilirubin, creatinine, and prothrombin time to predict survival<sup>5</sup>. In patients with chronic liver disease, an increasing MELD score is associated with increasing severity of hepatic dysfunction and risk of death<sup>6</sup>. Addition of Hyponatremia to MELD scoring further improves risk stratification of Cirrhotic patients with variceal bleed and makes it more reliable predictor than child pough scoring system as demonstrated by recent studies<sup>7</sup>. Assessing liver disease stage within 24 hours of bleeding onset, is useful to assess the short- and long-term prognosis of cirrhotic patients with acute variceal bleeding. Study would help to predict the utility of MELD Na in assessing prognosis of patient presenting with oesophageal variceal bleed in our local population and consideration for early referral for procedures like transjugular intra hepatic shunts (TIPS) to lessen morbidity and mortality related to variceal

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bleeding. The objective of our study was to analyze the utility of model of end stage liver disease sodium scores in predicting mortality following acute variceal bleeding in patients with Cirrhosis due to hepatitis C.

### METHODOLOGY

This case descriptive study was conducted at Department of Gastroenterology and Hepatology, Pakistan Institute of Medical Sciences (PIMS), Islamabad for 1 year from 4th January 2011 to 4th January 2012 after approval of hospital ethical committee. 240 patients (Sample size was calculated by using WHO Sample Size Calculator) were included in the study through consecutive non-probability Sampling. All patients with age 12 and above, of both genders presenting with acute variceal bleed secondary to hepatitis C are included in this study. Patients with liver cirrhosis due to other causes like Chronic Hepatitis B, fatty liver disease, autoimmune, metabolic and Alcohol related liver disease were excluded. Patients with a history of heart failure, hypothyroidism and acute or chronic renal failure were also excluded.

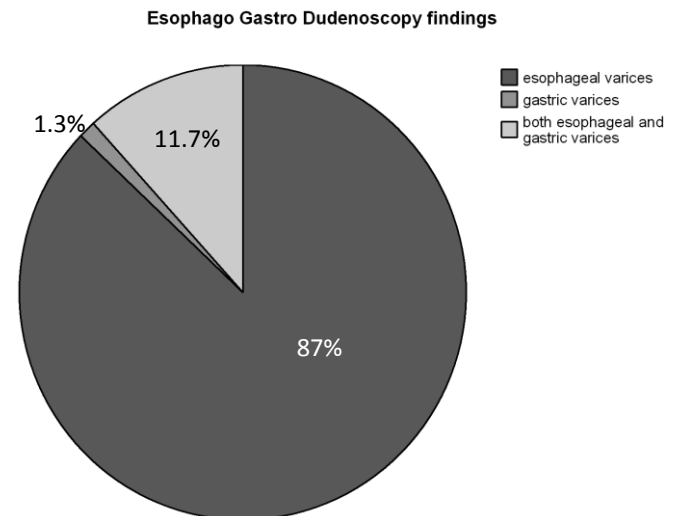
After taking the informed written consent, a detailed history and examination was carried out. All relevant investigations were performed including serum Bilirubin, Sodium, Creatinine and INR. These patients were scored according to Model for end stage liver disease Sodium (MELD-Na) scoring systems. These cirrhotic patients were followed up for 3 months for rebleeding and mortality through telephonic contact.

**Data Analysis:** Statistical package for social sciences version 14(SPSS 14) is used to analyze variables. Mean and standard deviation was calculated for quantitative variables such as age of patients and MELD-Na Score. Frequency and percentages were calculated for qualitative variables like gender, esophagogastroduodenoscopy findings, mortality and rebleeding in each group. Chi square test was used to determine difference in mortality in different groups. P value < 0.05 was considered significant.

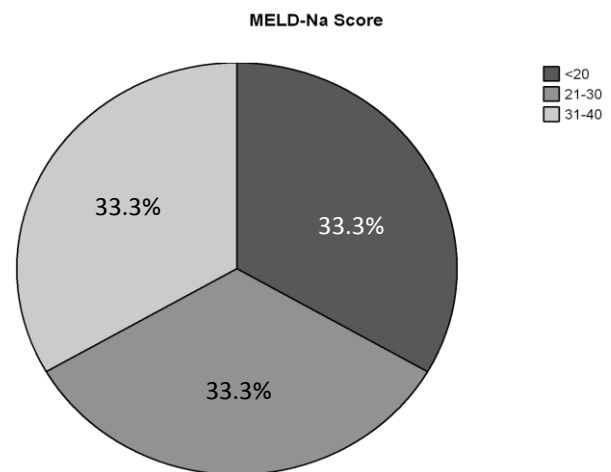
### RESULTS

A total of 240 patients suffering from cirrhosis secondary to Hepatitis C were included in the stud. Out of 240 patients, 118(49.2%) males and 122(50.8%) females. Average age at the time of admission was  $55.13 \pm 7.97$  (Mean $\pm$ SD, Range 35–95). Each patient included in study underwent Esophagogastroduodenoscopy (EGD) during admission. Out of these, 209(87.1%) patients had esophageal varices, 3(1.3%) patients had fundal varices and 28(11.7%) patients had both esophageal and fundal varices as shown in figure-1.

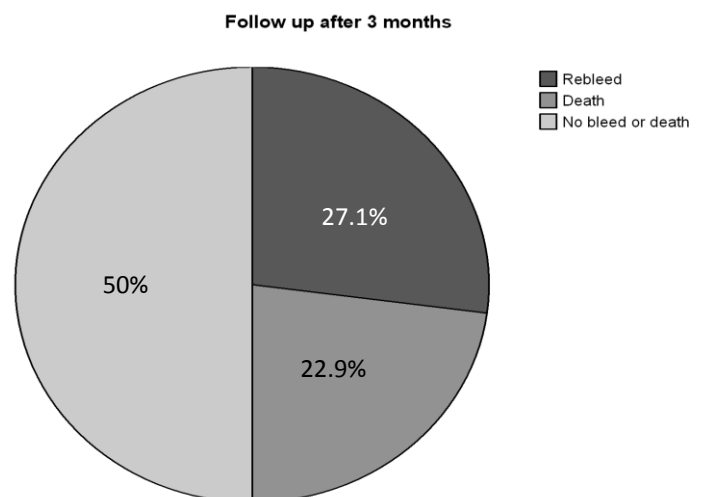
These patients were divided in three groups based on the basis of MELD-Na score. 80(33.3%) patients were founded to have MELD Na score of less than 20 and were assigned group 1, 80(33.3%) patients with MELD Na score of 21-30 were placed in group 2, and 80(33.3%) patients with MELD Na sore of 31-40 were placed in group 3. MELD Na score calculated at their time of admission is shown in figure-2.



**Figure-1: Frequency of Endogastrosocopy findings in patients presenting with variceal Bleeding (N=240)**



**Figure-2: MELD –Na Score in patients presenting with variceal Bleeding (N=240)**

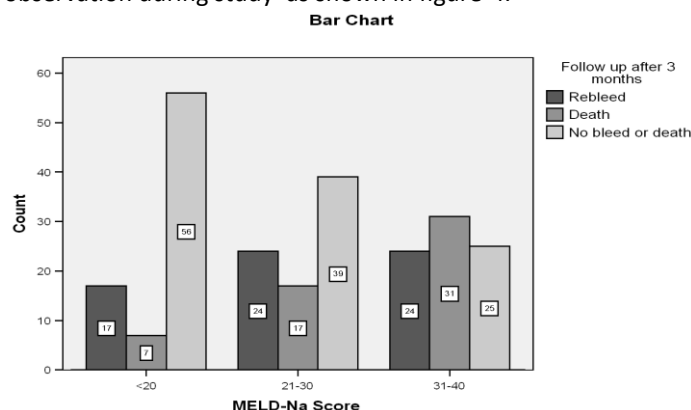


**Figure-3: MELD –Na Score in patients presenting with variceal Bleeding after 3 months (N=240)**

These patients were followed up for 3 months for rebleeding and mortality. After 3 months of study, 65 patients (27.1%) had rebleeding, 55 patients (22.9%) died and 120 patients (50%) had no adverse event as depicted in figure 3 and 4.

Out of 80 patients with MELD-Na score <20, 17(21.25%) patients rebleeded, 7(8.75%) patient died and 56(70%) patients had no rebleeding or death. In 80 patients with MELD-Na score 21-30 24(30%) patients had suffered rebleeding from varices, 17(21.25%) patients died and 39(48.75) patients had smooth recovery as shown in figure-4.

In 80 patients with MELD-Na score 31-40, 24(30%) patients had rebleeding, 31(38.75%) patients expired and 25(31.25%) patients had uneventful recovery after three months of observation during study as shown in figure-4.



**Figure-4: MELD –Na Score in patients presenting with variceal Bleeding (N=240)**

## DISCUSSION

Several studies have seen the utility of MELD Na in predicting survival among patients with variceal bleeding. Our study also aimed to see the reliability of MELD Na in our local population. In this study, only patients with HCV related cirrhosis are included with mean age of 55.13±7.97 while mean age of patients was 47.5±6 SD in study done by Zubair UB et al and patients included in that study were suffering from cirrhosis of multiple etiologies<sup>8</sup>. In my study, only cirrhotic patients with variceal bleeding are included. 209(87.1%) patients had esophageal varices, 3(1.3 %) patients had fundal varices and 28(11.7%) patients had both esophageal and fundal varices. Similar findings of 93% patients of oesophageal variceas and 7% of gastric varices were found in study done by Sempere et al.<sup>9</sup>

Frequency of rebleeding in patients with MELD-Na score <20, 21-30 and 31-40 after 3 months of acute variceal bleeding episode was 8.75%, 30% and 30%. Similar results of increasing incidence of rebleeding were found with rising MELD Na in other studies as well<sup>10</sup>.

After 3 months of study, 65 patients (27.1%) had rebleeding from varices, 55 patients (22.9%) died and 120 patients (50%) had no adverse event. Another study done in china showed 22.6% patients suffered esophageal variceal rebleeding within 3 months, while 12.4% died within 3months of variceal bleeding and rest have smooth recovery<sup>11</sup>. Earlier studies had demonstrated that patients presenting with variceal bleeding

and with MELD score ≥18 had worse prognosis with increased incidence of mortality<sup>11</sup>. Observed mortality in our study was 8.75%, 21.25% and 38.75% in patients with MELD-Na score <20, 21-30 and 31-40 after 3 months of acute variceal bleeding episode. Previous study showed comparable results with with 6%, 16%, and 37% of risk of death within 6 months with MELD-Na scores of 20, 30, and 40<sup>12</sup>.

In summary, assessing prognosis of patients presenting with vaiceal bleeding with a reliable model of MELD Na can be helpful in identification of high risk patients<sup>13-15</sup>.

## CONCLUSION

MELD-Na is reliable predictor of mortality and rebleeding in cirrhotic patients presenting with acute variceal bleeding.

## AUTHOR'S CONTRIBUTION

**Maqsood J:** Conceived idea, Designed study, Data analysis, Manuscript writing

**Quddus A:** Data collection, Manuscript drafting, Data analysis

**Rehman SS:** Final critical review of manuscript

**Munir W:** Data compilation, Literature review

**Ansari AM:** Data compilation, Literature review

**Disclaimer:** None.

**Conflict of Interest:** None.

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