










Research Article

Lower Gastrointestinal Bleeding in Patients with Liver Cirrhosis: Prevalence, Outcomes, and Correlation with MELD Score in an Indian Tertiary Care Facility

Mallipeddi Vivek Vardhan¹ , Aswini Kumar Sahoo¹ , Jimmy Narayan² , Samir Sahu¹ , Tapan Kumar Panda^{1*} 
Dattatreya Kar³ , Lohitha Bhavani Jasthi¹ , Tammineni Roja¹

¹ Department of General Medicine, IMS and SUM Hospital, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, Odisha, India; ² Department of Medical Gastroenterology, IMS and SUM Hospital, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, Odisha, India; ³ Department of Medical Research, IMS and SUM Hospital, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, Odisha, India

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Abstract

Background: Lower gastrointestinal bleeding (LGIB) is responsible for 25 percent of overall GI bleeding patients in the general population. In the US, the LGIB incidence is thought to be 21–27/100,000 per year, while the rate of hospitalization is thought to be 20–30/100,000 per year. According to reports, 2–4% of patients hospitalized with LGIB die. Despite the fact that upper GI complications associated with portal hypertension have received a lot of attention, few studies have explored lower GI complications. **Objective:** To study the prevalence and 28-day outcome of patients hospitalized with lower gastrointestinal bleeding in liver cirrhosis and its correlation with model for end-stage liver disease (MELD). **Method:** A single center-based cross-sectional study was conducted for a duration of eighteen months. The main source of data is from patients hospitalized at the Department of General Medicine and Department of Medical Gastroenterology at the Institute of Medical Sciences and SUM hospital, with a minimum of 100 cases. **Results:** Out of 100 patients, internal hemorrhoids were observed in 50 patients, external hemorrhoids were found only in 1 patient, and rectal varices were present in 17 patients. The MELD score for the 28th day outcome was found to be 21.85 on follow-up. It was 27.0 in discharged patients by the 28th day. **Conclusions:** An essential element of the condition, portal hypertension, appears to be responsible for the poor prognosis.

Keywords: Liver cirrhosis, Gastrointestinal bleed, MELD score, Portal hypertension.

نزيف أسفل الجهاز الهضمي في المرضى الذين يعانون من تليف الكبد: الانتشار والنتائج والارتباط مع درجة MELD في مرفق رعاية تالئية، الهند

الخلاصة

الخلفية: نزيف الجهاز الهضمي السفلي (LGIB) مسؤول عن 25 في المائة من إجمالي مرضى نزيف الجهاز الهضمي في عموم السكان. في الولايات المتحدة، يعتقد أن معدل الإصابة بـ LGIB يتراوح بين 21-27 / 100,000 سنوياً، بينما يعتقد أن معدل الاستشفاء يتراوح بين 20-30 / 100,000 سنوياً. وفقاً للتقارير، يموت 2-4٪ من المرضى في المستشفى. على الرغم من حقيقة أن مضاعفات الجهاز الهضمي العلوي المرتبطة بارتفاع ضغط الدم البابي قد حظيت بالكثير من الاهتمام، إلا أن القليل من الدراسات قد استكشفت مضاعفات الجهاز الهضمي السفلي. **الهدف:** دراسة مدى انتشار ونتائج 28 يوماً للمرضى الذين تم إدخالهم إلى المستشفى بسبب نزيف الجهاز الهضمي السفلي في تليف الكبد وعلاقته بـ MELD. **الطريقة:** أجريت دراسة مقطعية واحدة قائمة في مركز واحد لمدة ثمانية عشر شهراً. المصدر الرئيسي للبيانات هو من المرضى في المستشفى في قسم الطب العام وقسم أمراض الجهاز الهضمي الطبية في معهد العلوم الطبية ومستشفى SUM، بعد أدنى 100 حالة. **النتائج:** من بين 100 مريض، لوحظت البواسير الداخلية في 50 مريضاً، وتم العثور على البواسير الخارجية فقط في مريض واحد، وكانت دوالي المستقيم موجودة في 17 مريضاً. تم العثور على درجة MELD لنتيجة اليوم 28 لتكون 21.85 في المتابعة. وكان 27.0 في المرضى المتوفين بحلول اليوم 28. **الاستنتاجات:** يبدو أن أحد العناصر الأساسية للحالة، ارتفاع ضغط الدم البابي والمسؤول عن سوء مستقبل المرض.

* **Corresponding author:** Tapan K. Panda, Department of General Medicine, IMS and SUM Hospital, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, Odisha, India; Email: tapankumarpananda@soa.ac.in

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INTRODUCTION

Elderly people are more likely to experience lower gastrointestinal bleeding (LGIB), which is responsible for 25% of overall GI bleeding incidents in the general population [1,2]. In the US, the incidence of LGIB is thought to be 21–27/100,000 per year, while the rate of hospitalization is thought to be 20–30/100,000 per year. According to reports, 2–4% of patients hospitalized with LGIB die [1,2,3]. Hepatic hydrothorax, ascites, portal hypertensive gastropathy, hepatic encephalopathy, and other consequences can result from portal hypertension, which is a common cirrhosis complication [4]. In addition to varices or portal hypertension in the lower gastrointestinal (GI) tract, mucosal abnormalities can also result in LGIB. According to the (limited) research that is currently available, enteropathies, anorectal varices, colorectal varices and to a lesser frequency diverticula or vascular ectasia, are among the portal hypertensive lesions that most patients with cirrhosis and LGIB have [5,6]. There is currently an area of research on LGIB in cirrhotic individuals, particularly when portal hypertension is present. Complications of portal hypertension also include hypertensive gastropathy, gastroesophageal varices, and gastric antral vascular ectasia in the upper GI tract. Varices, internal hemorrhoids, and portal hypertensive colonopathy are signs of a portal hypertensive colon. According to various studies, rectal varices can occur in chronic liver diseases at a prevalence of 7% to 44%. 8% of LGIB occurring in patients having cirrhosis of liver have rectal varices. Despite the fact that upper GI complications associated with portal hypertension have received a lot of attention, few studies have explored lower GI complications [7]. As well as the correlation between MELD score and 28th-day outcome, this study examines the prevalence and etiology of lower gastrointestinal bleeding in cirrhosis. Cirrhosis patients can suffer life-threatening complications from lower gastrointestinal bleeding (LGIB), including upper gastrointestinal bleeding (UGIB). In patients diagnosed with cirrhosis, the information about LGIB is surprisingly low. Even though large epidemiologic studies are lacking, many fundamental questions remain regarding bleeding risks, diagnosis, and treatment [8]. According to data available from small studies and general populations, LGIB was not found commonly among cirrhosis patients. Cirrhosis patients are less likely to have LGIB when compared to patients with UGIB. LGIB is a source of bleeding in 15–20% of cases of GI bleeding, compared to 80–85% of cases of UGIB. A longitudinal study conducted by Brescia found that 34% of patients with cirrhosis developed UGIB and 6% developed LGIB. The incidence of LGIB is lower among women, whereas among men it increases with age [2]. The present study was aimed to evaluate the relationship between lower gastrointestinal bleeding and 28th-day outcome in those patients of cirrhosis using MELD score.

METHODS

A single center-based cross-sectional study was conducted for eighteen months. The main source of data is from patients hospitalized at the Department of General Medicine and Department of Medical Gastroenterology at the Institute of Medical Sciences and SUM Hospital after obtaining ethical clearance from the Institutional Ethical Committee (Reference No.: DMR/IMS.SH/SOA/2021/194).

Inclusion Criteria

Age 18 to 80 years of either gender, and cirrhotic patients with portal hypertension.

Exclusion Criteria

Patients with hepatic encephalopathy, grades III and IV, Patients who are in shock, acute respiratory distress syndrome (ARDS), and ventilator support. Patients with total colectomy. Patients in whom portosystemic shunt surgery had been done. Patients have portal hypertension due to pre- and post-hepatic causes.

Ethical approval

The study was conducted after obtaining the ethical clearance from the Institutional Ethical Committee of IMS and SUM Hospital, Bhubaneswar (Reference No.: DMR/IMS.SH/SOA/2021/194).

Statistical analysis

The statistical analysis was carried out using SPSS (Version 26) for Windows Package (SPSS Science, Chicago, USA). The quantitative data was described as medians, mean \pm standard deviation (SD), and intra-quartile range. Descriptive analysis was done by means of frequencies, percentages, and their confidence intervals. Parametric and non-parametric tests were used as appropriate for the comparison of variables.

RESULTS

The rectal varices were present in 17 patients (17%) and absent in 83 patients (83%). Out of 100 patients, 22 were under the age of 35, 37 were between the ages of 36 and 45, 23 were between the ages of 46 and 55, and 17 were between the ages of 56 and 65. Finally, only one patient was 66–75 years old. Out of 100 patients, male patients were 86 (86%) and female patients were 14 (14%). The rectal varices were present in 17 patients (17%) and absent in 83 patients (83%). Out of 100 patients, 22 were under the age of 35, 37 were between the ages of 36 and 45, 23 were between the ages of 46 and 55, and 17 were between the ages of 56 and 65. Finally, only one patient was 66–75 years old. Out of 100 patients, male patients were 86 (86%) and female patients were 14 (14%) (Table 1).

Table 1: Patient characteristics

Rectal Varices	n(%)
Present	17(17)
Absent	83(83)
<i>Age distribution (year)</i>	
≤35	22(22)
36–45	37(37)
46–55	23(23)
56–65	17(17)
66–75	1(1.0)
<i>Gender distribution</i>	
Male	86(86)
Female	14(14)

The prevalence of internal hemorrhoids was analyzed and given in Table 2. Out of 100 patients, internal hemorrhoids were not observed in 49 (49%) patients. However, the grade I internal hemorrhoids were found in 26 (26%) patients, the grade II internal hemorrhoids were found in 17 (17%) patients, the grade III internal

Table 3: Comparison of MELD and MELD-Na on 28th day outcome

Variable	28 th day outcome	n	Mean±SD	Range	p-value
MELD	On follow up	74	21.85±6.07	7.0-40.0	0.0001
	Dead	26	27.0±6.76	9.0-39.0	
	Total	100	23.19±6.62	7.0-40.0	
MELD-Na	On follow up	74	22.5±6.37	7.0-40.0	0.0001
	Dead	26	27.88±7.04	10.0-39.0	
	Total	100	23.9±6.93	7.0-40.0	

In our study, bleeding per rectum was observed in 5 patients whose MELD score was 27.40±6.54. In the same way, bleeding per rectum was observed in 5 patients whose MELD-Na score was 30.40±7.89 (Table 4).

Table 4: Comparison of MELD and MELD-Na and Bleeding per rectum

Variable	Bleeding per rectum	n	Mean±SD	Range	p-value
MELD	Present	5	27.40±6.54	24.0-39.0	0.146
	Absent	95	22.96±6.58	7.0-40.0	
	Total	100	23.19±6.62	7.0-40.0	
MELD-Na	Present	5	30.40±7.89	24.0-39.0	0.031
	Absent	95	23.55±6.75	7.0-40.0	
	Total	100	23.90±6.93	7.0-40.0	

DISCUSSION

Twenty-five percent of all the cases of GI bleeding in the general population are due to lower gastrointestinal bleeding (LGIB), which usually affects older people. We examined the patient's demographics, complete medical history, clinical data, Child-Pugh score (CP), MELD score, complications of cirrhosis, medicines, and lab results. Here, we propose that LGIB, which is common in many of these patients, may be linked to portal hypertension in cirrhotic individuals. In this study, the mean age of the studied group (n=100) was recorded as 44.49 ± 9.98, with a range between minimum 27 and

hemorrhoids were found in 7 (7%) patients, and the external hemorrhoids were found only in 1 (1%) patient.

Table 2: Prevalence of Internal Hemorrhoids

Internal Hemorrhoids	n(%)
Absent	49(49)
Grade I	26(26)
Grade II	17(17)
Grade III	7(7)
External Hemorrhoids	1(1.0)
Total	100

The mean MELD score for the 28th day outcome was found to be 21.85±6.07 on follow-up. It was 27.00±6.76 in dead patients by the 28th day. The mean MELD-Na score for the 28th day outcome was found to be 27.88±7.04 on follow-up. It was 23.90±6.93 in dead patients by the 28th day. The p-value was found to be significant at the 0.0001 level. (Table 3).

maximum 67. Out of 100 patients, 22 were ≤35 years old, 37 were 36–45 years old, 23 subjects were between the ages of 46–55 years, and 17 subjects were between the ages of 56–65 years. Finally, only one patient was 66–75 years of age. The gender distribution with rectal varices comparison was analyzed, and out of 86 (86%) male patients, rectal varices were observed in 17 (17%) males but not in the rest of the 69 (69%) male patients, whereas no female was observed with rectal varices. The Fisher's exact test and its p-value of 0.06 revealed that there are no significant differences between groups. In Imran Babar *et al.*, 96 patients (64%) were male, while the remaining 54 patients (36%) were female, which is higher than our study [9]. In a study by Wang *et al.*, 103 consecutive cirrhotic patients were studied. Among them, 91 were males and 12 were females, which were on par with our results [10]. All 100 patients were observed to have abdominal distension, and 16 (16%) patients had an altered sleep rhythm. Only 2 (2%) patients had drowsiness. The bleeding per rectum was observed in 5 (5%) patients, decreased urine output was observed in 3 (3%) patients, and jaundice was observed in 79 (79%) patients. According to previous reports, most patients vomit blood, but hematochezia and melena might be the only symptoms [11,12]. In our study, the association between bleeding per rectum and rectal variables was not significant. According to reports in the literature, rectal varices are enlarged portosystemic collaterals that may form in people with portal hypertension; as a result, they serve as another route for

the venous blood to flow from the superior hemorrhoid vein (portal) to and through the middle and inferior hemorrhoid vein (systemic). In this situation, massive bleeding has been observed per rectum, but seldom. On the other hand, hemorrhoids are a very common source of discomfort from rectal bleeding in the general population, and their occurrence in individuals with portal hypertension has been seen to be enhanced. The association between bleeding per rectum and hemorrhoids was highly significant in our study [13,14]. We are aware of conflicting findings about the predictive efficacy of the Child-Pugh score vs. the MELD score in cirrhosis patients, despite the demonstrable predictive relevance of these measures for predicting survival in patients with the disease. In our study, out of 100 patients, 33 (33%) had a B score for child pug, whereas 67 (67%) had a C score for child pug. In our study, bleeding per rectum was observed in 5 patients whose MELD score was 27.40 ± 6.54 . In the same way, bleeding per rectum was observed in 5 patients whose MELD-Na score was 30.40 ± 7.89 . Chalasani *et al.* reported that the MELD scale is an excellent predictor of patient mortality following bleeding per rectum [15]. In a study performed by Bishay *et al.*, the death cohort had a higher MELD score at presentation (24.0 versus 14.8, $p=0.001$), This association with mortality persisted even after multivariable correction ($p=0.001$). At admission, the death group's calculated MELD scores were higher (24.0 6.1 versus 14.8 5.6, $p=0.001$). There was a 1.31 (95% confidence interval [CI]: 1.13, 1.51) times greater chance of mortality for every unit higher MELD score [16]. Several studies that looked at the MELD score for in-hospital mortality similarly found that MELD values were quite high in liver cirrhosis patients with rectal bleeding who succumbed in the hospital. The comparatively higher MELD score for mortality in this research might be attributed to ongoing advancements in clinical outcomes and therapy for cirrhotic patients presenting with GIB. The findings of our study indicate that the MELD score, independent of the cause of the bleed, is linked to a greater mortality rate and can be a straightforward and practical technique for prognosticating patients presenting with LGIB among the cirrhotic. The finding that specific MELD score components are noticeably worse in patients who have passed away supported the study even more.

Study Limitations

We are aware of the restrictions on our investigation. The biggest drawback is the small cohort size, which has forced us to do a study that is mostly descriptive in nature. The third drawback is that our study was retrospective in nature. Last but not least, the fact that the results were limited to one hospital may prevent external applicability.

Conclusion

Although hemorrhoids are the most frequent cause of LGIB in cirrhotic patients that necessitate hospitalization, they are still linked to a significant death rate. The condition appears to have a significant role in portal hypertension, which probably plays a role in the unfavorable prognosis. According to the study, doctors should investigate a more thorough differential diagnosis for patients with cirrhosis and LGIB, including hemorrhoids, rectal varices, and PHC. According to the findings of our study, a high MELD score is linked to higher in-hospital mortality, independent of the cause of the bleed, and is a straightforward and practical technique to prognosticate the patients who come with LGIB due to liver cirrhosis.

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Conflict of interests

No conflict of interests was declared by the authors.

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Data sharing statement

Supplementary data can be shared with the corresponding author upon reasonable request.

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