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Original Article

Frequency of Duodenal Ulcers in Decompensated Cirrhotic Patients Undergoing Endoscopy for Upper GI Bleed

Muhammad Riaz, Sadaf Yousaf, Asma Kazi, Aisha Aziz, Hafiz Muhammad Irfan, Arslan Maqbool, Anjum Rashid

Arif Memorial Teaching Hospital, Lahore

Abstract

Objective: To assess the frequency of duodenal ulcers in decompensated cirrhotic patients (secondary to hepatitis B or hepatitis C) undergoing endoscopy for upper GI bleed.

Methods: This descriptive study was undertaken in Department of Gastroenterology, Arif Memorial Teaching Hospital, Lahore from February 02, 2021 to August 01, 2021. A total of 100 patients of age 30 to 70 years with either gender having liver cirrhosis secondary to hepatitis B or hepatitis C and presenting with upper GI bleed were included in the study. Patients with recent NSAIDs use, stress ulcers or history of poisoning by acid/ alkali were excluded. After complete history and examination, relevant imaging and laboratory investigations were ordered. After hemodynamic optimization, endoscopy was done and duodenal ulcer was recorded.

Results: Among 100 patients, mean age was 49.03 ± 10.77 years, most of the them (56.0%) were 30 to 50 years old, 53.0% were male and 47.0% were females. Results showed that frequency of duodenal ulcers in decompensated cirrhotic patients (secondary to hepatitis B or hepatitis C) undergoing endoscopy was 16.0%.

Conclusion: Study concluded that frequency of duodenal ulcers in decompensated cirrhotic patients (secondary to hepatitis B or hepatitis C) presenting with upper GI bleed was quite high.

Keywords: Liver cirrhosis, duodenal ulcers, esophageal varices, upper GI endoscopy

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Corresponding Author: Dr. Asma Kazi **Email:** docasmakazi@gmail.com

Introduction

The UGIB (upper gastrointestinal bleeding) is a prevalent medical condition associated with significant morbidity, mortality as well as healthcare costs. The duodenal ulcers are believed primary cause for upper gastrointestinal bleeding, while variceal bleeding predominates among patients with cirrhosis and portal hypertension. Nonetheless, individuals who have portal hypertension may experience upper GI bleeding due to causes not associated with portal hypertension, such as peptic ulcer disease. During a three-year follow-up study, the cumulative incidence of esophageal variceal bleeding was 44.5% and 11.3% in the EVB (esophageal variceal bleed) and non-EVB group, respectively.[1,2]

Esophageal band ligation remains the mainstay of treatment for esophageal varices, while sclerotherapy is a considerable option for gastric varices. Pharmacological agents like Terlipressin and Somatostatin have similar effects on mortality when they are used as an adjuvant to the endoscopic therapy among cirrhotic patients who have acute gastric variceal bleeding.[3,4] While the efficacy of PPIs (Proton Pump Inhibitors) in treating the peptic ulcer disease by inhibiting the final step in production of gastric acid is widely recognized, their impact, along with H2Ras (H2 Receptor Antagonists) on outcomes in the gastroesophageal variceal hemorrhage remains uncertain. The outcomes of a recent 15-year nationwide study highlighted that the results, with regards to re-bleeding & mortality, among the cirrhotic individuals who obtained EVBL regarding bleeding varices were comparable between those who obtained adjuvant prescriptions of the acid suppression along with vasoactive agents, and those who obtained standard therapy for EVBL, which comprises of vasoconstrictor treatment with no acid suppression.[5] The frequency of peptic ulcer in cirrhosis was 9.9 %.[6,7]

The rationale of this study is to determine frequency of duodenal ulcers in decompensated cirrhotic patients (secondary to hepatitis B or hepatitis C) undergoing esophageal band ligation (EVBL) for esophageal varices (from AMTH) amongst our population. Most of the patients only become aware of their condition when complications arise. Emphasizing early identification and intervention is crucial, as treatment options for these complications are often financially inaccessible for most of the patients and do not offer permanent solutions. Globally viral cause of liver cirrhosis is 57% as compared to a national study in which viral causes constitute 98.4% of total cases of liver cirrhosis.[6] Apart from this there is not a single study in Pakistan assessing the incidence of duodenal ulcers in decompensated cirrhotic patients (secondary to hepatitis B or hepatitis C) undergoing esophageal band ligation for esophageal varices. Therefore, it is significant to conduct a study to assess the incidence in Pakistani population, so that we may prescribe Proton Pump Inhibitors (PPIs) for longer duration to reduce this occurrence.

Methods

A descriptive, case series study was done in General Medicine Department, Outpatient and Inpatient Departments, Arif Memorial Teaching Hospital Lahore from 2nd February 2021 to 1st August 2021. A total of 100 patients of esophageal varices and decompensated cirrhosis secondary to hepatitis B or hepatitis C having ages between 30-70 years were enrolled in the study through non-probability, consecutive sampling. Patients with NSAID-induced ulcer, H. Pylori associated ulcer, malignant ulcers and stress ulcers or history of poisoning by acid/ alkali were excluded from the study. Informed written consent was obtained. Demographic details such as name, age, gender and address were noted. All information about patients was kept confidential. After complete history and examination, relevant imaging and laboratory investigations were ordered. After 2-3 weeks of band ligation, endoscopy was repeated and duodenal ulcer was recorded according to operational definition. All the data was recorded in a proforma. Data was entered and analyzed using SPSS version 21. Numerical variables such as age was summarized as mean+SD. Qualitative variables i.e., socioeconomic status, sex and duodenal ulcer were presented as frequency and percentage. Data was stratified for age, gender, and duration of cirrhosis to control the effect modifier and chi-square test was used to check the statistical significance post-stratification. P-value <0.05 was considered as statistically significant.

Results

Table-I depicts that among 100 patients, 56 (56.0%) were 30-50 years old and 44 (44.0%) were 51-70 years old while the mean age was 49.03 ± 10.77 years (age range 30-70 years).

Figure-I shows that among 100 patients, 53 (53.0%) were male while 47 (47.0%) were females. Table-II describes that among 100 patients, majority 64 (64.0%) had duration of disease up to 6 months and 36 (36.0%) patients had disease duration more than 6 months while the mean duration of disease among patients was 6.01 ± 2.38 months.

Table-III demonstrates that out of 100 patients, majority (40.0%) belonged to poor socioeconomic status, followed by, middle (35.0%) and upper socioeconomic status (25.0%).

Figure-II indicates that frequency of duodenal ulcers in decompensated cirrhotic patients (secondary to hepatitis B or hepatitis C) undergoing esophageal band ligation for esophageal varices was found in 16 (16.0%) patients.

Table-IV exhibits that among 56 patients who were 30-50 years old, 9 had duodenal ulcers and 47 had no duodenal ulcers. Among 44 patients who were 51-70 years old, 7 had duodenal ulcers and 37 had no duodenal ulcers (P=0.983).

Table-V asserts that among 53 patients who were male, 9 had duodenal ulcers and 44 had no duodenal ulcers. Among 47 patients who were female, 7 had duodenal ulcers and 40 had no duodenal ulcers (P=0.776).

Table-VI elucidates that among 64 patients who had duration of cirrhosis <6 months, 12 had duodenal ulcers and 52 had no duodenal ulcers. Among 36 patients who had duration of cirrhosis >6 months, 4 had duodenal ulcers and 32 had no duodenal ulcers (P=0.317).

Table 1: *Distribution of patients according to age (n=100)*

Age	No.	Percentage
30-50 yrs.	56	56.0
51-70 yrs.	44	44.0
Total	100	100.0
Mean ± SD	49.03 ± 10.77 yrs.	

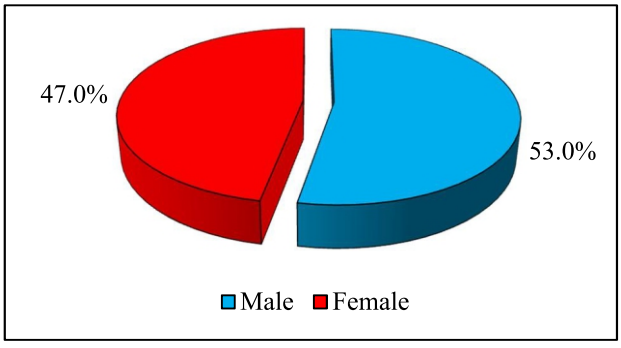

Figure 1: *Distribution of patients according to gender (n=100)*

Table-VII describes that among 40 patients who belonged to poor socioeconomic status, 7 had duodenal ulcers and 33 had no duodenal ulcers. Among 35 patients who belonged to middle socioeconomic status, 5 had duodenal ulcers and 30 had no duodenal ulcers. Among 25 patients who belonged to upper socioeconomic status, 4 had duodenal ulcers and 21 had no duodenal ulcers (P=0.931).

Table 2: *Distribution of patients according to duration of disease (n=100)*

Duration of disease	No.	Percentage
≤6 months	64	64.0
>6 months	36	36.0
Mean ± SD	6.01 ± 2.38 months	

Table 3: *Distribution of patients according to socioeconomic status (n=100)*

Socioeconomic status	No.	Percentage
Poor	40	40.0
Middle	35	35.0
Upper	25	25.0

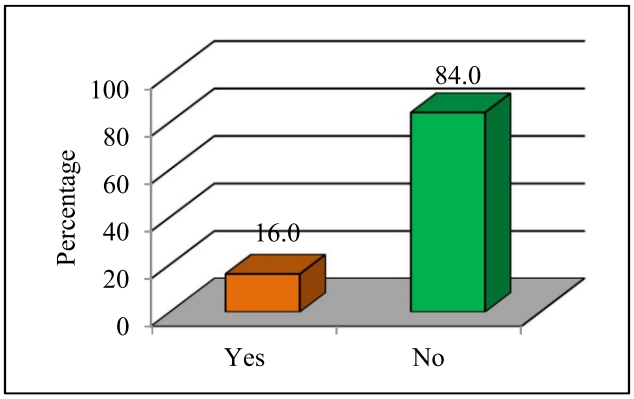

Figure 2: *Frequency of duodenal ulcers in decompensated cirrhotic patients (secondary to hepatitis B or hepatitis C) undergoing esophageal band ligation for esophageal varices (n=100)*

Table 4: *Stratification of duodenal ulcers with respect to age groups*

Age	Duodenal ulcers		P-value
	Yes	No	
30-50 years	09 (16.07%)	47 (83.93%)	0.983
51-70 years	07 (15.91%)	37 (84.09%)	

Table 5: *Stratification of duodenal ulcers with respect to gender*

Gender	Duodenal ulcers		P-value
	Yes	No	
Male	09 (16.98%)	44 (83.02%)	0.776
Female	07 (14.89%)	40 (85.11%)	

Table 6: *Stratification of duodenal ulcers with respect to duration of cirrhosis*

Duration	Duodenal ulcers		P-value
	Yes	No	
≤6 months	12 (18.75%)	52 (81.25%)	0.317
>6 months	04 (11.11%)	32 (88.89%)	

Table 7: *Stratification of duodenal ulcers with respect to socioeconomic status*

Socioeconomic status	Duodenal ulcers		P-value
	Yes	No	
Poor	07 (17.50%)	33 (82.50%)	0.931
Middle	05 (14.29%)	30 (85.71%)	
Upper	04 (18.18%)	21 (81.82%)	

Discussion

The incidence of peptic ulcer disease among cirrhotic patients has been reported to range from 8% to 20%.[8-12] The complication rate and mortality are also increased in such patients.(1) Suggested pathogenesis of peptic ulcers in patients with cirrhosis includes increased levels of gastrin and histamine, the presence of Helicobacter pylori, increased duodenogastric reflux, decreased level of prostaglandin in the gastric mucosa, impaired gastric emptying and reduced mucosal oxygen saturation.[13-18]

The current study was carried out to assess the frequency of duodenal ulcers in decompensated cirrhotic patients (secondary to hepatitis B or hepatitis C) undergoing esophageal band ligation for esophageal varices. Study revealed that age range of the patients was 30-70 years while the mean age was 49.03 ± 10.77 years. Most of the patients (56.0%) were 30 to 50 years old. Among 100 patients, 53.0% were male and 47.0% were females. In our study, frequency of duodenal ulcers in decompensated cirrhotic patients (secondary to hepatitis B or hepatitis C) undergoing esophageal band ligation for esophageal varices was found in 16 (16.0%) patients. The frequency of peptic ulcer in cirrhosis is 9.9%.[7]

Individuals with cirrhosis are mostly found with higher incidence of PUD, along with a described point prevalence of ten percent or above.[17-21] For example, among the 324 of 368 consecutive cirrhotic individuals who experienced endoscopic screening regarding esophageal varices, 11.7 percent were identified with PUD.[17] During the endoscopic follow-up of 140 cirrhotic patients, the annual prevalence of new PUD development was 4.3%, significantly surpassing the less than 0.5% annual incidence observed among general population.[17] A study carried out among 130 individuals with cirrhosis who underwent esophagogastroduodenoscopy for variceal screening reported that 50 (39%) individuals had PUD.[19] Insignificant differences were found in age, gender, history of tobacco smoking between individual with and

with no PUD. A prospective study carried out in South Korea revealed that among 288 individuals with cirrhosis, 24.3% had PUD.[22] Advanced cirrhosis (Child-Pugh class B / C) is notably linked to PUD.[19] For instance, in 324 individuals undergoing EGD, individuals with advanced cirrhosis had considerably elevated frequency of PUD than individuals with early cirrhosis (P= 0.04).[17]

The PUD is primary cause for nonvariceal upper GI bleeding among individuals with cirrhosis.[23] Out of 160 individuals with non-variceal upper GI bleeding & cirrhosis (mostly due to alcohol), 81(50.6%) individuals had PD while 53.1% individuals were found with high risk endoscopic SRH (stigmata of recent hemorrhage) at ulcer base.[24] The incidence of acute UGIB due to PUD among individuals with persistent liver disease has been reported to range from 1.6% to 25%.[25-27] The broad range of results likely stems from the diverse patient populaces across various countries as well as socioeconomic groups and differences in the stages of liver disease among the studies.

A nationwide recent database study conducted in Taiwan over seven years found a significantly higher prevalence of PUD among 4013 individuals who had nonalcoholic cirrhosis (4.8%) when compared with 8013 patients who had chronic hepatitis with no cirrhosis (1.6%) or 7793 controls who had no liver disease (1.6%).[25] Three groups of patients were matched based on age, gender, income per year, comorbidities and medications. Even after adjusting for the confounding factors, this difference was seen statistically significant (HR=4.22; 95% CI: 3.37-5.29, P<0.001).[25] Elderly age, male gender, chronic kidney disease, diabetes mellitus, past variceal bleeding as well as use of NSAIDs were the risk factors regarding PUD among cirrhotic patients.

In their study Houben and coworkers found that duodenal ulcer frequency was 11.1%.[28] In our study, similar results were found. The frequency of duodenal ulcer in our study was 16% (16 out of 100 patients). In another study carried out by Svoboda and colleagues, the gastroduodenal ulcers were found to be 25.8%.[29] Study conducted in Mayo Hospital Lahore Pakistan has shown the frequency of peptic ulcer among cirrhotic individuals to be 32%.[30] Siringo et al.[31] prospectively assessed the epidemiological as well as clinical features among 324 cirrhotic individuals who had peptic ulcer, and discovered that the peptic ulcer yearly incidence and prevalence was 4.3% and 11.7%% while more than 70% of patients were found asymptomatic (without complaint of epigastric pain constantly more than 7 days on diagnosis). There was majority of asymptomatic patients amongst those with severe decompensated liver cirrhosis (P = 0.04).

A study carried out among 435 individuals with nonalcoholic cirrhosis, the prevalence rates of gastric ulcer and duodenal ulcer were 2.2% and 4.1%, respectively.[32] In another study that included 81 individuals with nonalcoholic cirrhosis, the frequencies of gastric and duodenal ulcers were 7% and 14%, respectively.[33] Latest endoscopic surveys conducted in Europe and USA have reported the duodenal ulcer incidence ranging from 2.0% to 10.9% and the gastric ulcer ranging from 5.6% to 7.6% in series primarily consisting of individuals with alcoholic cirrhosis.[34-36] It is noteworthy that in these studies the ratio of the gastric to duodenal ulcers was higher than would be expected in a Western population.

Conclusion

Study concluded that the frequency of duodenal ulcers in decompensated cirrhotic patients (secondary to hepatitis B or hepatitis C) undergoing esophageal band ligation for esophageal varices was quite high. So, it is recommended that in every patient of liver cirrhosis, duodenal ulcers should be taken into consideration and its early identification as well as management should be carried out so as to decrease the morbidity and mortality within the community.

Conflict of Interest: *None*

Funding Source: *None*

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