

Frequency of Upper Gastrointestinal Bleeding As Precipitant of Hepatic Encephalopathy among Patients with Liver Cirrhosis

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ABSTRACT

Objective: To find frequency of upper gastrointestinal bleeding as precipitant of hepatic encephalopathy among patients with liver cirrhosis.

Study design. Descriptive cross sectional study

Setting: Gastroenterology and Hepatology Department, Lady Reading Hospital Peshawar.

Duration: 6 months 20th December 2018 to 20th June 2019.

Material and Methods: In this study a total of 271 patients were observed. History regarding the current illness was taken from the patient or the accompanying caregivers in case patient cannot respond adequately or at all. Emphasize was on the possible precipitant of current HE episode especially symptoms of upper gastrointestinal bleeding like hematemesis and melena. On examination; body temperature, stigmata of chronic liver disease such as hepatic flap, grading of HE and similarly presenting conditions was looked for.

Results: In this study mean age was 45 years with SD \pm 11.27. Fifty nine percent patients were male while 41% patients were female. More over 10% patients had upper gastrointestinal bleed with hepatic encephalopathy among patients with liver cirrhosis.

Conclusion: Our study concludes that the frequency of upper gastrointestinal bleed was 10% as precipitant of hepatic encephalopathy among patients with liver cirrhosis.

Keywords: Upper Gastrointestinal Bleed, Hepatic Encephalopathy, Liver Cirrhosis.

INTRODUCTION

Liver cirrhosis is a major cause of death and disability [1]. Because hepatitis B and C are so common in Pakistan, the disease is on the rise there [2]. Hepatic encephalopathy, hepatocellular cancer, and coagulation problems are just some of the consequences associated with liver cirrhosis [3]. An important reversible neuropsychiatric illness, hepatic encephalopathy (HE) can affect up to half of cirrhotic individuals. In order to determine how severe HE is, the WestHaven criteria are applied (grades 1-4). Patients with hepatic encephalopathy are less likely to survive than comparable patients without HE [4]. Infections, gastrointestinal haemorrhage, constipation, dehydration, and electrolyte imbalance (hypokalemia and hyponatremia) are all potential causes of hepatic encephalopathy [5].

Portal hypertension-related gastrointestinal bleeding is a life-threatening complication for people with liver cirrhosis. Either esophageal or stomach varices are the most common source of bleeding, while portal hypertensive gastropathy and ectopic varices are other probable causes [6]. Increased intestinal absorption of ammonia and nitrogen occurs when blood is present in the upper gastrointestinal tract. Hemolysis, which transfusions can cause, results in the production of ammonia [7]. In the context of liver cirrhosis, ammonia can pass the blood-brain barrier and lead to a rapid enlargement of astrocytes, which in turn can precipitate encephalopathy [7]. Two-sevenths of patients with hepatic encephalopathy have upper gastrointestinal bleeding as a precipitant, according to a global survey done in Egypt [8]. Upper gastrointestinal haemorrhage is a precipitating cause in 29% of patients with hepatic encephalopathy, according to a local Peshawar study [9]. Another investigation on patients with liver cirrhosis found that upper gastrointestinal haemorrhage was a precipitant of hepatic encephalopathy in 6.8% of cases [10].

As indicated above [8-10], different research conducted in different parts of Pakistan have yielded contradictory findings, suggesting that the aforementioned conclusions should not be extrapolated to the entire population. This is why I intend to study the incidence of upper gastrointestinal bleeding as a precipitant of

hepatic encephalopathy in our local sample of patients with liver cirrhosis. By treating cirrhotic patients as soon as possible after the onset of symptoms, we can reduce the incidence of hepatic encephalopathy and the associated morbidity and mortality. In addition, this research will aid in identifying the prevalence of this precipitant across different age groups in our general population.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted at Department of Gastroenterology and Hepatology Lady Reading Hospital Peshawar. Duration of the study was 6 months from 20th December 2018 to 20th June 2019. Sample size was 271 patients, taking frequency of upper gastrointestinal bleeding as a precipitant for hepatic encephalopathy in cirrhotic patients 6.8%¹⁰, confidence level 95 %, margin of error 3 %; using WHO software for sample size calculation. Patients of either gender with liver cirrhosis and ages between 20 and 60 years were included. Patients with any organic and/or functional brain disorder, acute/fulminant hepatic failure, poor renal function (serum creatinine >1.5 mg/dL), and secondary causes of portal systemic bypass in the absence of intrinsic hepatocellular disease were excluded.

After obtaining informed consent from the patient or his/her family (in cases where the patient is unable to answer) and approval from the ethics committee and research department, patients admitted to the Gastroenterology department who meet the inclusion criteria were enrolled in this study. The patient's safety and anonymity were guaranteed at every stage.

At the time of admission, the patient's demographics, medical history, physical examination, laboratory parameters, and previous medical records were evaluated.

The patient's or accompanying carers' medical history was obtained in the event that the patient cannot react appropriately or at all. Symptoms of upper gastrointestinal bleeding, such as hematemesis and melena, were highlighted as possible precipitants of the current HE episode. History-based exclusion of other medical conditions that can closely resemble HE. Examining

for body temperature, signs of chronic liver illness such as hepatic flap, HE grading, and similarly presenting diseases.

The past medical history, including previous hospitalizations and drug history, was acquired from the accompanying caregivers' and hospitals' medical records. The collection of laboratory parameters (complete blood counts, liver function tests, renal function tests, serum electrolytes, random blood sugar, serum albumin, and coagulation profile) occurred. Once the patient's condition was stabilised, an upper GI endoscopy was performed to provide a definitive diagnosis.

Statistical software was employed to analyse the data (IBM-SPSS version-22). For qualitative factors such as gender, obesity, diabetes mellitus, hypertension, smoking, grade of hepatic encephalopathy, aetiology of cirrhosis, and upper gastrointestinal haemorrhage, the frequency and percentage were computed. For quantitative characteristics such as age, BMI, and duration of symptoms, the mean SD was reported. Stratification controlled effect modifiers such as age, gender, obesity, diabetes mellitus, smoking, grade of hepatic encephalopathy, aetiology of cirrhosis, and hypertension. P 0.05 was deemed statistically significant when the post-stratification chi-square test was applied. The outcomes were displayed as tables and graphs.

RESULTS

Mean age of patients was 45±11.27 years. Gender distribution was analyzed as 160 (59%) patients were male while 111 (41%) patients were female. Mean duration of symptoms was 72±4.02 hours. Mean BMI was 25±4.93 kg/m². Status of diabetes mellitus was analyzed as 95 (35%) patients were diabetic while 176 (65%) patients were non diabetic. Status of hypertension was analyzed as 168 (62%) patients were hypertensive while 103 (38%) patients were not hypertensive. Grades of encephalopathy were analyzed as 179 (66%) patients had grade 1-2 encephalopathy while 92 (34%) patients had grade 3-4 encephalopathy. Status of smoking was analyzed as 81 (30%) patients were smokers while 190 (70%) patients were nonsmokers. (Table 1)

Table 1: Baseline characteristics of all the included patients

Characteristics	Frequency No.	%age
Mean Age (years)	45±11.27	-
Mean BMI (kg/m ²)	25±4.93	-
Duration of Symptoms (hours)	72±4.02	-
Gender		
Male	160	59%
Female	111	41%
Co-morbidities		
DM	95	35%
HTN	168	62%
Grades of Encephalopathy		
1 to 2	179	66%
3 to 4	92	34%
Smoking Status		
Yes	81	30%
No	190	70%

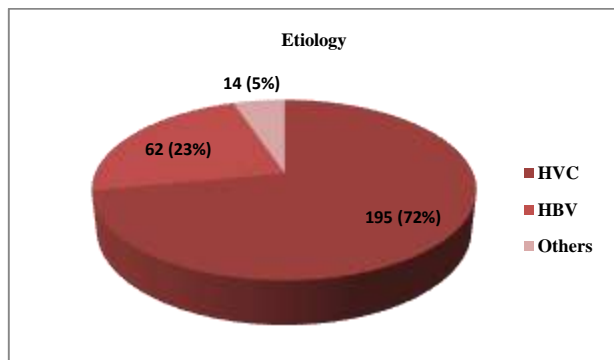


Figure 1: Etiology of Liver Cirrhosis

Status of etiology was analyzed as 195 (72%) patients had HCV, 62 (23%) patients had HBV while 14 (5%) patients had other etiology. (Figure No 1)

Status of upper gastrointestinal bleeding was analyzed as 27 (10%) patients had upper gastrointestinal bleeding while 244 (90%) patients didn't had upper gastrointestinal bleeding. (Figure No 2)

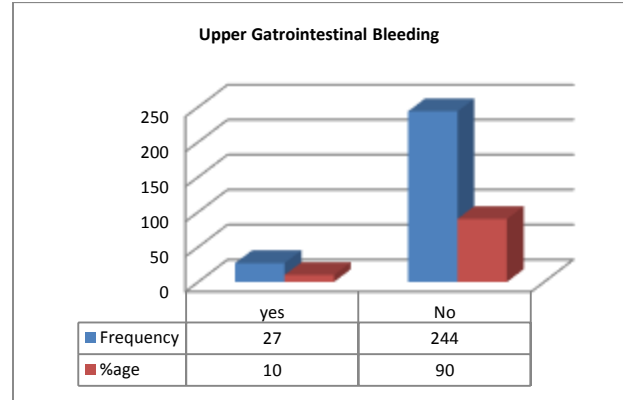


Figure 2: Frequency of Gastrointestinal Bleeding

DISCUSSION

A major cause of death and high medical bills, hepatic encephalopathy (HE) is a common consequence of liver cirrhosis. Based on the West Haven Criteria, HE can be classified as either "minimal" (MHE) or "overt" (OHE) [1]. Although there is probably more than one cause of HE, an imbalance in the urea cycle and increased systemic ammonia circulation are commonly thought to be at the root of the disease. Portal circulation carries nitrogenous substances excreted by gut bacteria to the liver, where they join endogenous nitrogen in the urea cycle.

Findings from our analysis indicate that the average age was 45 years old, with a standard deviation of 11.27 years. 59% of the patients were men, while 41% were women. Among those with liver cirrhosis, more than 10% experienced an upper GI bleed accompanied by hepatic encephalopathy.

Of the 540 patients in a research by Farag AA et al [11], 353 (65.4% of the total) were male and 187 (34.6% of the total) were female, yielding similar results. 618.4 years of age was the average. The majority of patients (465, or 86.1%) had cirrhosis due to the hepatitis C virus, and 489, or 90.6%, had Child-Pugh (C-P) class C. On admission, 5.4% of patients had HE of grade 1, while 30% had HE of grade 2, 41.5% had HE of grade 3, and 22.4% had HE of degree 4. Infection was the leading cause of HE in 159 patients (29.4%), followed by gastrointestinal bleeding in 146 patients (27%), and constipation in 47 patients (8.7%). The ICU mortality rate was 23%. Age, hemodynamic instability, HE of grade 3 or 4, renal impairment, recurring bouts of HE, and sepsis were all independently linked with ICU death in a univariate analysis. The average number of days a patient spent in the intensive care unit was 2.54. Grade 1 and 2 HE, Child class B, and patients in the fourth treatment group had shorter ICU stays (indicating early recovery) (BCAA plus LOLA). Grade 3, 4, HE, Child Class C, and Group I therapy were all related with longer ICU stays (i.e. slower recovery) (standard treatment). Mean intensive care unit (ICU) stays were 2.971.1 days in the standard therapy group and 2.10.9 days in the BCAA plus LOLA group. ICU mortality was 36% in the usual therapy group and 15.4% in the BCAA plus LOLA group. Upper gastrointestinal bleeding is a precipitant in more than 27 percent of patients with hepatic encephalopathy [8].

Infection (44%), gastrointestinal bleeding (38%), and constipation (38%), were also found to be the most common factors in a different study by Tariq M et al [12]. Low frequency factors were large-volume paracentesis, sedative use, and the use

of medicines containing ammonium salts. The most common severity levels of hepatic encephalopathy were grade III (52%), followed by grade IV (22%). Ascites (64 percent), Child's class C (62 percent), hyponatremia (50 percent), low haemoglobin (70 percent), hepatitis C (62 percent), and a high mortality rate (30 percent) were also frequently linked. Patients with hepatic encephalopathy are more likely to have upper gastrointestinal bleeding, according to a study conducted in Peshawar.

The results of another study by Achakzai M et al [13], in which 177 patients ranging in age from 20 to 80 years old were analysed, were similar. Seventy were males (40%) and 107 were females (60%) among the total. It was found that hepatitis C virus (HCV) was the cause of cirrhosis in 126 patients (71%). In total, 134 (76%) of the kids had a Child Turcotte Pugh (CTP) class C, with 41 (23%) having a class B, and 2 (1% having a class A). A total of 23 patients (13%) presented with HE of grade 1, while 45% (80 patients) had HE of some severity, 36% (64 patients), and 6% (10 patients) had HE of some severity. Constipation (39%), electrolyte imbalance (35%), infections (46%), spontaneous bacterial peritonitis (25%), urinary tract infections (23%), respiratory tract infections (8%), and gastrointestinal bleeds (7%) were the most common underlying causes of HE. There were 89 patients (50.3%), each with one precipitant, and 79 (44.6%), each with two. While the majority of patients (82.5%), 146, showed clinical improvement and were discharged, a significant minority (17%), 31 patients, did not survive their hospital stay. Class C children with multiple precipitants, hyponatremia, and severe HE at presentation had a mortality rate nearly three times higher than other children.

CONCLUSION

Our study concludes that the frequency of upper gastrointestinal bleed was 10% as precipitant of hepatic encephalopathy among patients with liver cirrhosis.

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