



Prevalence of Hepatic Encephalopathy and Its Precipitating Factors in CLD Cirrhotic Patients

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Authors' contributions

This work was carried out in collaboration between all authors. Author AK designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors AA and AG managed the analyses of the study and also edited the research paper and revised it. Authors SK and SS managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Objectives of Study: Hepatic Encephalopathy is a spectrum of neuropsychiatric abnormalities in patients with acute or chronic liver dysfunction, after exclusion of brain disease. It is characterized with intellectual impairment, personality changes, and a depressed state of consciousness. This study is underwent to study the clinical profile, important precipitating factors and outcome of hepatic encephalopathy in hospitalized CLD patients.

Methods: Cross-sectional, observational descriptive study which was undergone at Chaudhry Hospital, Gut and Liver Center, Gujranwala, Pakistan, on a sample size of 145 hospitalized CLD patients, out of which 92 with Hepatic Encephalopathy during August 2016 to December 2016. Data

was analyzed by SPSS v22.0 and the results are expressed as counts and percentage.

Results: Prevalence of hepatic encephalopathy in CLD patients is 63.4% with average age of patients above 40 years and 60% male predominance. The main precipitating factor for hepatic encephalopathy is underlying infection 57% (n=52) and upper gastrointestinal bleed 29% (n=27). The most common comorbidity is diabetes mellitus i.e. 62% (n=57). The main cause for CLD is hepatitis B and C related liver cirrhosis in our study. Among 92 patients, 42% (n=39) presented in grade 2 hepatic encephalopathy followed by 30% (n=27), 19.5% (n=18) and 8.5% (n=8) in grade 3, 1 and 4 respectively. Among 92 patients, 73% (n=67) got discharged after a stay of 5 ±2 days and 27% (n=25) expired. Among 25 expired patients, 71% (n=17) with Child-Pugh Score class C.

Conclusion: The prevalence of HE is more than 60% and main precipitating factor for hepatic encephalopathy is underlying infection. Diabetes mellitus is important co-morbidity factor observed in more than half of the patients. Majority of the patients present in grade 1 have good outcome. Expiry rate is higher in patients presenting with grade 3 and 4 hepatic encephalopathy and with Child-Pugh Score of class C.

Keywords: Hepatic encephalopathy; constipation; diabetes mellitus.

1. INTRODUCTION

Hepatic Encephalopathy is a complex, frequent neuropsychiatric manifestation of chronic and acute liver disease with disturbance of psychomotor, intellectual, cognitive, behavioral and fine motor functions of varying severity [1]. It is one of the common and serious complications of liver cirrhosis, affecting almost one third of cirrhotic patients. This spectrum of neuropsychiatric abnormalities with advance liver disease is associated with significant morbidity and mortality. It is functional in nature and potentially reversible and symptoms range from personality change to deep coma.

Hepatic Encephalopathy may arise spontaneously due to liver failure but more commonly will develop as a result of one or more precipitating factors in course of chronic liver disease or it could happen as a result of prolonged Porto-systemic shunting leading to chronic PSE (Portal Systemic Encephalopathy). Outcome of patients depends upon timely and early identification of precipitating factors in diagnosis and treatment of this fatal condition [2]. Common precipitating factors of HE include Sepsis/Infection, Upper Gastrointestinal bleeding (UGIB), Constipation, over usage of drugs such as Sedatives, Diuretics, Tranquilizers and NSAIDS.

Pathogenesis of HE is not clearly elucidated because of less clinical study in this aspect. However, it is said that diminished hepatic reserve results in impaired ability of liver to detoxify nitrogenous compounds e.g. ammonia, magnese, GABA, phenols, mercaptans that are absorbed from bowel [3]. They gain access to the

systemic circulation as a result of poor porto-systemic shunting of blood. Furthermore, they alter amino acid metabolism in neurons resulting in astrocyte swelling and cerebral edema.

The survival of patients having chronic PSE is better than those who develop hepatic encephalopathy acutely. But prognosis is better than those who presents with increased severity of disease. About 30% of patients with cirrhosis usually die in hepatic coma [4,5]. This study has been done to study the common precipitating factors, clinical outcome of cirrhotic patients who need hospitalization due to hepatic encephalopathy on the basis of Child-Pugh Score.

2. RESEARCH METHODOLOGY

2.1 Study Design

A hospital based Observational and Cross sectional descriptive study.

2.2 Study Population

CLD patients presented with hepatic encephalopathy in emergency.

2.3 Study Area

Chaudhry Hospital, Gut and Liver Center, Gujranwala.

2.4 Study Duration

Study was completed in 05 months i.e. August 2016 to December 2016.

2.5 Study Technique

Non-probability convenient sampling technique.

2.6 Sample Size

Total sample of 145 CLD (Hepatitis B and C related liver cirrhosis) hospitalized patients out of which 92 with hepatic encephalopathy.

2.7 Inclusion Criteria

CLD patients with hepatic encephalopathy.

2.8 Data Collection

The data was collected through patients file after taking informed consent.

2.9 Analytical Techniques

The data was entered and analyzed in a computer program SPSS v22.0 and reports were generated accordingly. Data results are presented as numbers and percentages. p value at <0.05 is considered significant.

2.10 Objectives of Study

- ◆ To determine the prevalence of hepatic encephalopathy in liver cirrhotic patients.

- ◆ To determine major causes and precipitating factors promoting hepatic encephalopathy.
- ◆ To determine the outcome of patients with different grades of hepatic encephalopathy.

3. RESULTS

In our study sample of 145 patients, 92 presented with hepatic encephalopathy, male to female ratio is 3:2 i.e. 60% male (n=55) and 40% female (n=37) and a significant percent (66%) of patient are of 40 to 60 years of age followed by 29% above 60 years and a very low percent 5% of those below 40-year age. The presenting complaints of patients in emergency are shown in Fig. 1.

The main precipitating factors promoting for HE in emergency are shown in following Fig. 2..

Among 92 HE patients, 42% present with grade 2 hepatic encephalopathy followed by 30%, 19.5% and 8.5% with grade 3, 1 and 4 respectively. A significant number of patients presented with recurrent hepatic encephalopathy as shown Fig. 3.

Child-Pugh Score was used to assess the severity, treatment and prognosis of HE patients is as shown in Table 1.

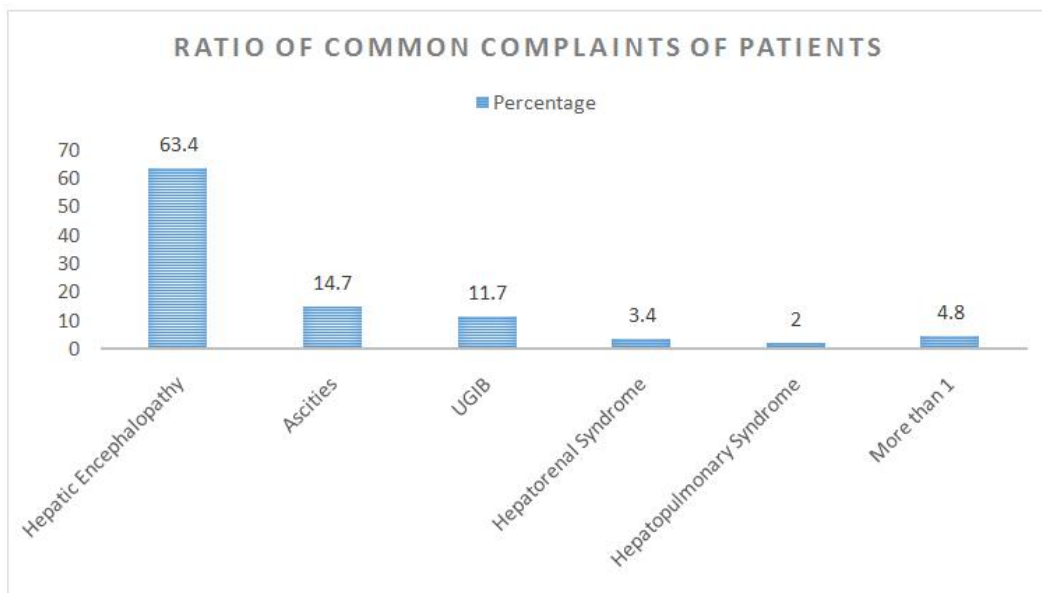


Fig. 1. Percentage of common complaints about hepatic encephalopathy

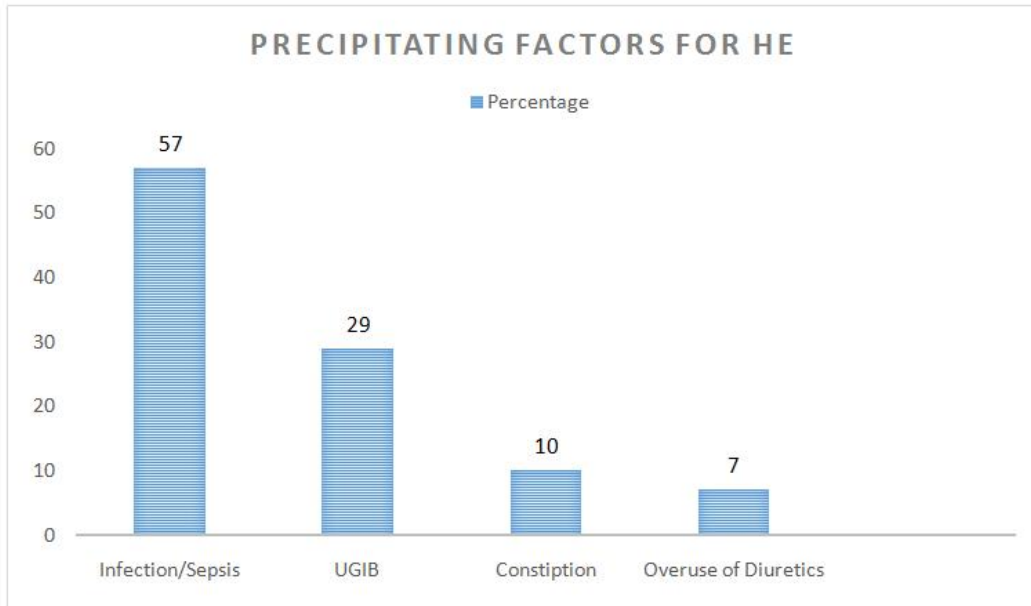


Fig. 2. Precipitating factors promoting hepatic encephalopathy

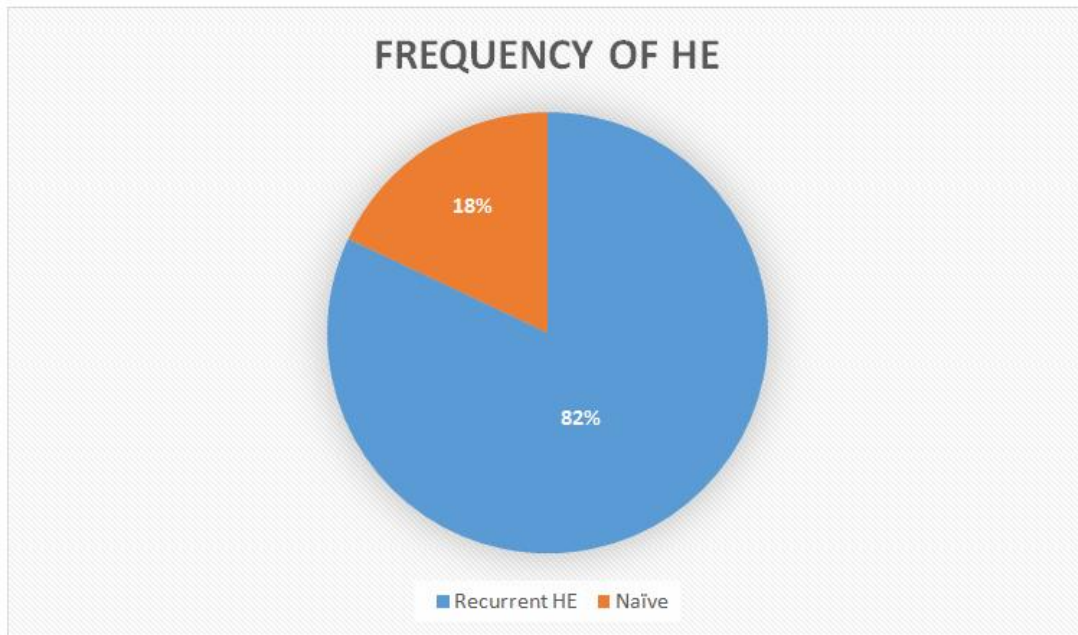


Fig. 3. Frequency of hepatic encephalopathy

Table 1. Child pugh score

Child-pugh score	Percentage
Class A	11
Class B	21
Class C	68

Among co-morbidities, DM stands first with 62% (n=57). In 20% of patients more than one comorbidity factors are present, making them at risk of being presented with grade 3 or 4 in emergency. The following figure shows the co-morbidities factors in Hepatic Encephalopathy patients presenting in emergency.

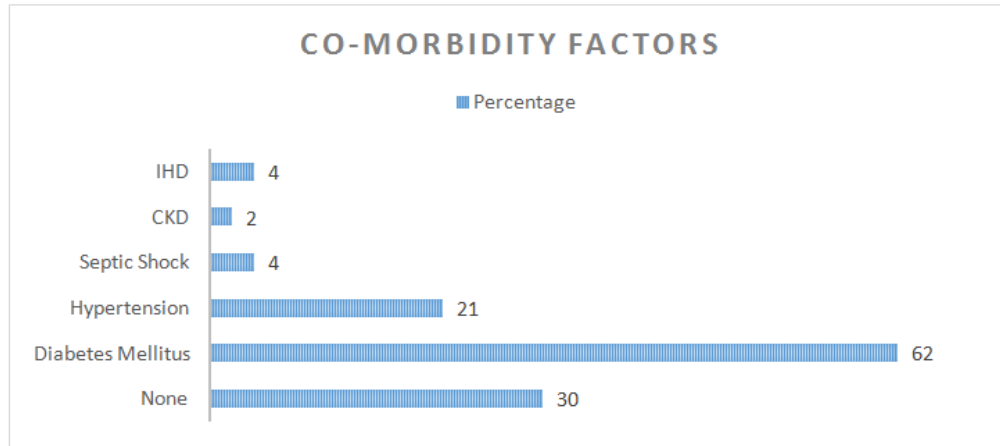


Fig. 4. Ratio of co-morbidity factors

In our study of 92 patients with Hepatic Encephalopathy, 73% (n=67) are discharged after a stay of 3 to 7 days commonly and 27% (n=25) are expired. Among 25 expired patients, 71% (n=17) in grade 3 or 4 of hepatic encephalopathy and a Child Score of class C.

4. DISCUSSION

Liver cirrhosis complicated to hepatic encephalopathy in 35 to 40% of cases which is a sign of poor prognosis [2,16]. In our study only patients with Hepatitis B and C related cirrhotic liver disease are studied. [6] Like in past study done in Karachi Pakistan, the main cause of chronic liver disease is hepatitis B and C 74% (n=68) [7]. Unlikely past study done in Germany shows alcohol as main cause of CLD. This study is undergone to find out prevalence of HE in CLD patients and to identify the common precipitating factors promoting hepatic encephalopathy. Hepatic Encephalopathy was observed in 92 out of 145 CLD patients presented in emergency and admitted in Chaudhry Hospital, Gut and Liver Center, Gujranwala, Pakistan. The diagnosis of HE was made after having blood ammonia levels of patients at the time of admission. In present study, 66% of patients are between 40-60 years of age and male predominance is present 60%. Similar results are present in past study done at Hyderabad [8,9]. In our study, 82% (n=76) presented with recurrent episodes of HE with majority of patients more than three episodes per annum. Among 92 patients, 42% (n=39) are present with grade 2 followed by 30% (n=27), 19.5% (n=18) and 8.5% (n=8) with grade 3, 1 and 4 respectively. Unlikely study done in Peshawar shows majority of patients present in

grade 4 (34%) [10]. The main precipitating factor promoting hepatic encephalopathy is infection/sepsis i.e. 57% (52) and upper GI bleed i.e. 29% (n=27) followed by constipation, overuse of diuretics and sedatives. More than 1 precipitating factor is present in 4.8% (n=07) patients. Infection as main precipitating factor leading to hepatic encephalopathy is present in past research done in Abbottabad [11]. Similarly infection and UGIB is main risk factor in research done in Rawalpindi[12] Similar risk factors with different frequencies are found in different studies done in past [8,13,14,17]. Among comorbidities, diabetes mellitus is present in 62% (n=57) and no comorbidity is present in 30% patients. Past studies showed a significant association of DM on promoting hepatic encephalopathy [10,15]. In this study, 73% (n=67) are discharged after a stay of 3 to 7 days and 27% (n=25) are expired. Similarly, mortality rate in hepatic encephalopathy is 26% in past study [5]. Among 25 expired patients, 68% (n=17) are in grade 3 or 4 of hepatic encephalopathy and with a Child Score class C showing the terminal stage of illness. Acutely developed hepatic encephalopathy can be cured if precipitating factors are timely diagnosed and cured immediately [16]. Therefore, awareness of health related persons and general population is required related to precipitating factors for hepatic encephalopathy in CLD patients in order to have a better outcome and decrease the mortality among HE patients.

5. CONCLUSION

The Prevalence of Hepatic Encephalopathy in CLD patients is 63.4%. The main precipitating

factors for hepatic encephalopathy are Infection and UGIB followed by others. Diabetes mellitus is a major co-morbidity factor in more than half of the patients. Most of patients present in grade 2 hepatic encephalopathy. Patients with Child-Pugh Score of Class A have good recovery outcome. Expiry occur in patients with grade 3 and 4 of hepatic encephalopathy and with a Child Score of Class C.

Early diagnosis and prompt treatment of precipitating factors play a significant role in improving life expectancy of patients. Along with healthcare professionals, general population also needs awareness about reversible precipitating factors so early diagnosis gets possible and quality of life of CLD patients can be improved by decreasing the frequency of episodes of PSE.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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