

"Unraveling the Neuropsychiatric Impact: Clinical Profile and Outcomes of Hepatic Encephalopathy in Liver Cirrhosis Patients at a Tertiary Care Center"

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Abstract:

Introduction: Hepatic encephalopathy (HE) is a neuropsychiatric disorder often linked with liver cirrhosis, particularly due to alcohol or viral hepatitis infections. Timely identification of precipitating factors is essential for effective management. This study aims to explore the clinical profile, risk factors, and outcomes of patients with HE caused by cirrhosis. **Methods:** A prospective observational study was conducted at Sri Venkateswara Ram Narain RUIA Government General Hospital, Tirupati, from August 2016 to August 2017, including 50 patients diagnosed with HE and cirrhosis based on West Haven criteria. Clinical data, lab results, and precipitating factors were recorded and analyzed. **Results:** The study involved 50 patients (male-to-female ratio 4:1), with the most affected age group being 45-54 years in males and 35-44 years in females. Alcohol abuse was the leading cause (52%), followed by combined alcohol and viral hepatitis (20%). Common symptoms included abnormal sleep patterns (48%) and altered social behavior (38%). Jaundice (86%) and constructional apraxia (60%) were frequent signs. Gastrointestinal bleeding (36%), diuretic use (20%), and electrolyte imbalances (20%) were common precipitating factors. Grade I encephalopathy was most common (38%), followed by Grade III (36%). Of the 50 patients, 44

recovered, and 6 (12%) died, all with Grade IV encephalopathy. **Conclusion:** Early detection and management of precipitating factors like gastrointestinal bleeding and electrolyte imbalances are crucial for better outcomes in HE patients. Most patients with Grade I and III encephalopathy recovered, while Grade IV was associated with higher mortality, highlighting the need for improved health education and prevention strategies for patients with cirrhosis.

(Keywords: Hepatic encephalopathy, liver cirrhosis, alcohol abuse, viral hepatitis, precipitating factors, clinical profile, outcomes, gastrointestinal bleeding, electrolyte imbalances, diuretic use, mortality, recovery)

INTRDUCTION:

Hepatic encephalopathy (HE) is a neuropsychiatric disorder commonly associated with liver cirrhosis, manifesting as cognitive dysfunction, altered consciousness, and motor disturbances (1). It is a significant complication of both acute and chronic liver diseases, with liver cirrhosis being the primary underlying cause. Recognizing and addressing the precipitating factors, such as infections, gastrointestinal bleeding, or renal failure, is crucial for early diagnosis and treatment. Timely intervention can significantly improve patient outcomes, as many neurological symptoms are reversible when these factors are corrected. Cirrhosis, often resulting from chronic alcohol use or viral infections like Hepatitis B and C, is a major contributor to the increasing prevalence of HE. Management involves staging the condition based on the severity of neuropsychiatric symptoms, ranging from mild confusion to coma. Correcting the precipitating factors plays a vital role in reversing the neurological impairments associated with HE, improving both short-term recovery and long-term survival (2). This study aims to explore the clinical profile of patients with HE in the context of cirrhosis, focusing on identifying key risk factors and evaluating patient outcomes. Understanding the underlying causes of liver cirrhosis and the precipitating factors for HE will help clinicians tailor treatment plans to reduce morbidity and mortality. By assessing the effectiveness of treatments and the potential for recovery, this research seeks to improve patient care and guide future therapeutic strategies.

METHODOLOGY:

This study is a hospital-based, prospective observational design conducted at the Acute Medical Care and Medical Wards of Sri Venkateswara Ram Narain RUIA Government General Hospital, Tirupati, focusing on patients diagnosed with hepatic encephalopathy due to cirrhosis of the liver. A total of 50 patients, admitted between August 2016 and August 2017, were included in the study. Inclusion criteria consisted of patients over 14 years of age who met the West Haven criteria for hepatic encephalopathy with cirrhosis. Exclusion criteria included patients under 14 years, those with other types of encephalopathy, moribund patients, and those unwilling to participate.

After obtaining informed consent, detailed clinical histories and relevant risk factors were documented. Patients underwent routine laboratory investigations, including complete blood count (CBC), liver function tests (LFT), random blood sugar (RBS), renal function tests (RFT),

serum electrolytes, serum albumin, prothrombin time (PT), and international normalized ratio (INR). Standardized treatment protocols were followed, and the outcomes were recorded using a pretested proforma. The collected data were analyzed using appropriate statistical methods. The study was conducted without any ethical issues, ensuring patient safety and confidentiality throughout.

RESULTS:

A total of 50 patients diagnosed with hepatic encephalopathy were included in this study, all of whom met the specified inclusion and exclusion criteria. The male to female ratio was 4:1, with the most affected age group being 45-54 years (36%), followed by 35-44 years (32%). Among males, the most common age group was also 45-54 years (40%), while in females, 35-44 years was the predominant age range. The leading cause of chronic liver disease in these patients was alcohol abuse, which accounted for 52% of cases, followed by a combination of alcohol and viral hepatitis (20%) and viral hepatitis alone (18%). In 10% of the cases, the cause was cryptogenic. Clinically, the most frequent symptoms were abnormal sleep patterns (48%) and altered social behavior (38%), while the least common symptoms were seizures (10%) and coma (12%). Icterus was the most common clinical sign, observed in 86% of the patients, followed by constructional apraxia (60%) and plantar extensor responses (38%).

The most common precipitating factors for hepatic encephalopathy included gastrointestinal bleeding (36%), excessive diuretic use (20%), and electrolyte imbalances (20%). The majority of patients presented with Grade I (38%) or Grade III (36%) hepatic encephalopathy, with only a few cases of Grade IV. Among the 50 patients, 44 (88%) recovered, while 6 (12%) patients died, all of whom had Grade IV hepatic encephalopathy and multiple risk factors. The primary etiology in the non-survival group was alcohol abuse, followed by mixed and cryptogenic causes. The most common precipitating factors in this group were upper gastrointestinal bleeding and electrolyte imbalances. A higher mortality rate was observed in male patients, with 5 out of 6 deaths occurring in men, most of whom had alcohol-related liver disease. Statistical analysis revealed that all patients with Grade IV hepatic encephalopathy expired, indicating a significant correlation between disease severity and mortality.

DISCUSSION :

The present study included 50 patients diagnosed with hepatic encephalopathy, with the majority falling into the age group of 45-54 years (36%), followed by 35-44 years (32%). In males, the most common age group affected was 45-54 years (40%), followed by 35-44 years (32.5%). In females, the most common age group affected was 35-44 years, followed by those over 45 years. Only one female patient was affected in the 15-24 years age group, and no male patients in that age group were seen. The mean age of male patients was 45.4 ± 10.03 years, while the mean age of female patients was 49.9 ± 13.54 years. Studies by Tribeni Sharma et al(3).and Benhar et al(4). showed similar findings, with the age group of 31-50 years being common. Dileep Kumar et al (5).observed that 67% of their patients were above 40 years, while Manabendhra Nayak et al (6). found the most common age group to be 20-40 years.

In terms of sex distribution, a male predominance was noted in the current study with a male to female ratio of 4:1. This finding was consistent across all age groups and is likely due to higher alcohol consumption among males, as seen in other studies such as those by SO Handady et al (7), Dileepkumar et al., and Tribeni Sharma et al., where male predominance was also noted. A lower male to female ratio was observed by Benhar et al. (2:1), and FAQ Arisar et al (8). reported a female predominance, possibly because of a higher incidence of viral etiology in females. Manabendhranayak et al. found a male to female ratio of 6.1:1 in their study.

Regarding the etiology of chronic liver disease, alcohol abuse was the most common cause in the current study, affecting 52% of patients, followed by both alcohol and viral infections in 20%, and viral infections alone in 18%. The etiology of 10% of patients remained cryptogenic. Males were more likely to have alcohol-related liver disease, while females more often had a viral etiology. The high prevalence of alcohol-related liver disease in the present study is consistent with the findings of Tribeni Sharma et al. (66.25%) and Benhar et al. (47%). Manabendhranayak et al. found 76% of their patients to be alcoholics. Studies from Pakistan, such as Dileepkumar et al. and FAQ Arisar et al., which reported higher rates of hepatitis C, contrast with the current study, where alcohol consumption is more prevalent. Viral etiology was seen in 18% of patients in the present study, which aligns with the findings of Manabendhranayak et al. and SO Handady et al. However, Tribeni Sharma et al. reported a lower percentage of viral cases (17.5%).

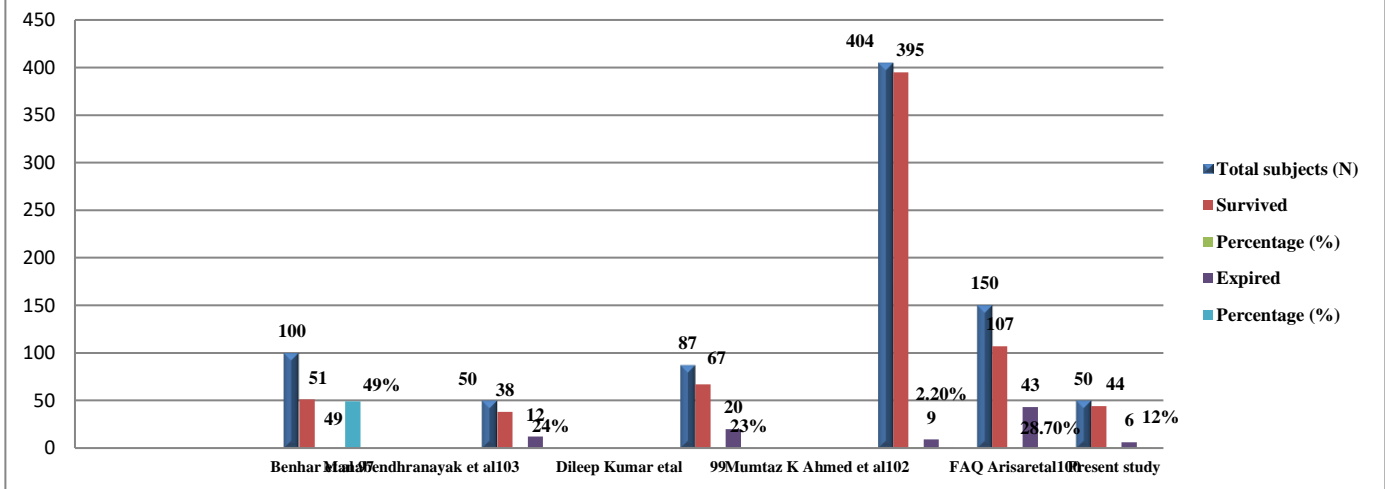
The clinical profile of hepatic encephalopathy in the present study showed that the most common presentation was an abnormal sleep pattern (48%), followed by abnormal social behavior (38%) and altered sleep pattern (38%). Seizures (10%) and coma (12%) were less common, suggesting that patients presented in the earlier stages of the disease. The most common clinical signs were jaundice (86%), constructional apraxia (60%), asterixis (28%), extensor plantar response (19%), and fetor hepaticus (18%). Manabendhranayak et al. found jaundice in 72% and altered consciousness in 68%, which is similar to the present study. However, asterixis was observed in 66% of their patients, which is higher than in the current study, likely due to their patients presenting in more advanced stages of hepatic encephalopathy. Tribeni Sharma et al. reported sleep disturbances and neuropsychiatric manifestations in 100% of their patients, and jaundice was found in 93.75%, which is also in line with the findings of the present study. However, asterixis was found in only 38.75% of their patients, and fetor hepaticus was observed in 10%, which differs from the findings in the current study.

Regarding precipitating factors, the most common triggers for hepatic encephalopathy were gastrointestinal (GI) bleeding (36%), diuretic use (20%), and electrolyte imbalance (20%). Other factors included constipation (18%), spontaneous bacterial peritonitis (SBP) (10%), and paracentesis (10%). Hypokalemia was the most common electrolyte disturbance. Similar findings were reported by Benhar et al. (GI bleed 29%, constipation 27%, and electrolyte imbalance 36%) and Tribeni Sharma et al. (GI bleed 52.5%, electrolyte imbalance 51%, infections 42.5%). FAQ Arisar et al. noted constipation in 53.33% and infections in 36.66% of patients. Manabendhranayak et al. found GI bleeding (68%) and electrolyte imbalance (38%) as the most common precipitating factors, with infections seen in 26% of patients. Khalid Mumthaz et al (9). reported SBP (20.5%) as the most common risk factor, likely due to dietary issues that contribute to malnutrition and increased susceptibility to infections.

In terms of grading hepatic encephalopathy, Grade I was the most common (38%), followed by Grade III (36%) and Grade II (14%). Only 12% of patients presented with Grade IV encephalopathy. The distribution of grades in the present study was comparable to that reported by Tribeni Sharma et al. (30% in Grade I), although other studies such as Benhar et al. (22%), SO Handady et al. (20%), and Manabendhranayak et al. (24%) reported fewer cases in Grade I. The higher number of Grade I cases in the present study may be due to earlier hospital presentation and increased health awareness. In contrast, studies by Manabendhranayak et al. (36%), SO Handady et al. (41%), and Mumtaz K Ahmed et al. (44%) reported a higher prevalence of Grade II encephalopathy. Similarly, 36% of patients in the present study had Grade III encephalopathy, which aligns with the results from other studies such as Benhar et al. (31%) and Tribeni Sharma et al. (28.75%). The 12% of patients with Grade IV encephalopathy in the present study is relatively low, possibly due to early detection and treatment.

In terms of outcomes, 88% of patients in the present study recovered, while 12% succumbed to the illness. All of the non-survivors had multiple precipitating factors and presented with Grade IV hepatic encephalopathy. Studies by Manabendhranayak et al. and Benhar et al. reported survival rates of 76% and 51%, respectively, with the majority of deaths occurring in Grade IV encephalopathy. Dileepkumar et al. observed a mortality rate of 23%, and FAQ Arisar et al. reported 28.7% mortality, mostly in patients with Grade IV encephalopathy (Fig.1). Mumtaz K Ahmed et al. reported a mortality rate of only 2.2%, with no significant association between precipitating factors and the severity of the illness.

Fig. 1. Comparison of Outcome of Hepatic Encephalopathy in various studies



Finally, in the current study, the most common etiology for mortality was alcohol abuse (66.66%), followed by both alcohol and viral etiology (16.66%) and cryptogenic causes (16.66%). In the study by Benhar et al., mortality due to alcohol was 46.5%, while hepatitis B and C caused 48% and 66.66% of deaths, respectively. These findings underscore the significant role of alcohol and viral infections in hepatic encephalopathy-related mortality.

SUMMARY & CONCLUSION:

In this study, 50 patients with hepatic encephalopathy who met the inclusion and exclusion criteria were included and analyzed. The most common age group affected in males was 45-54 years, with a mean age of 45.4 ± 10.03 years, while in females, it was 35-44 years, with a mean age of 49.9 ± 13.54 years. A male predominance was observed with a male-to-female ratio of 4:1.

Alcohol abuse was the most common etiology in males (60%), followed by a combination of alcohol and viral causes (22.5%), whereas viral causes (40%) were the most common in females, with alcohol abuse (20%) coming second. Cryptogenic causes were the least common in both sexes.

The most frequent clinical presentations were abnormal sleep patterns (48%), abnormal social behavior (38%), and altered sensorium (38%). Common clinical signs included jaundice (86%), apraxia (60%), and extensor plantar responses (38%).

Regarding precipitating factors for hepatic encephalopathy, gastrointestinal bleeding (36%), excessive use of diuretics (20%), electrolyte imbalance (20%), and constipation (18%) were the most common, while excessive protein intake, paracentesis, and infections were less frequently observed.

The majority of patients in this study presented with Grade I encephalopathy (38%), followed by Grade III (36%), and Grade IV (12%). Among the 50 patients, 44 recovered, while 6 (5 males and 1 female) died. All deaths occurred in Grade IV hepatic encephalopathy patients, most of whom had multiple precipitating factors, with alcohol abuse being the most common etiology.

In conclusion, this study highlights the various factors contributing to the onset and progression of hepatic encephalopathy, including gastrointestinal bleeding, electrolyte imbalance, diuretic use, and constipation. Early identification and management of these risk factors play a critical role in improving outcomes for patients. There is a clear need for health education and proper counseling for patients diagnosed with cirrhosis of the liver, particularly concerning the prevention and management of hepatic encephalopathy.

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