



Research Article

SPECTRUM OF PRECIPITATING FACTORS OF HEPATIC ENCEPHALOPATHY IN CIRRHOSIS OF LIVER

Dr. C. Sreya Pranusha¹, Dr. R. Nagamani², Dr.P.Vikas³ and Dr. Sattu Bhavya⁴Post graduate¹, HOD² and Faculty^{3,4}

Department of General Medicine, MRMCW, Hyderabad

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ABSTRACT

Cirrhosis is diffuse septal fibrosis of the liver, associated with regenerative parenchymal nodules and a disturbed intrahepatic circulation. Cirrhosis of liver is common chronic clinical entity, which has a variety of clinical manifestations and complications, some of which may be life threatening. About 30% of patients with cirrhosis die in hepatic coma. Appearance of HE in any patient is indicative of poor prognosis. **Aim:** To study the spectrum of precipitating factors of Hepatic Encephalopathy in cirrhosis of liver. **Materials & Methods:** The study was a prospective study carried out in patients admitted to Department of General medicine, from May 2022 to October 2022. A total of 50 patients presenting with hepatic encephalopathy were included in the study after satisfying the inclusion criteria and signing the informed consent forms. **Results:** A total of 50 patients were enrolled in the study. The mean age of the study population was 52.68 years with standard deviation of 10.96 years. Majority (58%) belonged to the age group of 50 and above years. Alcohol (84%) was the most common etiological factor. The most common precipitating factors were dehydration (78%), use of diuretics (56%), SBP (38%), hypokalemia (36%), constipation (32%), hyponatremia (26%). **Conclusion:** The most common precipitating factors were dehydration (78%), use of diuretics (56%), SBP (38%), hypokalemia (36%), constipation (32%), hyponatremia (26%).

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INTRODUCTION

Cirrhosis is diffuse septal fibrosis of the liver, associated with regenerative parenchymal nodules and a disturbed intrahepatic circulation.[1] Cirrhosis of liver is common chronic clinical entity, which has a variety of clinical manifestations and complications, some of which may be life threatening. About 30% of patients with cirrhosis die in hepatic coma. Appearance of HE in any patient is indicative of poor prognosis. In the recently reported WHO (World Health Organization) data, 2.95% of total deaths in India were caused by liver diseases deaths.[2] India was ranked 63rd in the world when age-adjusted death rates (22.93 per 100,000 of population) were calculated.[2]

Hepatic encephalopathy is a frequent complication of cirrhosis that is usually observed in association with severe hepatic insufficiency. It is a potentially reversible, or progressive, neuropsychiatric syndrome characterized by changes in cognitive function, behavior, and personality, as well as by transient neurological symptoms and characteristic electroencephalographic patterns associated with acute and chronic liver failure.[3] The characteristic presentation is the development of acute encephalopathy with an abrupt decline in the level of consciousness, manifested as confusion or coma. Frequently, a precipitating factor is identified. The

treatment of the episode is directed toward the correction of the precipitating factor. Once the precipitating condition is resolved the encephalopathy also typically disappears.[4] HE develops in 50% to 70% of patients with cirrhosis, and its occurrence is a poor prognostic indicator, with projected one- and three-year survival rates of 42% and 23%, respectively, without liver transplantation.[5]

Common precipitating factors include gastrointestinal bleeding, infection, azotemia, constipation, electrolyte imbalance and high protein diet. Usage of drugs such as sedatives, tranquilizers, analgesics and diuretics, fulminant hepatic injury, large volume paracentesis have all been considered to precipitate encephalopathy in an otherwise stable cirrhotic patient.

Aim: To study the spectrum of precipitating factors of Hepatic Encephalopathy in cirrhosis of liver.

MATERIALS & METHODS

The study was a prospective study carried out in patients admitted to Department of General medicine, from May 2022 to October 2022. A total of 50 patients presenting with hepatic encephalopathy were included in the study after satisfying the inclusion criteria and signing the informed consent forms.

*Corresponding author: Dr. C. Sreya Pranusha

Department of General Medicine, MRMCW, Hyderabad

Inclusion criteria

1. Patients with cirrhosis of liver, belonging to either sex
2. Age above 12 years
3. Hepatic encephalopathy including minimal hepatic encephalopathy

Exclusion criteria

1. Patients with psychiatric disorders or on treatment for psychiatric disorders
2. Those with altered sensorium due to metabolic disease or head injury
3. Acute alcoholic intoxication and alcoholic withdrawal states

The data was collected using a pre-tested semi structured questionnaire. A detailed clinical history of the patient was taken regarding the present and past illnesses. Details about gastrointestinal bleeding, including haemetemesis and melaena, constipation, vomiting, diarrhoea, oliguria, fever, bleeding manifestation, high protein diet, paracentesis and any trauma or surgery. Personal history about alcohol consumption was noted in along with smoking and i.v drug abuse, use of any sedatives, diuretics, tranquilizers, analgesics and cough syrups was also inquired in detail.

All patients were carefully examined with special attention to jaundice, anaemia, fever, asterixes, hydration, pedal edema, and ascites. Detailed abdomen system and neurological examination was done on all patients. Encephalopathy grading was done according to West Haven’s grading. West Haven’s Grading:[6]

Grade	Level of consciousness	Personality and intellect	Neurologic signs	Electroencephalogram (EEG)
0	Normal	Normal	None	None
Sub-clinical	Normal	Normal	Abnormal only on psychometric testing	None
1	Day/night sleep reversal, restlessness	Forgetfulness mild confusion, agitation, irritability	Tremor, apraxia, incoordination, impaired handwriting	Triphasic waves (5 Hz)
2	Lethargy, slowed response	Disorientation to time, loss of inhibition, inappropriate behavior	Asterixis, dysarthria, ataxia, hypoactive reflexes	Triphasic waves (5 Hz)
3	Somnolence, confusion	Disorientation to place, aggressive behavior	Asterixis, muscular rigidity, Babinski signs, hyperactive reflexes	Triphasic waves (5 Hz)
4	Coma	None	Decerebration	Delta/slow wave activity

For each patient full blood count, liver function tests, renal function tests, random blood sugar, serum electrolytes, serum albumin and coagulation profile were carried out. An abdominal ultrasound was done to look for liver and splenic size, parenchymal echogenicity, portal vein diameter, and ascites. In case of ascites, an ascites tap was also done to look for spontaneous bacterial peritonitis. Any evidence of the presence of other co-existent complications of cirrhosis liver was also recorded and Child’s score was assessed for each patient. All patients were followed for the duration of their stay in hospital and outcome was also monitored.

Child Pugh Score:[7,8]

Clinical and Lab Criteria	Points*		
	1	2	3
Encephalopathy	None	Mild to moderate (grade 1 or 2)	Severe (grade 3 or 4)
Ascites	None	Mild to moderate (diuretic responsive)	Severe (diuretic refractory)
Bilirubin (mg/dL)	< 2	2-3	>3
Albumin (g/dL)	> 3.5	2.8-3.5	<2.8
Prothrombin time			
Seconds prolonged	<4	4-6	>6
International normalized ratio	<1.7	1.7-2.3	>2.3
Child-Turcotte-Pugh Class obtained by adding score for each parameter (total points)			
Class A = 5 to 6 points (least severe liver disease)			
Class B = 7 to 9 points (moderately severe liver disease)			
Class C = 10 to 15 points (most severe liver disease)			

Data Entry and Analysis

The data was entered in Microsoft Excel 2010 version. Data was analyzed using Microsoft Excel 2010 and Epi Info 7.2.0. Descriptive and inferential statistical analyses were used in the present study. Results on continuous measurements were presented on Mean±SD (Min-Max) and results on categorical measurements were presented in Number (%).

RESULTS

A total of 50 patients were enrolled in the study. The mean age of the study population was 52.68 years with standard deviation of 10.96 years. Majority (58%) belonged to the age group of 50 and above years.

Table showing the details of various parameters:

Parameter	Subgroup	Frequency	Percentage
Gender	Male	46	92
	Female	4	8
Etiology	Alcohol	42	84
	Hepatitis B	3	6
	Hepatitis C	1	2
	Cryptogenic	2	4
	Others	2	4
Child Pugh Score	Group A	8	16
	Group B	18	36
	Group C	24	48
West Haven’s grading.	HIE - I	9	18
	HIE - II	18	36
	HIE - III	21	42
	HIE - IV	10	20
Onset	New onset	29	58
	Recurrent	21	42
Outcome	Improved	22	44
	Referred	19	38
	DAMA	9	18
	Death	0	0

Table showing the precipitating factors:

Precipitating factor	Frequency	Percentage
Dehydration	39	78
Spontaneous Bacterial Peritonitis	19	38
Respiratory infection	8	16
Urinary Tract Infection	2	4
Hematemises	8	16
Malena	9	18
Constipation	16	32
Diarrhea	9	18

Sedatives	4	8
Diuretics	28	56
Hypokalemia	18	36
Hyponatremia	13	26

Among the study population, most common precipitating factors were dehydration (78%), use of diuretics (56%), SBP (38%), hypokalemia (36%), constipation (32%), hyponatremia (26%).

DISCUSSION

The study was a prospective study carried out in patients admitted to Department of General medicine, from May 2022 to October 2022. A total of 50 patients presenting with hepatic encephalopathy were included in the study after satisfying the inclusion criteria and signing the informed consent forms.

The findings of the present study can be compared with the following studies:

Parameter	Present study	Rahul RK et al [2021][9]	Sethuraman VK et al [2019][10]
Mean age	52.68 years	47.5 years	49.58 years
Gender	94% Males	74% were males	95.53% were males
Etiology	Alcohol – 84% Viral hepatitis – 8%	Alcohol – 54% Viral hepatitis – 24%	Alcohol – 88.53% Viral hepatitis – 10.57%
Outcome	Improved – 44% Referred – 38% DAMA – 18% No deaths	Discharged – 53% DAMA – 10% Expired – 37%	Discharged – 57.28% Referred – 14.56% DAMA – 10.68% Expired – 17.48%

Table showing the comparison of HIE grading and Child Pugh Score with other studies:

Parameter	Subgroup	Present study	Sethuraman VK et al [2019][10]
Child Pugh Score	Group A	16%	0.97%
	Group B	36%	11.65%
	Group C	48%	87.38%
West Haven’s grading.	HIE - I	18%	3.88%
	HIE - II	36%	36.89%
	HIE - III	42%	39.81%
	HIE - IV	20%	19.42%

Precipitating factors:

In the presents study, most common precipitating factors were dehydration (78%), use of diuretics (56%), SBP (38%), hypokalemia (36%), constipation (32%), hyponatremia (26%). The findings of the present study can be compared with the following studies:

Precipitating factor	Present study	Rahul RK et al [2021][9]	Sethuraman VK et al [2019][10]
Dehydration	78%	NA	78.64%
Diuretics	56%	9%	46.60%
Spontaneous Bacterial Peritonitis	38%	NA	30.10%
Hypokalemia	36%	25%	35.3%
Constipation	32%	41%	33.01%
Hyponatremia	26%	13%	26.5%
Malena	18%	23%	14.56%
Diarrhea	18%	NA	16.50%
Respiratory	16%	22%	15.53%

infection			
Hematemises	16%	28%	15.53%
Sedatives	8%	5%	6.8%
Urinary Tract Infection	4%	NA	1.94%

CONCLUSION

The most common precipitating factors were dehydration (78%) and use of diuretics (56%).

Conflicts of Interest: None

Source of funding: None

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