

A Clinical Study of Precipitating Factors of Overt Hepatic Encephalopathy in Decompensated Cirrhosis From North East India

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Abstract

Introduction: Hepatic encephalopathy (HE) is a brain dysfunction caused by liver insufficiency and/or porto-systemic shunt (PSS) and it manifests as a wide spectrum of neurological or psychiatric abnormalities. It is a common cause of hospitalization and affects the quality of life (QOL) of the patients.

Aims and Objectives: We evaluated the precipitating factors of overt HE in patients with cirrhosis of liver presenting to our tertiary care hospital. We attempted to correlate the precipitating factors with mortality in hospitalized patients with OHE.

Materials And Methods: This was a prospective observational study in patients above 13 years of age coming with decompensated cirrhosis of liver in a tertiary care hospital of north east India. Patients were selected randomly over a period of one year. Patients with covert HE, HE associated with PSS without hepatic cirrhosis, acute liver failure were excluded and Stages 2, 3 and 4 of West-Haven classification were regarded as Overt Hepatic Encephalopathy (OHE) and were included in the study. Necessary biochemical tests, viral serology and radiological investigations were done.

Results and Observations: 158 cases (153 male, 5 female, mean age 46.2 yr) of OHE were included. Majority were from the age group of 40 to 49 years (28.5%). 63 (39.87%) were episodic recurrent HE, whereas 95 (60.13%) had episodic precipitant HE. OHE was precipitated by GI bleed in 31 (19.6%) cases, electrolyte imbalance in 31 (19.6%) cases, infection in 23 (14.6%) cases and constipation in 13 (8.2%) cases. 60 (37.97%) cases had spontaneous OHE. GI bleed, electrolyte imbalance and infections were more common in precipitant cases whereas electrolyte imbalance and infections was more frequent in recurrent OHE. 32 (20.25%) cases expired and mortality was highest among those with infections (47.8%) and upper gastrointestinal bleed (45.2%). The average hospital stay was 5.6 (± 1.1) days with more in survivors 6.2 (± 0.9) days, than in non survivors 2.9 (± 0.4) days.

Conclusion: OHE was most common in male cirrhotics of fourth decade. Most had episodic precipitant OHE due to by GI bleed, electrolyte imbalance and infection as the precipitating factor whereas recurrent OHE had electrolyte imbalance and infection as the most common precipitating factor respectively. Mortality was highest in those with infection and GI bleed. Those who died due to GI bleed had the shortest hospital stay.

Key words: Hepatic Encephalopathy, Cirrhosis of Liver, Alcoholic Liver Disease

I. Introduction

Hepatic encephalopathy (HE) is a brain dysfunction caused by liver insufficiency and/or porto-systemic shunt (PSS) and it manifests as a wide spectrum of neurological or psychiatric abnormalities ranging from subclinical alterations to coma¹. In cirrhotic patients, fully symptomatic overt hepatic encephalopathy (OHE) defines the decompensated phase of the disease². OHE is also reported in subjects without cirrhosis with extensive PSS^{3,4}. HE can be due to acute liver failure (Type A), PSS (Type B) and Cirrhosis (Type C). The latter can be divided into episodic, persistent and minimal. The common precipitating factors of episodic precipitant OHE are infections, GI bleeding, diuretic overdose, electrolyte disorder, constipation and unidentified respectively whereas the same in episodic recurrent OHE is mostly electrolyte imbalance and infections⁵. It is a common cause of hospitalization and affects the quality of life (QOL) of the patients.

II. Aims And Objectives

We evaluated the precipitating factors of OHE in patients with cirrhosis of liver presenting to our tertiary care hospital. We attempted to correlate the precipitating factors with mortality in hospitalized patients with OHE.

III. Materials And Methods

This was a prospective observational study including adult patients above 13 years of age coming with decompensated cirrhosis of liver in a tertiary care hospital of north east India. Patients were selected randomly over a period of one year from 1st March 2015 to 28 February 2016 on every Wednesday out patients department and alternate Saturdays. Cirrhosis of liver was diagnosed by established criteria. Necessary biochemical tests, viral serology and radiological investigations were done. Patients with covert HE, HE associated with PSS without hepatic cirrhosis, acute liver failure, patients with other psychiatric and neurological diseases causing cognitive dysfunction, patients on hepatotoxic drugs and patients with primary or secondary neoplasms were excluded from the study. The West-Haven classification was used for classifying the degree of HE⁶. As per International Society for Hepatic Encephalopathy and Nitrogen Metabolism (ISHEN) Consensus, 2014, the Stage 0 and 1 of West Haven Criteria was considered as Covert Hepatic Encephalopathy while Stages 2, 3 and 4 were regarded as Overt Hepatic Encephalopathy.

IV. Results And Observations

158 cases of OHE were included in our study which included 153 male and 5 female patients. The mean age of presentation was 46.2 years ranging from 13 years to 76 years. Majority were from the age group of 40 to 49 years (28.5%) followed by 30 to 39 years (25.9%).

Table 1: Demographic profile

Age group (years)	Male (n = 153)	Female (n = 5)	Total (n = 158)	Percentage (%)
12 to < 20	3	0	3	1.9 %
21 to < 30	9	1	10	6.3 %
31 to < 40	41	0	41	25.9 %
41 to < 50	43	2	45	28.5 %
51 to < 60	33	1	34	21.5 %
61 to < 70	20	1	21	13.3 %
71 to < 80	3	1	4	2.5 %

150 (94.9 %) patients (147 males and 3 females) had history suggestive of alcoholic liver disease, 3 (1.9 %) patients had autoimmune disease and 5 (3.2%) cases had cryptogenic cirrhosis of liver. 63 (39.87%) cases were admitted with similar symptoms of OHE within last 6 months and therefore classified as episodic recurrent HE, whereas 95 (60.13%) had episodic precipitant HE. OHE was precipitated by upper gastrointestinal bleed in 31 (19.6%) cases, electrolyte imbalance in 31 (19.6%) cases, infection in 23 (14.6%) cases and constipation in 13 (8.2%) cases. 60 (37.97%) cases had spontaneous OHE.

Table 2: Precipitating factors of OHE

Sl no	Precipitating factor	Precipitant OHE (n=95)		Recurrent OHE (n=63)		Total OHE (n=158)	
1	Upper gastrointestinal bleed	23	24.2%	8	12.7%	31	19.6%
2	Electrolyte imbalance	17	17.9%	14	22.2%	31	19.6%
3	Infection	14	14.7%	9	14.3%	23	14.6%
4	Constipation	8	8.4%	5	7.9%	13	8.2%
5	Unidentified	33	34.7%	27	42.8%	60	37.97%

Out of the 95 precipitant OHE patients, most common was spontaneous followed by upper gastrointestinal bleed, electrolyte imbalance and infections respectively (Table 2). Out of 63 recurrent OHE patients electrolyte imbalance was more frequent (Table 2).

Out of 158 cases, 32 (20.25%) cases expired. 14 (43.75%) cases had upper gastrointestinal bleed, 11 (34.75%) cases had infection, 2 (6.25%) cases had electrolyte imbalance and 5 (15.63%) were unidentified HE. The mortality was highest among those with some infections (47.8%) and upper gastrointestinal bleed (45.2%) (Table 3).

Table 3: Mortality

Sl no	Precipitating factor	Total	Survived		Expired	
		N = 158	N = 126	(%)	N =32	(%)
1	Upper gastrointestinal bleed	31	17	54.8%	14	45.2%
2	Electrolyte imbalance	31	29	93.5%	2	6.5%
3	Infection	23	12	52.2%	11	47.8%
4	Constipation	13	13	100%	0	0
5	Unidentified/ Spontaneous	60	55	91.7%	5	8.3%

The average hospital stay was 5.6 (\pm 1.1) days, with a minimum of 1 day and maximum of 12 days. The average hospital stay in the survivors was 6.2 (\pm 0.9) days and expired patients were 2.9 (\pm 0.4) days. The average hospital stay in those who died due to GI bleed was even less 1.7 (\pm 0.8) days.

V. Discussion

The prevalence of OHE at the time of diagnosis of cirrhosis is 10%-14% in general^{7,8,9}, 16%-21% in those with decompensated cirrhosis^{10,11} and 10%-50% in patients with transjugular intrahepatic portosystemic shunt (TIPS)^{12,13}. The cumulated numbers indicate that OHE will occur in 30%-40% of those with cirrhosis at some time during their clinical course and in the survivors in most cases repeatedly¹⁴. We studied 158 cases of decompensated cirrhosis of liver coming with OHE and tried to find out the precipitating factors for that. The mean age was 46.2 years with maximum cases in 3rd, 4th and 5th decade. Alcohol was the most important cause of cirrhosis of liver.

Nearly 60% was episodic precipitant OHE and 40 % recurrent OHE. Strauss E et al found infections, GI bleeding, diuretic overdose, electrolyte disorder, constipation and unidentified respectively as the most common causes of precipitant OHE⁵. We found spontaneous OHE in every third episodic OHE, followed by GI bleeding, electrolyte disorder, infections and constipation respectively. Strauss E et al found electrolyte imbalance and infections as the most common cause of recurrent OHE⁵. We found two out of five recurrent OHE had OVERT spontaneous OHE and one out of five had electrolyte imbalance. Rest had infections, GI bleed and constipation respectively.

Overall mortality (8.86%) was highest among those who had GI bleed. 47.2% of those who had infection and 45.2% of those who had GI bleed expired. Mortality was less among those who had electrolyte imbalance (6.5%) and those with spontaneous OHE (8.3%). The average hospital stay was 5.6 (\pm 1.1) days with more in survivors 6.2 (\pm 0.9) days, than in non survivors 2.9 (\pm 0.4) days. Those who died due to GI bleed had even shorter hospital stay, probably due to massive bleed at the time of hospitalization.

VI. Conclusion

OHE was most common in male cirrhotics of fourth decade. Most had episodic precipitant OHE due to by GI bleed, electrolyte imbalance and infection as the precipitating factor. Those with recurrent OHE had electrolyte imbalance and infection as the most common precipitating factor respectively. Mortality was highest in those with infection and GI bleed. Those who died due to GI bleed had the shortest hospital stay.

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