

**Research Article**

**Spontaneous bacterial peritonitis in patients of cirrhosis  
of liver with hepatic encephalopathy**

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**ABSTRACT**

**Objectives:** To assess the spontaneous bacterial peritonitis in cases of cirrhosis of liver with hepatic encephalopathy.

**Material and Methods:** This cross sectional was conducted at Department of Medicine, Mayo Hospital Lahore from January 2018 to June 2018 over the period of six months. Total 155 cases of cirrhosis of liver with hepatic encephalopathy were selected and SBP was analyzed.

**Results:** Mean age of patients was  $38.9 \pm 11.7$ . Males were 119 (77%) and females were 36 (23%). Overall SBP was present in 81 (52.3%) patients.

**Conclusion:** HE and SBP are the common complications in liver cirrhosis. Most of the HE patients having SBP as well as precipitating factor. The treatment of SBP is the important step of management of HE in liver cirrhosis.

**Key Words:** Hepatic Encephalopathy, SBP

**INTRODUCTION**

Hepatic encephalopathy (HE) is a serious complication of advanced liver disease and refers to Neuropsychological syndrome that occurs in a patient with either severe liver failure, chronic liver disease or as a consequence of surgical or radiological portal systemic shunts.<sup>1</sup>

Factors like gastro-intestinal bleeding, infections, constipation, electrolyte imbalance (hyponatremia, hypokalemia), hypoglycemia, Medicines (sedative-hypnotics, opiates) could be responsible for the development of Hepatic encephalopathy. It is imperative to identify one of these factors so

that prompt treatment given to get patient out of encephalopathy.<sup>2,3</sup>

Ascites is defined as the collection of free fluid in the peritoneal cavity. More than 500ml of fluid must be present before ascites can be presented clinically.<sup>4</sup>

Spontaneous Bacterial Peritonitis(SBP) is defined as the infection of ascetic fluid without any apparent intra-abdominal focus of infection in patients of cirrhosis of liver.<sup>5</sup>SBP is a common complication in patients of cirrhosis of liver.<sup>6</sup> The signs and symptoms of SBP are subtle compared with those of patients who have surgical

peritonitis in the absence of ascites.<sup>4</sup> Ascites prevent the development of rigid abdomen by separating the visceral pleura from the parietal pleura. Patients of cirrhosis of liver with SBP may be asymptomatic not having the clinical sign and symptoms of peritonitis like abdominal pain, abdominal discomfort and fever.<sup>4</sup> Despite the effective treatment of SBP, it has the high morbidity and mortality. Mortality rate of SBP is 70% per one year due to the complications like septic shock, hepatorenal syndrome and hepatic encephalopathy. Various international studies show that 10% to 30% of patients of cirrhosis of liver develop SBP.<sup>7</sup> One of the predisposing factors which are responsible for hepatic encephalopathy and subsequent deterioration in the condition of cirrhosis patient is appearance of spontaneous bacterial peritonitis (SBP).<sup>8</sup>

SBP is characterized by abrupt onset of fever, chills abdominal pain with rebound tenderness over abdomen, absent bowel sounds and leucocytosis. Paracentesis reveals cloudy ascitic fluid with many WBCs predominantly, polymorphonuclear cells (PMN). SBP is an important cause of morbidity and mortality in patients with hepatic encephalopathy.<sup>9</sup> It is a serious and potentially life-threatening complication and associated with a 30–50% mortality rate, if not treated and death can occur within few hours.<sup>10</sup> so early diagnostic paracentesis should be performed in every patient presented with hepatic encephalopathy.<sup>11</sup>

Keeping in view the high mortality rate of SBP in patients of liver cirrhosis, a study was conducted to find out the frequency of SBP in patients with hepatic encephalopathy and to determine the association of different grades of hepatic encephalopathy with SBP.

### MATERIAL AND METHODS

This cross sectional was conducted at Department of Medicine, Mayo Hospital Lahore from January 2018 to June 2018 over the period of six months. Total 155 patients were included in this study after taking informed consent. An approval was taken

from institutional review committee. Patients with hepatic encephalopathy and ascites age from 18 to 65 years were included in this study. Patients with fulminant hepatic failure, non-cirrhotic portal hypertension and uremic, anoxic, cerebral and metabolic encephalopathy were excluded from this study.

Detailed history of all patient were taken and physical examination was done. Patients were labeled as having SBP when ascetic fluid neutrophil count > 250/ml. Hepatic encephalopathy was graded according to west heaven criteria as shown in table No.1.

Demographic data of all the patients and clinical and laboratory findings were recorded in pre-designed proforma. All the data was entered in SPSS version 16. Mean and standard was calculated for numerical data. Frequencies were calculated for categorical data and chi-square test was applied to see the association of SBP with grades of HE. P. value ≤ 0.05 was considered as significant.

**TABLE 1:** West Haven criteria for grading hepatic encephalopathy

<b>Grade 1</b>	Trivial lack of awareness Euphoria or anxiety Shortened attention span Impaired performance of addition
<b>Grade 2</b>	Lethargy or apathy Minimal disorientation for time or place Subtle personality change Inappropriate behavior Impaired performance of subtraction
<b>Grade 3</b>	Somnolence to semi stupor, but responsive to verbal stimuli Confusion Gross disorientation
<b>Grade 4</b>	Coma (unresponsive to verbal or noxious stimuli)

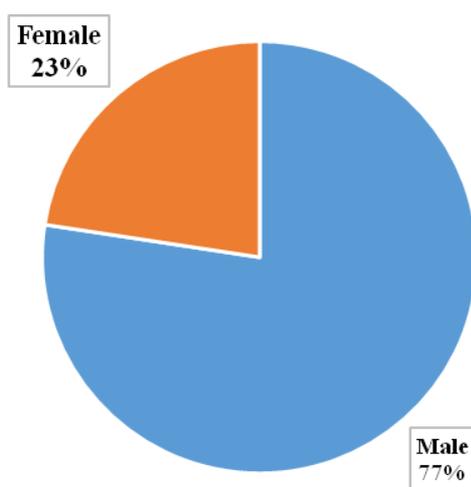
### RESULTS

Total 155 patients with hepatic encephalopathy were included in this cross sectional study. Mean age of patients was 38.9 ± 11.7. Among the 155 patients of hepatic encephalopathy, 119 (77%) were males and 36 (23%) were females as shown in Figure 1.

Among the 155 patients, HBsAg Positive patients were 60 (38.70%), Anti-HCV Positive were 87 (56.13%) and Both HBsAg & Anti-HCV Positive patients were 8 (5.16%). (Table 2)

Grading of the patients of hepatic encephalopathy was done according to west heaven criteria. (Table 1). Out of 155 patients 48 (30.97%) patients had Grade I hepatic encephalopathy and SBP was present in 33 (68.8%) patients, 63 (40.64%)

patients had Grade II hepatic encephalopathy and SBP was found in 32 (50.8%) patients, 23 (14.84%) had Grade III hepatic encephalopathy and SBP was present in 10 (43.5%) patients and 21 (13.55%) had Grade IV hepatic encephalopathy and SBP was found in 6 (28.6%) patients. There is significant association between SBP and grade hepatic encephalopathy (P. value 0.01). (Table 3)



**Fig. 1:** Gender distribution

**Table 2:** Characteristics of patients

Viral Cause of Cirrhosis HBsAg Positive	60 (38.70%)
Anti-HCV Positive	87 (56.13%)
Both HBsAg & Anti-HCV Positive	8 (5.16%)

**Table 3**

GRADES	Spontaneous Bacterial Peritonitis		Total	P. Value
	Present	Absent		
GRADE I	33 ( 68.8% )	15 ( 31.3% )	48 (30.97%)	<b>0.01</b>
GRADE II	32 ( 50.8% )	31 ( 49.2% )	63 (40.64%)	
GRADE III	10 ( 43.5% )	13 ( 56.5% )	23 (14.84%)	
GRADE IV	6( 28.6%)	15 ( 71.4% )	21 (13.55%)	
<b>Total</b>	<b>81 (52.3%)</b>	<b>74 (47.7%)</b>	<b>155</b>	

## DISCUSSION

HE is one of the commonest presentation in advanced liver diseases. It precipitates in cirrhosis of liver patients due to SPB, massive ascites with

albumin level < 1.5 g/dl etc. The exact pathogenesis of HE is not well defined, multiple hypothesis are there. In majority of patients the precipitating factor control or reversal is the main corner stone of the HE management.<sup>12</sup>

In present study SBP was presented 52.3% patients. This is very high presence of SBP in patients of liver cirrhosis with hepatic encephalopathy. This high percentage of SBP in these patients is due to not taking primary or secondary prophylaxis of antibiotics. SBP needs early diagnosis to prevent mortality in HE patients.<sup>10</sup> Ram N et al found 48.46% patients with SBP which is almost close to our study.<sup>10</sup> Mumtaz et al is in contrast with this study, who found SBP in 20.5% patients with hepatic encephalopathy.<sup>13</sup>

SBP was detected the most common 67% precipitating factor by Devrajani et al<sup>14</sup>, this percentage is also in contrast with this study.

Primary prophylaxis of antibiotics is recommended for high risk cirrhotic patients with ascitic fluid albumin < 1.5 gm/dl.<sup>9</sup> Antibiotic prophylaxis in cirrhotic patients with ascites is mandatory. Variceal bleed is the most common event in advanced cirrhosis. It leads to hepatic encephalopathy and SBP. However antibiotic therapy decrease infection (SBP) and increase survival. In our study, SPB more observed in grade I and II of hepatic encephalopathy. This is due to greater risk factor of GIT bleed in these. Hepatic encephalopathy and SBP both are important complications in cirrhotic patients and potentiate each other in the presence of any participating factors.

## CONCLUSION

HE and SBP are the common complications in liver cirrhosis. Most of the HE patients having SBP as well as precipitating factor. The treatment of SBP is the important step of management of HE in liver cirrhosis.

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