



# SPONTANEOUS BACTERIAL PERITONITIS (SBP); ASSESSMENT OF SPONTANEOUS BACTERIAL PERITONITIS (SBP) IN PATIENTS OF HEPATIC ENCEPHALOPATHY AND ITS ASSOCIATION WITH GRADES OF HE

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## INTRODUCTION

In cases of liver failure, altered levels of consciousness is defined as hepatic encephalopathy (HE) and it impacts negatively on survival of patients.<sup>1-2</sup>

Factors may responsible for onset of HE are hypoglycemia, medicines (sedative-hypnotics, opiates), electrolyte imbalance and Gastro-intestinal bleeding.<sup>3-4</sup> Free fluid in peritoneal cavity is defined as ascites.<sup>5</sup>

In cases of liver cirrhosis, ascetic fluid infection without any apparent intra-abdominal focus of infection is defined as Spontaneous Bacterial Peritonitis (SBP) and it is the common complication in cases of cirrhosis.<sup>6-7</sup>

Cases of liver cirrhosis with SBP may be asymptomatic not having the clinical signs and

**ABSTRACT... Objectives:** To assess the SBP in patients with Hepatic Encephalopathy and its association with grades of hepatic encephalopathy. **Study Design:** Cross sectional study. **Setting:** Department of Medicine, Medina Teaching Hospital. **Period:** January 2017 to June 2017. **Material and Methods:** Total 143 patients of HE having age range from 18-65 years either male or female selected. SBP was assessed in these selected patients. SBP defined as positive when ascetic fluid neutrophil count > 250/ml. West heaven criteria was used for grading of HE. **Results:** In present study, mean age of patients was 37.45 ± 10.63 years. Out of 143 patients, SBP was found in 77 (54%) patients. HBsAg was found positive in 58 (40.56%) patients followed by Anti-HCV was found positive in 77 (53.85%) patients and Both Anti-HCV & HBsAg was found positive in 8 (5.59%) patients. Total 51 (35.66%) patients were found with grade I HE followed by 60 (41.96%) patients grade II, 23 (16.08%) patients grade III and 9 (6.29%) patients found with grade IV HE. SBP was found in 36 (70.59%) patients, 32 (53.33%) patients, 5 (21.74%) patients and 4 (44.44%) patients respectively. Statistically significant association between grade of HE and SBP was noted with p value 0.001. **Conclusion:** Results of present reveals that frequency of SBP is very high in cases of HE. Hepatitis C was found positive in most of the patients. Statistically insignificant association of SBP with gender was observed. But highly significant association of SBP with grade of HE was seen.

**Key words:** Hepatic encephalopathy, Cirrhosis, Spontaneous bacterial peritonitis, Ascites

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symptoms of peritonitis.<sup>5</sup> SBP is responsible for 70% deaths annually due to HE, hepatorenal syndrome and septic shock.<sup>8</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>9</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).<sup>10</sup>

SBP is responsible for 30-50% deaths in patients suffering from cirrhosis of liver if not treated timely. 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 was a cross-sectional study and conducted at Department of Medicine, Medina Teaching Hospital from January 2017 to June 2017. Total 143 patients of HE either male or female having age from 18-65 years were selected for this study after taking written informed consent and an approval was taken from institutional review committee before commencing the study. Patients with fulminant hepatic failure, non-cirrhotic portal hypertension and uremic, anoxic, cerebral and metabolic encephalopathy were excluded from this study.

History of all the patients was 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. Demographic data of all the patients and clinical and laboratory findings were recorded in pre-designed proforma. Data was analyzed by using SPSS version 18. Mean and SD was calculated for age and frequencies were calculated for gender, grade of HE and SBP.

Stratification in relation to gender and grade of HE was done to detect the effect of these on outcome variable i.e. SBP. Chi-square test was used to detect the association. P. value ≤ 0.05 was considered as significant.

**RESULTS**

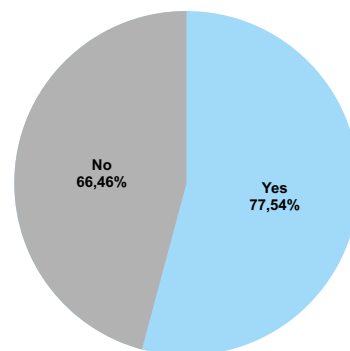
In present study, mean age of patients was 37.45 ± 10.63 years. Out of 143 patients, SBP was found in 77 (54%) patients. (Fig-1)

Division of patients according to viral cause of cirrhosis was done. HBsAg was found positive in 58 (40.56%) patients followed by Anti-HCV was

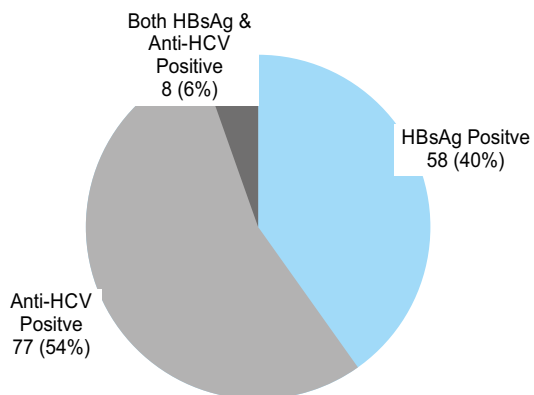
positive in 77 (53.85%) patients and Both HBsAg & Anti-HCV was found positive in 8 (5.59%) patients. (Fig-2)

Out of 85 (59.44%) male patients, SBP was noticed in 42 (70.59%) patients. Total 58 (40.56%) patients were female and SBP was found in 35 (53.33%) patients. Statistically insignificant (P = 0.233) association between gender and SBP was noted. (Table I)

Division of patients according to grade of hepatic encephalopathy was done by using West Haven criteria. Total 51 (35.66%) patients were found with grade I HE followed by 60 (41.96%) patients grade II, 23 (16.08%) patients grade III and 9 (6.29%) patients found with grade IV HE. SBP was found in 36 (70.59%) patients, 32 (53.33%) patients, 5 (21.74%) patients and 4 (44.44%) patients respectively. Statistically significant association between grade of HE and SBP was noted with p value 0.001. (Table II)



**Fig-1. Frequency of Spontaneous Bacterial Peritonitis**



■ HBsAg Positive ■ Anti-HCV Positive ■ Both HBsAg & Anti-HCV Positive

**Fig-2. Characteristics of patients**

Gender	Spontaneous Bacterial Peritonitis		Total	P. Value
	Present	Absent		
Male	42 (70.59%)	43 (29.41%)	85 (59.44%)	<b>0.233</b>
Female	35 (53.33%)	23 (46.67%)	58 (40.56%)	
Total	77 (53.85%)	66 (46.15%)	143	

Table-I. Association of SBP with gender

Graded of HE	Spontaneous Bacterial Peritonitis		Total	P. Value
	Present	Absent		
GRADE I	36 (70.59%)	15 (29.41%)	51 (35.66%)	<b>0.001</b>
GRADE II	32 (53.33%)	28 (46.67%)	60 (41.96%)	
GRADE III	5 (21.74%)	18 (78.26%)	23 (16.08%)	
GRADE IV	4 (44.44%)	5 (55.56%)	9 (6.29%)	
Total	77 (53.85%)	66 (46.15%)	143	

Table-II. Association of SBP with grade of HE

## DISCUSSION

In literature, reported prevalence of SBP is 10-30% and its mortality rate decreased from 80% to 20% due to its early diagnosis and management.<sup>12-13</sup>

In present study, mean age of patients was  $37.45 \pm 10.63$  years. 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>14</sup> Ram N et al found 48.46% patients with SBP which is almost close to our study.<sup>14</sup> Maqsood et al is in contrast with this study, who found SBP in 20.5% patients with hepatic ncephalopathy.<sup>15</sup> SBP was detected the most common 67% precipitating factor by Devrajani et al<sup>16</sup>, this percentage is also in contrast with this study.

Out of 143 patients, SBP was found in 77 (54%) patients. In one study by Khan AM et al,<sup>17</sup> SBP was noted in 36% patients of liver cirrhosis. Iqbal S et al<sup>18</sup> documented in their study on patients HE, frequency of SBP as 38.23% and Sarwar S et al<sup>19</sup> reported frequency of SBP as 38% in cases of HE. In study of Saqib A et al,<sup>20</sup> SBP was present in 31% patients.

Out of 85 (59.44%) male patients, SBP was noticed in 42 (70.59%) patients. Total 58 (40.56%) patients were female and SBP was found in 35 (53.33%) patients. Statistically insignificant ( $P =$

0.233) association between gender and SBP was noted. In one study by Saqib A et al,<sup>20</sup> out of 100 patients of liver cirrhosis, 43 (43%) patients were male and 57 (57%) patients were female. Results of this study are not in agreement with our study. Division of patients according to viral cause of cirrhosis was done. HBsAg was found positive in 58 (40.56%) patients followed by Anti-HCV was positive in 77 (53.85%) patients and Both HBsAg & Anti-HCV was found positive in 8 (5.59%) patients.

In one study by Khan AM et al,<sup>17</sup> hepatitis B was positive in 27.9% patients and hepatitis C was positive in 68.5% patients and both hepatitis B and C was found positive in 3.6% patients. Findings of this study is comparable with our findings.

## CONCLUSION

Results of present reveals that frequency of SBP is very high in cases of HE. Hepatitis C was found positive in most of the patients. Statistically insignificant association of SBP with gender was observed. But highly significant association of SBP with grade of HE was seen.



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### AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
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2	Ibrah Ahmed	Data collection	
3	Riaz Ahmed Javid	Data collection	