

# SPONTANEOUS BACTERIAL PERITONITIS IN CIRRHOTIC PATIENTS WITH HEPATIC ENCEPHALOPATHY

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## ABSTRACT

**Objective:** To evaluate the spontaneous bacterial peritonitis in cirrhotic patients with hepatic encephalopathy.

**Material and Methods:** This hospital based descriptive cross sectional study was carried out in Departments of General ICU (Intensive Care Unit) and Medicine, Lady Reading Hospital Peshawar from August 2012 to February 2013. A total number of 111 cirrhotic patients having hepatic encephalopathy and ascites were included in this study. Ascitic fluid analysis was performed in each patient. Cirrhotic patients with hepatic encephalopathy and ascites having age 15 years and above were selected in the study while patients with hemorrhagic or malignant ascites and peritonitis due to trauma, surgery or perforation were excluded. All the data was collected using a Performa and analyzed by descriptive statistics.

**Results:** Among these 111 patients, 60(55%) were males and 51(45%) were females(1.1:1). The age ranged from 25 to 75 years. Mean age was 54 years and the median age was 52.5 years with mode age 50 years. Out of these 111 patients, spontaneous bacterial peritonitis (SBP) was present in 40 (36%) patients. The ascitic fluid albumin concentration was low and ascitic fluid mean total leukocyte count was high in SBP patients and reverse was true for NON-SBP patients. The clinical features of patients with SBP were diffuse with most common presentation was abdominal pain (78%), followed by abdominal tenderness (76%), fever (72%), jaundice (58%), hepatic encephalopathy (48%), hypotension (22%) and few were asymptomatic(10%). Hepatitis B was present in 31(27.9%), hepatitis C in 76(68.5%) and both B and C was present in 4(3.6%) patients.

**Conclusion:** It is concluded that cirrhosis liver is a common problem in our country leading to hepatic encephalopathy. Most episodes of hepatic encephalopathy are due to clinically apparent precipitating factors. SBP is one of such precipitating factors leading to hepatic encephalopathy. Failure to recognize the precipitating factor may lead to a death.

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

## INTRODUCTION

Liver cirrhosis is defined as necrosis of the liver parenchyma followed by fibrosis and regeneration.<sup>1</sup> Hepatic stellate cells (SC) are responsible as a common path for the fibrosis.<sup>2</sup> Cirrhosis of liver is one of the common causes of both morbidity and mortality, being the 14<sup>th</sup> most common cause of death worldwide.<sup>3,4</sup> Also HCV related cirrhosis represents the leading indication for liver transplantation in western countries.<sup>5</sup> Hepatic encephalopathy is a neuropsychiatric syndrome, which develops during acute or chronic liver diseases. It is functional in nature and potentially reversible, the symptoms range from subtle personality changes to deep coma.<sup>6</sup> Most episodes of hepatic encephalopathy in patients with chronic liver disease are due to clinically apparent precipitating factors or the spontaneous development of portosystemic shunting.<sup>7</sup>

Due to inadequate defense mechanisms, cirrhotic patients with ascites have an increased susceptibility to infections, the most frequent and the most severe one being spontaneous bacterial peritonitis (SBP).<sup>8</sup> Spontaneous bacterial peritonitis is characterized by the spontaneous infection of ascitic fluid without an intra abdominal source of infection.<sup>9</sup> Spontaneous bacterial peritonitis (SBP) is one of the main infectious complications of cirrhosis and occurs in 8-30% of hospitalized patients with ascites.<sup>10</sup>

A polymorph nuclear cell count of more than 250 cells/mm<sup>3</sup> of ascitic fluid is considered diagnostic and from cultures of ascitic fluid only one germ should be isolated.<sup>8</sup> E.Coli is the commonest organism followed by streptococcal pneumoniae.<sup>11</sup>

Symptoms of infection occur in most patients which include fever, abdominal pain, mental status changes and ileus.<sup>12</sup>

An international study showed that spontaneous bacterial peritonitis is a precipitating factor in 37% patients with hepatic encephalopathy.<sup>5</sup> Our local literature is lacking such information, therefore the present project is designed to determine the frequency of spontaneous bacterial peritonitis in patients with hepatic encephalopathy.

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## MATERIAL AND METHODS

It was a descriptive cross sectional study, carried out in Lady Reading Hospital (LRH), Peshawar which is a tertiary care hospital. This was a hospital based descriptive study. It included 111 cases of chronic liver disease with hepatic encephalopathy and ascites, admitted to the General ICU and Medical Department of LRH. Selection of patients was by convenient sampling. The study was carried out from August 2012 to February 2013.

Cirrhotic patients, both male and female having age 15 years and above with hepatic encephalopathy and ascites were included in the study. While patients having haemorrhagic or malignant ascites or peritonitis due to trauma, surgery or perforation were excluded.

After formal consent taken from the patients or immediate attendants, as may be feasible, patients fulfilling the inclusion criteria were further assessed through detailed history (from patient or relatives), clinical examination and routine laboratory investigations like liver function test, prothrombin time (PT) and serum albumin. Ultrasound was the main tool for diagnosis of liver cirrhosis. Diagnosis of hepatic encephalopathy was made on clinical basis. While diagnosis of SBP was confirmed on the ascitic fluid routine examination showing more than 250 polymorph nuclear cells/mm. All information was recorded on a standard Performa.

All the data regarding the patients was analyzed using SPSS (Statistical Package for Social Sciences) version 11.0, data base software. The important results are mentioned in the form of tables and graphs.

## RESULTS

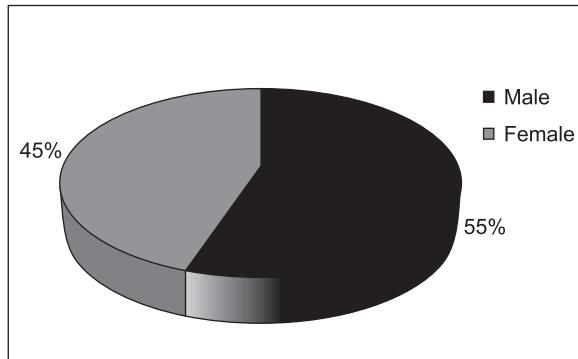


Figure 1: Sex wise distribution

A total of 111 patients were included in the study. Out of these 111 patients, 60 (55%) were males and 51 (45%) were females (1.1:1) as shown in the figure 1. Majority of the patients in the study were in the age range of 46-65 years as depicted in the Table No.3. The mean age was 54 years and the median age was 52.5 years with mode age 50 years. Out of these 111 patients, spontaneous bacterial peritonitis was present

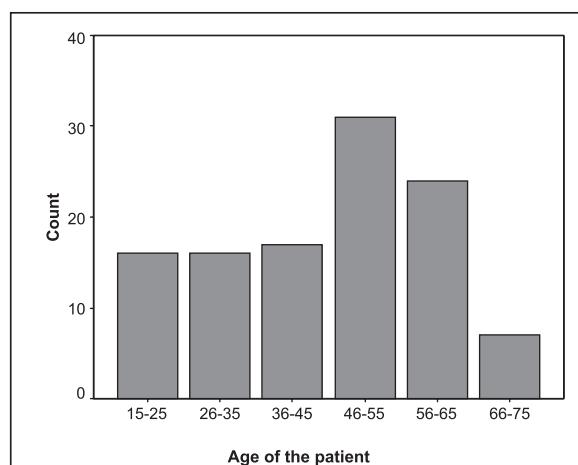


Figure 1: Age wise distribution

Table 1: SBP vs. Non SBP

S. No.	SBP/Non SBP	Total No.	Percentage
1	SBP	40	36 %
2	Non SBP	71	64 %

Table 2: Ascitic Fluid Analysis

S. No	Content	Non SBP	SBP
1	Albumen	1.7 gm %	0.86 gm %
2	TLC	219/mm3	2853/mm3
3	PMN Count	30.3/mm3	2357/mm3

Table 3: Age Distribution in Study

S. No	Age of the	Frequency	Percent
	Frequency	Percent	
1	15-25	16	14.4
2	26-35	16	14.4
3	36-45	17	15.3
4	46-55	31	27.9
5	56-65	24	21.6
6	66-75	7	6.3

Table 4: Viral Status

Viral Status	Frequency	Percent
Hepatitis B	31	27.9
Hepatitis C	76	68.5
Hepatitis B&C	4	3.6

**Table 5: Ultrasound Findings in Cirrhotic Patients with Hepatic Encephalopathy**

S. No.	Clinical Features	Percentage
1	Ascites	100 %
2	Hepatomegaly	40 %
3	Splenomegaly	54 %
4	Coarse shrunken liver	46 %
5	Thrombosed portal vein	14 %
6	Dilated portal vein	16 %

in 40(36%) patients as shown in the Table No.1. Hepatitis B was present in 31(27.9%), hepatitis C in 76(68.5%) and both B and C was present in 4(3.6%) patients.

The clinical features of patients with SBP were diffuse with most common presentation was abdominal pain (78%), followed by abdominal tenderness (76%), fever (72%), jaundice (58%), hepatic encephalopathy (48%), hypotension (22%) and few were asymptomatic (10%). The ultrasound findings in cirrhotic patients with ascite are ascites(100%), hepatomegaly(40%), splenomegaly(54%), coars shrunken liver(46%), thromboses portal vein(14%) and dilated portal vein(16%) as illustrated in Table No.5.

When they were classified according to the grades of encephalopathy, 35(31.5%) patients were in grade-I HE(Hepatic Encephalopathy), 42(37.8%) in grade-II HE, 20(18%) in grade-III HE, 14(12.6%) in grade-IV HE.

## DISCUSSION

Spontaneous Bacterial Peritonitis is one of the major complications of cirrhosis with ascites with a prevalence of about 10-30 %.<sup>13,14,15</sup> The risk of developing SBP is greater in those with a coexistent gastrointestinal bleed, high serum bilirubin, a previous episode of SBP, or low ascitic fluid protein concentration(less than 1gm/dl). Its mortality has been decreased from 80 to 30 % due to prompt diagnosis and early initiation of adequate treatment.<sup>16</sup>

The frequency of SBP in this study was 36 %. It correlates well with a local study conducted by Iqbal S et al, whose data showed classical spontaneous bacterial peritonitis in 38.23 %.<sup>17</sup> Sarwar S et al, another study from Pakistan, showed figure of 38 %.<sup>18</sup> This study also correlates well with the present study. One another study from Pakistan, Imran M et al, showed prevalence of 31.58 %.<sup>19</sup>

One study from Czech Republic, Lata J et al, showed prevalence of 35.4 % which is nearly correlating the present study.<sup>20</sup> Jain AP et al from India in 1999 showed prevalence of 34.92 %.<sup>21</sup> Puri AS et al, from North India showed the prevalence of 30 % in one study.<sup>22</sup> These two studies also nearly correlating my

study.

Contrary to the above reports which showed the prevalence of Spontaneous Bacterial Peritonitis between 30-38 %, there are other studies from the other provinces of Pakistan, which report the other way. Memon AQ et al, reported high prevalence i.e. 56.25% from Nawabshah in 1999.<sup>23</sup>

Some studies showed quite low prevalence of Spontaneous Bacterial Peritonitis. Amarapurkar DN et al, reported only 22% prevalence in one study from India in 1992.<sup>24</sup> Obstein KL et al,

reported 26.12 % prevalence in one study recently in 2007<sup>25</sup>. Jepsen P et al, showed 27 % prevalence in one study.<sup>26</sup>

A slight high percentage of Spontaneous Bacterial Peritonitis in this study from most of other studies from abroad may be due to late presentation of the patients to the tertiary care hospital, advanced stage of disease at the time of presentation, poor socio economic state, under nutrition with weak immune system and non compliance to the therapy.

The mean age of the patients was 54 years which is nearly correlating with the mean age in another study, Syed VA et al, (51.11 years).<sup>27</sup>

The more common presenting symptoms were abdominal pain (78%), abdominal tenderness (76%), fever (72 %), jaundice (58%), hepatic encephalopathy (48%) and hypotension (22 %). 10 % patients were asymptomatic. Nearly the same percentage was observed in one other local study, Iqbal S et al.<sup>17</sup>

## CONCLUSION

Spontaneous bacterial peritonitis is quite a common and major complication of liver cirrhosis with ascites. Patients usually present with abdominal pain, abdominal tenderness, fever, jaundice, hepatic encephalopathy and hypotension. SBP can be diagnosed and treated easily and hence clinicians should have a high index of suspicion and low threshold for diagnosis. Hence prompt diagnosis and treatment of SBP in cirrhotic patients can be a life saving step as routine examination of ascetic fluid is now available in periphery as well.

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