FREQUENCY OF SPONTANEOUS BACTERIAL PERITONITIS IN HOSPITALIZED PATIENTS WITH CIRRHOSIS AND HYPOALBUMINEMIA

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ABSTRACT

Background: Spontaneous bacterial peritonitis (SBP) is one of the complications in patients of cirrhosis. These patients when exposed to infection are likely to develop SBP. Various studies refer its frequency to around 30%, yet no study has estimated its frequency in hospitalized cirrhotic patients with serum albumin <3.5 g/dl. **Objectives:** To find out the frequency of SBP in hospitalized patients with cirrhosis and hypoalbuminemia. **Methodology:** This cross sectional study was conducted in Medical wards of Mayo hospital, Lahore from August 2010 to January 2011. A total of 110 cirrhotic patients recently hospitalized and having serum albumin < 3.5 g/dl in their initial investigations were investigated. Relevant history, examination and investigations were carried out &recorded in the proforma. **Results:** Of 110 patients under study, 60 were males(54.5%) and 50 were females(45.5%). Total 54 patients (49.1%) had SBP. Patients having SBP were older (52.6±12.8 years) compared to others (45.4±10.2 years). Among those having SBP, 38(70%) patients were > 40 years of age. The mean ascitic fluid white cell count in SBP patients was 884±260 cells/uL versus 236±108 cells/uL. The mean neutrophil count in ascitic fluid was 643±181 cells/uL versus 137±65 cells/uL. HCV was the commonest etiology of cirrhosis 59 (54%), HBV in 29 (26%), combined HBV &HCV in 10 (9%), and non-viral in 12 (11%). **Conclusion:** SBP is a common complication of cirrhosis and its frequency is higher in those cirrhotic patients who also have hypoalbuminemia (<3.5gm/dl).

Key words: Spontaneous bacterial peritonitis, Cirrhosis, Hypoalbuminemia

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INTRODUCTION

Cirrhosis is characterized by patchy necrosis of liver accompanied by simultaneous erratic regeneration and fibrosis. Ascites is one of the complications of cirrhosis.[1] Poor immunity in cirrhotic patients frequently leads to infections, and ascitic fluid infection, is known as spontaneous bacterial peritonitis (SBP), provided no secondary etiology is found.[2] It appears in 10-30% of cirrhotic patients having ascites. Patients having SBP are at higher risk of mortality, figure ranging from 30-50%.[3] Ascitic fluid infection leads to alteration in hemostasis and increased sinusoidal pressure that may favor bleeding from varices. In these cases, prompt diagnosis followed by judicious antibiotic treatment can be lifesaving.[4] Diagnostic abdominal paracentesis carries minimal risk and should be performed in all patients admitted to hospital during times of worsening clinical condition.[5] SBP is diagnosed as>250 neutrophils/uL and or >500 white cells/uL in ascitic fluid and/or presence of bacteria on ascetic fluid culture or gram's stain smear.[6,7]

Most frequent symptoms of SBP include fever, pain in abdomen, change in mental state, or ileus.[8] However, some patients with ascites present with SBP on their first diagnosis.[9]

Bacterial infections are quite frequent in patients with cirrhosis, and there is increased risk when they are hospitalized.[10] High SAAG ratio (serum to ascitic albumin gradient) and low ascetic albumin correlates with chances of developing SBP.[11] But no study in Pakistan has directly investigated SBP with serum albumin level. Therefore, we planned this study to find out the frequency of SBP in hospitalized cirrhotic patients with serum albumin <3.5gm/dl.

METHODOLOGY

We conducted this cross sectional study in medical wards of Mayo hospital, Lahore from 1st August, 2010 to 31 January 2011. 110 adult cirrhotic patients of either gender hospitalized with ascites and low serum albumin were included in study. Non-probability sampling was employed for patient selection. Patients were recruited after informed consent from patient him/herself or responsible member of family in case of altered mental state of patient. Patients with azotemia or kidney failure, CCF, or suspected tuberculosis or malignancy, evident from clinical review, were excluded. Diagnostic ascitic tap of each patient was done and fresh sample was immediately sent to laboratory for

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analysis. Diagnosis of SBP was made on pre-set criteria.

Cirrhosis: Clinically enlarged spleen or shifting dullness, supported by ultrasound evidence of coarse liver, large spleen and/or free fluid in abdominal cavity not attributable to other cause.

Hypoalbuminemia: Serum albumin < 3.5gm/dl.

Spontaneous bacterial peritonitis: SBP was considered if following criteria in ascitic fluid examination were met.

1. White cell count ≥ 500/µl.
2. Neutrophil count ≥ 250/µl.

SBP was labeled if either or both criteria were fulfilled.

SPSS-16 was used for statistical analysis of data. Quantitative variable like age, total white cell and neutrophil count were narrated in mean ± SD. Qualitative variables, like gender and SBP status of patients, were given in frequency and %age. P-value <0.05 was considered as significant and was calculated for comparison in certain parameters.

RESULTS

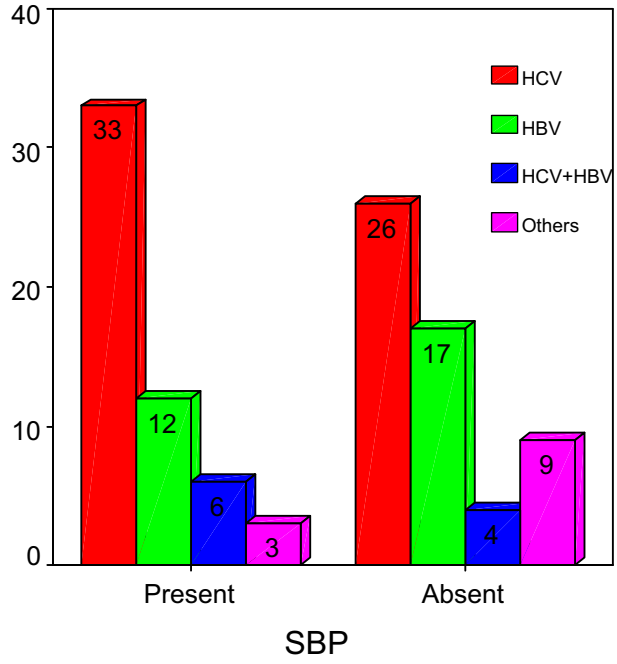
The patients in our study were 60 males (54.5%) and 50 females (45.5%). 54 patients (49.1%) had SBP; among those 30 were males (55.5%) and 24 were females (44.5%).

Table I: Ascitic Fluid Analysis of the patients

Characteristics		SBP status		P-value
		Positive	Negative	
Age		52.6±12.8	45.4±10.2	<0.05
Gender	Males	30	30	
	Females	24	26	
Ascitic Fluid WCC cells/µl		884± 260/uL	236±108/ul	<0.05
Ascitic Fluid Neutrophil count cells/uL		643±181/ul	137±65/ul	<0.05

Among 56 patients (50.9%) who were negative for SBP, 30 patients (53.6%) were males and 26 were females (46.4%). The mean age of these patients was 48.9±12.1 years; 32 patients (29.1%) were of 20-39 years age, 48 patients (43.6%) were of 40-59 years age, while 30 patients (27.3%) were in 60-70 years age range. Patients with SBP were of significantly higher age (52.6±12.8 years) than other patients (45.4±10.2 years) (p<0.05). Both groups had most patients > 40 years of age [38 (70%) in SBP group versus 40 (71%) in other]. Table I shows analysis of ascitic fluid. Figure 1 shows etiology of cirrhosis in our study subjects. Hepatitis C was commonest in both groups.

Figure I: Etiology of spontaneous Bacterial peritonitis



DISCUSSION

Spontaneous bacterial peritonitis (SBP) is characterized by ascetic fluid infection in cirrhotic patients, not attributable to secondary or surgically treatable cause of infection. It is a serious as well as frequent complication of advanced cirrhosis. In Pakistan, its frequency in patients with cirrhosis is estimated to be10-30%, as narrated by Iqbal et al[11] and 31.66% by Imran et al.[12] In international literature, it is 24%.[13] Our study adds that hospitalized cirrhotic patients who are hypoalbuminemic also, have an even higher (49%) frequency of SBP.

The causes of this much high frequency of spontaneous bacterial peritonitis in our study may be multifactorial. Firstly, our study targeted that population that is already at higher risk of SBP. This was our reason to know the frequency of SBP in this very group who are already at advanced cirrhosis and likely to harbor the infection. Our results highlight an important point that this group when encountered with or without signs and symptoms of SBP should be dealt by the doctors with low threshold for suspicion of SBP, because in these patients, SBP may easily culminate in sepsis, alteration in hemostasis, bleeding from varices, and death. A meta-analysis

also supports the use of IV albumin in these patients showing that adding IV albumin to antibiotics for treatment of SBP produces prognostic improvement in SBP, and prevention of renal impairment.[14] Overall poor status of health in our country and in cirrhotic population particularly might also be a reason of high frequency of SBP in our study. Both hepatitis C & hepatitis B dominated as etiology of cirrhosis in both groups. We suggest further large scale studies to strengthen the findings of our study.

CONCLUSION

Almost half of the cirrhotic patients with ascites and having low serum albumin (<3.5gm/dl) levels hospitalized in medical ward had SBP. High index of suspicion should be practiced to save these patients from fatal consequences.

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