

Research Article**Study of spontaneous bacterial peritonitis in patients with cirrhotic ascites****¹Sana Zafar, ²Syeda Rawash Mehdi****and ³Anum Liaqat**¹Woman Medical Officer,
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Medicare Hospital, Multan**ABSTRACT****Objective:**To study the spontaneous bacterial peritonitis in patients with cirrhotic ascites.**Methods:**100 Patients presenting with cirrhotic ascites to Shahida Islam Teaching Hospital Lodhran. SBP was studied thoroughly with regards to both history and clinical examination, diagnosis based on ascitic fluid cell PMN count of $> 250/\text{mm}^3$. OR. A positive ascitic fluid culture and an absence of a primary source of infection.**Results:**Cirrhosis was secondary to Alcoholism in this study, seen predominantly in male population i.e. 86 cases (86%) and only 14 (14%) females. SBP seen only in male cirrhotics. Mean age of the patients were 49.10 yrs and mean age of patients diagnosed for SBP was 50.58 yrs. Among the 18 patients positive for SBP, 14 had PMN count $>250/\text{mm}^3$. Three patients were culture positive for E.coli and one case was positive for staph aureus. Studying the mode of presentation of SBP - Among the patients presented with fever, vomiting 66% were positive for SBP. Among patients presented with altered sensorium and pain abdomen, all were positive for SBP. 2.5% cases, who were positive for SBP had no Fever. Studying the clinical signs with SBP, all patients presenting with abdominal tenderness, had SBP Comparing the positive cases with child pugh grading, as the severity of scoring increased, increased incidence of SBP was noted with 13 (85.71%) of the 18 patients in the SBP group belonged to Child Pugh class C and 5 patients(7.8%) to class B. Ascitic fluid protein of less than 1g/dl are more prone to SBP 44%. CNNA type is the commonest type of SBP seen in 15 of 18 cases 83.3 %.**Conclusion:**18% of patients of cirrhotic ascites have ascitic fluid infection causing SBP. Patients with deterioration of general condition were mostly due to SBP Higher the derangement of Liver function there is more chances of SBP. Ascitic protein of $<1\text{g/dl}$ cases are more likely to present with SBP, than the patients with AF protein $>1\text{g/dl}$ cases. The risk of developing SBP increases with the severity of cirrhosis as judged by Child Pugh class.**Keyword:**SBP, cirrhosis, abdominal tenderness, MNP**INTRODUCTION**

Cirrhosis of Liver is the common hepatological disorder seen in clinical practice. Ascites is the Consequence of portal hypertension which is characteristic clinical feature of cirrhosis. One of the predisposing factors which is responsible for hepatic encephalopathy and subsequent deterioration in the condition of cirrhosis patient is appearance of spontaneous bacterial peritonitis

(SBP). The terminal event in these patients is Hepatic encephalopathy. Spontaneous bacterial peritonitis is characterized by abrupt onset of fever, chills, abdominal pain with rebound tenderness over abdomen. Absent bowel sounds and leucocytosis are seen in most cases. Paracentesis reveals cloudy ascitic fluid with many WBCs predominantly, polymorphonuclear

cells (PMN). A single organism usually, enteric group is cultured from the ascitic fluid in majority of cases¹. The same organism is often recovered from blood culture also. Most of the patients die, due to infection per se, others of its complications and some from other hazards of cirrhosis such as bleeding varices or the hepatorenal syndrome.

This syndrome first appeared to be a disorder of alcoholic cirrhosis, has also been reported in postnecrotic cirrhosis², chronic active hepatitis³, Nephrotic syndrome⁴, Cardiac cirrhosis⁵, malignant ascites and primary Biliary cirrhosis⁶. The full blown syndrome may not be present and any one or all of its components may be missing. It may present as fever of unknown origin or as hypothermia. Sometimes it emerges as encephalopathy of uncertain cause^{7,8}. So, unexplained fever, hypothermia, hypotension, encephalopathy, abdominal pain or simply unexplained clinical deterioration should be considered as indicators for diagnostic paracentesis in cirrhotics for the diagnosis of SBP^{7,8,9,10,11,12}. SBP is caused by enteric group of organisms in about 75% and the remainder by non-enteric group of organism including anaerobes^{13,14}.

SBP being the problem in cirrhosis with ascites, all cirrhotics should be screened for SBP with atleast ascitic fluid analysis, PMN cell count and culture of ascitic fluid. These patients must be treated with antibiotics aggressively as they have poor prognosis and high mortality if not treated early.

The present study is taken up to find SBP in cases of ascites and find its etiological causes, so that early diagnosis will help in early initiation of treatment of SBP leading to improvement of clinical state.

MATERIALS AND METHODS

This Study was carried out on patients admitted to Shahida Islam Teaching Hospital Lodhran.

Study Subjects – Patients admitted for cirrhosis of liver with ascites or its complications were studied during the period from January 2017 to June 2017. All patients who were confirmed of

hepatic cirrhosis with ascites by ultra sound were screened for SBP.

Liver size, caudate/right lobe ratio, liver surface, echogenicity, portal vein diameter, portal vein mean flow velocity and spleen size were variables used in diagnosing cirrhosis.

Total of 100 patients were studied thoroughly with regards to both history and clinical examination.

METHODS -

SBP was diagnosed by following criteria.¹⁵⁻¹⁶

An ascitic fluid neutrophil count greater than 250 cells/ mm³. Or A positive ascitic fluid culture, And An absence of a primary source of infection in abdomen. Ascitic fluid for analysis was aspirated as soon as the patients were admitted, and diagnosed to be suffering from Cirrhosis of Liver, before giving any antibiotics. All patients underwent paracentesis within 24 hours of admission.

About 30 ml of ascitic fluid was tapped in each patient with aseptic precautions.

1. 10ml of ascitic fluid was immediately inoculated in to blood culture bottles at the bed side formicrobiological analysis.
2. 10ml of ascitic fluid was sent to the laboratory in sterile test tubes for conventional culture.
3. 10ml of ascitic fluid was utilised for biochemical and cytological examination.

Ascitic fluid of all patients were analysed for the type of cells and cell count. Gram's stain was done in all cases. Ascitic fluid was cultured to know the presence of pathogenic organisms.

Ascitic fluid was subjected to culture in blood culture bottles, Cytological and Biochemical examination including protein, albumin, glucose and pH. A total of 20ml of ascetic fluid was inoculated, 10ml was inoculated in Blood broth .The broth bottle was incubated under aerobic conditions at 35°C for 7 days. Blind subcultures on sheep blood agar and Mac- Conkey agar (incubated in aerobic conditions) and in phenylethyl alcohol agar (incubated in anaerobic conditions) were performed at 48 and 72 h. The final report will be made after 72 hours. Both plates and broth were examined daily for visible

growth. When turbidity was detected, additional subcultures were performed. On isolation the organism were characterised by standard protocol and antibiotic sensitivity evaluated.

RESULTS

Total 100 patients were studied thoroughly with regards to both history and clinical examination, cytological, microbiological and biomedical tests. The observations of the study are analysed.

Male patients were 86 (86%) and female patients were 14 (14%). (Table 1)

Age distribution ranged widely with youngest patient being 28 years and oldest patient of 76 years. Mean age of the study population is 49.10 years. Maximum number of patients are found in age group of 30-59years.

(Table 2)Among The 100 patients with cirrhotic ascites which was confirmed by USG 18 patients were found positive for SBP, in this 14 patients had only PMN count $>250/\text{mm}^3$ but culture negative for any organism. Only 4 subjects were culture positive and isolated E.coli in 3 cases and in one case Staphylococcus aureus organism by 72hrs, by culture.

(Table 3)Among the 100 patients studied 24 patients presented with fever,6 presented with vomiting and 3 patients presented with altered sensorium. In 24 patients who presented with fever in 16 patients were had SBP(66%), 14 patients had PMN count $>250/\text{mm}^3$ (CNNA)and 2 was culture positive (MNB). In 6 patients who

presented with vomiting 4 patients were positive for SBP (64%).Among these 4 positive cases 3 had PMN count $>250/\text{mm}^3$ (CNNA) and 1 was culture positive, E.coli (MNB). 3 patients presented with altered sensorium all the 3 patients was positive for SBP among this three positive cases one was culture positive (E.coli) MNB and the rest 2 had PMN count $>250/\text{mm}^3$ (CNNA). Presence of Jaundice had no significance to SBP, but the degree of Jaundice is an indicator of SBP. Similarly Ascites had no significance to the occurrence. (Table 4)

All the 100 patients were evaluated with child pugh grading system. The results was 20 patients were in grade A among them no patients were positive for SBP. 64 patients were under grade B and in those patients 5 were positive for SBP (7.8%).16 patients were coming under grade C and 13 positive cases had SBP in that group (81.25%).

It is well known that as the child Pugh grade increases, there is more chances of SBP. In the present study also 81% of patients in Grade 3 were in SBP. Similarly in Grade 2 patients the incidence is only 7.8% whereas subjects in grade 1 had no SBP. Patients in Grade 3 Child Pugh class are more likely to be suffering from spontaneous Bacterial Peritonitis. Hence all patients in grade 3 according to Child Pugh classification must be evaluated for spontaneous Bacterial Peritonitis. (Table 5)

Table No 1Sex distribution of patients studied

SEX	NUMBER OF PATIENTS	PERCENTAGE
MALE	86	86%
FEMALE	14	14%

Table No 2 Age Distribution of Patients Studied

AGE IN YEARS	NUMBER	%
20 -29	1	1%
30-39	25	25%
40-49	28	28%
50-59	25	25%
60-69	19	19%
70-79	2	2%

Table No 3INCIDENCE OF SBP

TOTAL NO .OF PATIENTS	PATIENTS POSITIVE FOR SBP	POSITIVE BY PMN COUNT >250/mm ³	POSITIVE BY CULTURE	MALES	FEMALES
100	18	14	4	18	0

Table No 4MODE OF PRESENTATION SBP CASES

MODE OF PRESENTATION	NO. OF CASES	POSITIVE FOR SBP	PMN >250	CULTURE POSITIVE	%
FEVER	24	16	14	2	66%
VOMITING	6	4	3	1	64%
ALTERED SENSORIUM	3	3	2	1	100%
WITH OUT FEVER	76	2	NIL	2	2.5%

Table No 5CHILD-PUGH CLASSIFICATIN AND SBP

CHILD PUGH GRADE	NO.OF PATIENTS	POSITIVE CASES	PERCENTAGE OF POSITIVE CASES %
GRADE A (SCORE 5-6)	20	NIL	0%
GRADE B (SCORE 6-9)	64	5	7.8%
GRADE C (SCORE 9 -15)	16	13	81.25%

DISCUSSION

18% of Ascitic subjects had Spontaneous Bacterial Peritonitis out of one hundred Cirrhotic Ascitic cases presently studied. In this 14 patients had only PMN count >250/mm³but culture negative for any organisms. Only 4 subjects were culture positive and isolated E.coli and Staphalococcus aureus organism on culture by 72hrs. Mean age of the patients were 49.10 years and mean age of patients diagnosed for SBP was 50.58 years. SBP was seen in predominantly older age group, with most patients in 5th and 6thdecade. Mean age at the time of diagnosis was 50.58 years. Mean age at the time of diagnosis in Filik L, Unal S¹⁷ was 49.9 years, 39 years in N Rawat, MK Bhatnagar^{13,18}series and 44 years in Mihas AA¹⁰study.

The common mode of presentation of SBP in our series was with fever, vomiting, altered sensorium and abdominal tenderness. Among 24 patients presented with fever 66% of cases had SBP and Among 6 patients presented with vomiting 64% was positive for SBP . All the three patients

presented with altered sensorium was positive for SBP. In Mihas AA , Toussaint J, study the clinical features were fever (69%) range and abdominal pain range (59%). include hepatic encephalopathy (54%), abdominal tenderness (49%), diarrhea (32%),¹⁰

In our study the prevalence of SBP is found to be 18 %. Among this 18% (18 patients) 14 (77.7%) were CNNA and 4 (22.3%)were MNB.In various studies, routine paracentesis has documented a prevalence of SBP of 10 -27%¹⁹⁻²⁰. Andreuet al²¹ reported a prevalence of 28% while Amarapurkar et al, found it to be 22.5%²². In a study involving 169 cirrhotic patients, Jarcuska et al found evidence of SBP by first paracentesis in 27 (16.0%). Romney et al, in a study involving 67 cirrhotic patients found no case CNNA and only 10 of MNB²³. In this study 13 (85.71%) of the 18 patients in the SBP group belonged to Child Pugh class C and 5 (7.8%) to class B. In a study by Amarapurkar et al had found that 6 of the 7 patients detected to have SBP belonged to class C²⁴. This finding supports the view that SBP is

more common in patients with advanced liver disease.

CONCLUSION

Cirrhotic cases with constitutional symptoms must be compulsorily screened for SBP and started on Antibiotic therapy to reduce the mortality. Gross derangement of Liver function predisposes to SBP. Hence it is better to prevent cirrhotics progressing to hepatocellular failure, rather than start treating the patients after they are diagnosed as SBP.

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