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Research Article

### A CROSS SECTIONAL STUDY TO DETERMINE THE FREQUENCY OF SPONTANEOUS BACTERIAL PERITONITIS AMONG DECOMPENSATED CHRONIC LIVER DISEASE PATIENTS

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**Abstract:**

**Objective:** The objective of this research is to find frequency of spontaneous bacterial peritonitis in patients with decompensated chronic liver disease patients (DCLD).

**Methodology:** Study sample was 100 patients with ascites due to chronic liver disease. Detailed clinical history was taken from all patients and complete general physical examination along with abdominopelvic examination was performed. SBP (spontaneous bacterial peritonitis) was diagnosed on basis of history, examination and investigations. Ascitic fluid analysis was done and neutrophils count more than 250/mm<sup>3</sup> were considered diagnostic. Besides that ascetic fluid culture and presence of any source of infection was also considered diagnostic for SBP.

**Results:** 6% of study population was male while only 14% individuals were females. Alcoholic cirrhosis was found to be a common cause. Male patients had SBP, mean age group was 49.9 years. Those with SBP belonged to 50.3 years mean age. 18 individuals had SBP, out of which 14 had neutrophils count >250/mm<sup>3</sup>. Fluid culture revealed E coli in most patients with staph. Aureus only positive in one patient. Patients were also studied with respect to presenting complains, most individuals with SBP had fever and vomiting (66%). Patients in altered state of consciousness had SBP positive in all of them (100%). Fever was not presenting complain in 2.5% patients. High Child Pugh Scoring was associated with higher incidence of SBP, 85% of total i.e. 13 out of 18 had Child Pugh class C, while only 5 patients had Child Pugh Class B. Ascitic fluid proteins <1g/dl had more chances to suffer SBP (44%). CNNA type SBP was most common (83%).

**Conclusion:** 18% chronic liver disease ascetic individuals had SBP, it was a common sign of early deterioration of patient. Chances of SBP are associated with degree of hepatic derangements. Ascetic proteins <1g/dl had more chances of SBP. The cirrhosis severity had a strong correlation with chances of SBP, it was estimated by Child Pugh Scoring.

**Key Words:** Cirrhosis, chronic liver disease (CLD), Spontaneous bacterial peritonitis (SBP), Child Pugh.

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**INTRODUCTION:**

Chronic liver disease is defined by presence of cirrhosis confirmed on ultrasonography. The stigmata of chronic liver disease are ascites, palmar erythema, spider angiomas, gynecomastia, hair loss, etc. The abdominal ascites is a common complication associated with cirrhotic patients. The spontaneous bacterial peritonitis is a complication occurred as a result of superimposed bacterial infection. This condition presents by vomiting, fever, altered sensorium, abdominal pain, tenderness, in a few cases fever is not the presenting complaint. Diagnosis is made on clinical examination, history and investigations. The polymorphonucleocyte count more than 250 cells/mm<sup>3</sup> and cell culture showing any bacteria on gram staining [1.2].

Journal of Canadian association of gastroenterology published a study risk of SBP in asymptomatic individuals undergoing repeated paracentesis was done. Total incidence of SBP as a result of paracentesis was 3%. However, overall risk of SBP was 0.5% [2]. The risk factors and treatment options for SBP and its relation to onset of hepatic encephalopathy has repeatedly been studied and tested. Xuibijing injections in combination with antibiotics were studied in treating SBP and conclusion was drawn in favor of improving treatment response as a result of combination therapy [3]. C reactive proteins level estimation and pro-calcitonin levels help in measuring the onset of complications and mortality rate [4.5]. The native liver survival was highly affected by onset of SBP in children suffering from end stage liver disease [6].

**METHODOLOGY:**

Research study was performed at Sheikh Zaid Hospital Lahore. Patients admitted in general medicine department were included in study. Study duration was 2 months, from January to February 2019. All enrolled individuals were diagnosed CLD ascetic individuals. Ultrasonography was used as a tool for diagnosis. Variables used to determine extent of hepatic cirrhosis were echogenicity, texture, borders, portal vein size, right left lobe ratio, portal vein flow rate and spleen size.

Detailed history and examination of whole sample was done. The diagnostic criteria for SBP were neutrophils count more than 250 cells/mm<sup>3</sup>, absence of primary abdominal source of infection, positive fluid culture. Fluid sample was collected shortly after admission before injecting any antibiotic. Paracentesis was performed within 24 hours. 30 ml ascetic fluid was collected from all patients to undergo necessary investigations and was divided in such a way: 10ml was transferred to blood culture bottle shortly after collection. 10ml for cytological and biochemical investigations 10ml for conventional culture.

The gram staining, cell count, type of cells were tested on ascetic fluid. Albumin, proteins, glucose, pH were tested. Blood culture vials were inoculated in aerobic environment at 35 degree Celsius for 7 days. Sheep blood agar, Ma-Conkey agar, phenylethyl alcohol agar cultures were performed at 48 and 72 hours. Culture agars were examined daily. Turbidity if found, further subcultures were performed. After confirmation of micro-organism, suitable antibiotic was started.

**RESULTS:**

6% of study population was male while only 14% individuals were females. Alcoholic cirrhosis was found to be a common cause. Male patients had SBP, mean age group was 49.9 years. Those with SBP belonged to 50.3 years mean age. 18 individuals had SBP, out of which 14 had neutrophils count >250/mm<sup>3</sup>. Fluid culture revealed E coli in most patients with staph. Aureus only positive in one patient. Patients were also studied with respect to presenting complains, most individuals with SBP had fever and vomiting (66%). Patients in altered state of consciousness had SBP positive in all of them (100%). Fever was not presenting complain in 2.5% patients. High Child Pugh Scoring was associated with higher incidence of SBP, 85% of total i.e. 13 out of 18 had Child Pugh class C, while only 5 patients had Child Pugh Class B. Ascitic fluid proteins <1g/dl had more chances to suffer SBP (44%). CNNA type SBP was most common (83%).

Table: 1 gender stratification of study population:

Gender	(N)	Percentage
Male	86	86%
Female	14	14%

Table: 2 Age stratification.

Age (years)	Number of patients	Percentage
20 to 29	1	1%
30 to 39	25	25%
40 to 49	28	28%
50 to 59	25	25%
60 to 69	19	19%
70 to 79	2	2%

Table: 3 SBP incidence

Total patients	SBP positive	Culture positive	Neutrophils >250cells/mm <sup>3</sup>	Females	Males
100	18	4	14	0	18

Table: 4 association of Child Pugh scoring with SBP

Child Pugh	Total Patients	Positive patients	Percentage
Grade A(5 to 6)	20	0	0%
Grade B (6 to 9)	64	5	7%
Grade C (9 to 15)	16	13	82%

### DISCUSSION:

Spontaneous bacterial peritonitis is a common complication occurred as a result of super imposed bacterial infection. The risk factors associated with it are repeated paracentesis, etc. The patients usually present with fever, vomiting, and abdominal pain. Ascitic fluid analysis and culture helps in diagnosing the condition [7]. The risk of complications such as hepatic encephalopathy is more frequently observed in individuals with repeated episodes of SBP than in those who do not. Similarly, repeated paracentesis due to massive ascites in end stage liver disease individuals is also a major source of infection [4,5].

The retrospective cohort study was performed in Netherlands in 2003 in which the bacterial infections in ascetic patients and the antibiotic resistant patterns were studied. It was noticed that antibiotic susceptibility and resistant patterns vary from region to region so no solid conclusion can be drawn based on a study conducted on a single population [7]. Procalcitonin, C reactive proteins and lactate dehydrogenase levels has been studied as markers for diagnosing SBP and mortality predictors [8,9].

Due to increased risk of hepatic encephalopathy, associated with repeated episodes of SBP, there is a need to discover new diagnostic predictors, risk factors and treatment options in order to prevent cirrhotic patients from complications and to improve overall survival [10].

### CONCLUSION:

18% chronic liver disease ascetic individuals had SBP, it was a common sign of early deterioration of patient. Chances of SBP are associated with degree of hepatic derangements. Ascetic proteins <1g/dl had more chances of SBP. The cirrhosis severity had a strong correlation with chances of SBP, it was estimated by Child Pugh Scoring.

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