

A Cross Sectional Study on Spontaneous bacterial Peritonitis in Patients With cirrhosis of Liver

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Abstract:

Background: The history of spontaneous bacterial peritonitis Correia and Conn invented the concept in 1975. The phrase was used to differentiate this kind of illness from surgical peritonitis. Although many patients with SBP have an infection (e.g., urinary tract infection or pneumonia), they are classified as having SBP until the illness needs surgical intervention.

Objective: To investigate the prevalence of SBP, its clinical profile, clinical course, and microbiology, as well as its responsiveness to therapy and short-term prognosis.

Materials and Procedures: Cross-sectional research conducted at a hospital.

The research was carried out in the Department of General Medicine, Subbaiah Institute of Medical Sciences, Shimoga, and Karnataka. The study period is from April 2021 to March 2022. Patients with cirrhosis of the liver and ascitis of various aetiologies admitted to medical wards comprised the study population. Our research included a sample size of 100 patients.

Method of sampling: Simple random sampling. Prior to the start of the research, authorization was obtained from the Institutional Ethical Committee. Study aids and Data collecting procedure: All of the patients who were chosen received a full history taking on their etiological symptoms. A thorough physical examination was performed to search for the numerous stigmata and symptoms of cirrhosis complications.

Results: A total of 22 individuals with spontaneous ascitic fluid infection were treated in the hospital and were discharged with oral norfloxacin prophylaxis 400mg Bid and were subsequently followed up on for 6 months.

Conclusion: Based on our findings, SBP is a prevalent and recurring consequence of cirrhosis. The most frequent sign of spontaneous bacterial peritonitis is fever. Hepatic encephalopathy is a prevalent symptom in SBP patients. Bad Renal failure, high serum bilirubin, low total blood proteins, and low ascitic fluid protein content are all prognostic indications in SBP.

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Introduction

Correia and Conn created the phrase "spontaneous bacterial peritonitis" in 1975. The phrase was used to differentiate this kind of illness from surgical peritonitis. Although many patients with SBP have an infection (e.g., urinary tract infection or pneumonia), they are diagnosed with SBP until the illness necessitates surgical intervention (e.g., ruptured viscus). SBP is diagnosed when an ascitic fluid culture is positive and there is an increased ascitic fluid absolute polymorphonuclear count (i.e. > 250 cells/mm³) without an obvious intraabdominal surgically curable cause of infection [1]. Bacterial peritonitis develops exclusively in the presence of serious liver damage. Cirrhosis is a chronic liver illness, although it may also be acute (fulminant hepatic failure) or subacute (alcoholic hepatitis). [2] The majority of SBP patients exhibit symptoms and/or signs of

peritoneal infection, including abdominal discomfort, fever, and changes in gastrointestinal motility [3-5]. In some individuals, the development of SBP may be clinically characterised by impairment of liver function (e.g., development of Hepatic encephalopathy) or renal failure as the primary or sole characteristics. Most cases of SBP and monomicrobial bacterial ascites are caused by E Coli, streptococci, and Klebsiella. Although previous research reported a 6% incidence of anaerobes within SBP flora, this is most likely due to the occurrence of unrecognised instances of Secondary Bacterial peritonitis. Anaerobes caused around 1% of SBP and monomicrobial bacterial ascites in a recent study. In all instances of clinically compatible ascitic fluid infection with ascitic fluid PMN levels equal to or more than 250 cells/mm³, empirical antibiotic

therapy is recommended. Because spontaneous ascitic fluid infection is an excellent predictor of end-stage liver disease, it has been advocated as a reason for liver transplantation [6,7].

Previously, 48% to 95% of patients with spontaneous ascitic fluid infection perished during their hospitalisation, despite antibiotic therapy. Early identification and treatment of infection, as well as avoidance of nephrotoxic medications, have now been linked to a decrease in mortality. The fatality rate was strongly related to age and length of stay in the critical care unit. As a result, the current research was conducted to investigate spontaneous bacterial peritonitis in individuals with liver cirrhosis.

Objective: To study the incidence of SBP, its clinical profile, clinical course and its microbiology and its response to treatment and assess its short – term outcome.

Material & Methods:

Study Design: Hospital-based cross-sectional study.

Study area: The study was done at department of General Surgery and Medicine, SCB Medical College and Hospital, Cuttack

Study Period: Apr. 2021 – March 2022.

Study Population: Patients of cirrhosis of liver with ascites of varied aetiology admitted in medical and surgical wards

Sample Size: 100 cases were included in our study.

Sampling Method: Simple Random sampling method.

Inclusion Criteria:

All patients of cirrhosis of liver of varied aetiology of above 15 years with ascites.

Exclusion criteria:

1. Patients who already received treatment (antibiotics) before admission into hospital.
2. Patients of ascites with surgical source of infection intraabdominal - perforation of intestine, traumatic causes of peritonitis.
3. Patients who had undergone large volume paracentesis within 10 days prior to admission into hospital.

Observations & Results:

Table 1: Age wise distribution of the study participants

Age in Years	Number of Patients	Percentage
15 – 24	6	6.0
25 – 34	18	18.0
35 – 44	19	19.0
45 – 54	25	25
55 – 64	22	22
65 – 74	8	8
75 – 84	3	3
Total	100	100

The youngest patient in study was 18 years old. The oldest patient was 77 years old.

Table 2: Distribution of patients according to gender

Sex Incidence	Number of Patients	Percentage
Females	28	30
Males	72	70

Male: Female ratio = 2.55: 1

Table 3: Symptoms Analysis

Symptom	No. of patients	Percentage
Distention of abdomen	90	90
Swelling of feet	68	68
Fever	37	37
Jaundice	43	43
Pain Abdomen	41	41
Upper GI bleed	42	42

Table 4: Symptoms in patients with spontaneous ascetic fluid infection (n = 29)

Symptom	No. of Patients	Percentage
Fever	12	41.4
Pain abdomen	8	27.6
Upper GI Bleed	10	34.5

Table 5: Clinical Signs:

Sign	No. of Patients	Percentage
Ascitis	99	99.00
Pedal Edema	63	63.00
Dilated Abdominal Veins	68	68.00
Splenomegaly	75	75.00
Icterus	57	57.00
Pallor	52	52.00
Clubbing	40	40.00
Hepatomegaly	24	24.00
Spidernevi	17	17.00

Laboratory Data:

Haemoglobin levels of 6% were identified in 28 patients, blood urea levels of 40% were found in 38 patients, and serum creatinine levels of 1.5 mg% were detected in 36 patients. In 22 cases, the surface antigen for Hepatitis B was positive.

In 19 cases, total serum proteins were determined to be 5%. None of the patients had SOL in their liver. In 73% of patients, the liver was diminished on an ultrasound test. Cirrhosis was macronodular in 90% of the patients and micronodular in 10%.

Upper GI endoscopy showed Grade-I esophageal varices in 35% of patients, Grade-II varices in 27%, and Grade-III varices in 38%. Among the 22 patients admitted with spontaneous ascitic fluid infection, 8 had SAAG > 2 gm% and 14 had SAAG between 1.1 and 2.0. In 9 of 22 SBP patients, ascitic fluid total protein was less than 1 gm%. At the time of admission, 6 of the 19 patients had a total ascitic fluid cell count more than 1000 cells/mm³. All three patients who died in the hospital had total ascitic fluid cell counts more than 2000 cells/mm³.

Table 6: Ascitic fluid cultures

Organism	No. of Patients	Percentage
E.coli	11	50.00
Klebsiella	2	9.0
Proteus	1	4.54
S. Aureus	4	18.3
Pseudomonas	1	4.54
No Organism (CNNA)	3	13.6

Number of patients of cirrhosis having spontaneous ascitic fluid infection at admission – 14 patients (23.3%).

- No. of patients having culture negative (CNNA) – 3
- No. of patients having SBP – 10
- No. of patients having MNBA – 1

Total of 22 patients who developed spontaneous ascitic fluid infection were treated during hospital stay and were put on oral norfloxacin prophylaxis 400mg Bid at discharge and later followed up for 6 months.

Ascitic fluid analysis at 6 months of follow-up showed

- No. of patients receiving norfloxacin prophylaxis - 22
- Recurrence – 2
- Recurrence rate 9.09%
- No. of patients who did not receive prophylaxis – 75
- No. of patients who developed SAI at 6 months of follow-up – 25

Percentages of patients who are not on norfloxacin prophylaxis developing SBP are 33.3%

Discussion:

Cirrhosis is more prevalent in the 45-54 age groups in the current research, compared to Bhatia et al (30-39 yrs. - 32.3%). Males were found to have cirrhosis at a higher rate than females in this research, with a male-to-female ratio of 2.55: 1. It is consistent with the findings of Rollenston and McNee 3:1.

Alcoholism is more frequent in men than in women, which may explain the male prevalence of cirrhosis. At the time of admission, 22 individuals had spontaneous ascitic fluid infection. This number is consistent with the findings of Rimola et al [12]. The number of patients who had spontaneous ascitic fluid infection during their hospital stay is three out of one hundred, which is somewhat lower than the figure given by Rimola et al [12]. Fever was the most prevalent symptom among the others. In contrast to the figure given by Mihas A.A. et al (54%), [9,10]. Hepatic flapping tremor is seen in 8 of 14 patients with spontaneous ascitic fluid infection upon admission, which is

consistent with the consensus document (Rimola et al 1991). Blood urea and serum creatinine levels were elevated in all individuals with (SBP, CNNA, MNBA). Similarly to what Toussaint J et al. said [9]. Renal failure was present in three of the patients who died, leading to the high mortality rate reported by Mihas et al (87%). In this investigation, no SBP patients were asymptomatic. This is also comparable to the 3.5% of SBP patients who are asymptomatic as reported by Boixeda et al [4]. There were no fatalities in the CNNA group, despite the fact that all three patients who died in hospital were culture positive and had ascitic fluid PMN counts more than 250 cells/mm³. This is comparable to the increased hospital mortality rates reported by Amri SM et al. High blood Bilirubin levels, elevated serum liver enzymes, and decreased total serum protein concentrations were seen in 22 individuals who developed SAI. This is analogous to the findings of Llach et al [10]. Two of the 22 patients who received oral norfloxacin prophylaxis had recurrence. The recurrence rate for gramme positive organisms (*S. aureus*) is 7%, which is somewhat higher than the 2%³⁵ indicated by Novelle et al. The same research found a predominance of Gramme positive organisms in SBP recurrences on oral Norfloxacin prophylaxis. The recurrence rate in individuals receiving Norfloxacin prophylaxis is much lower (33.33) than in cirrhotics receiving no prophylaxis. This is closer to the figure given by Bleichner G. et al.

Conclusion:

Based on our findings, SBP is a prevalent and recurring consequence of cirrhosis. The most frequent sign of spontaneous bacterial peritonitis is fever. Hepatic encephalopathy is a prevalent symptom in SBP patients. Bad Renal failure, high serum bilirubin, low total blood proteins, and low ascitic fluid protein content are all prognostic indications in SBP. CNNA (culture negative neutrocytic ascites) has a lower fatality rate than SBP. Norfloxacin prophylaxis is useful in all cirrhotics since it is linked with lower recurrence rates as compared to no prophylaxis.

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