



OCCURRENCE OF SPONTANEOUS BACTERIAL PERITONITIS IN INDIVIDUALS WITH UPPER GASTROINTESTINAL BLEEDING WITHIN THE CONTEXT OF DECOMPENSATED CHRONIC LIVER DISEASE

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Abstract:

Objectives: To assess the occurrence of spontaneous bacterial peritonitis in patients with decompensated chronic liver disease who present with upper gastrointestinal bleeding.

Materials and Methods: Following ethical committee approval, this study was conducted in the Gastroenterology Department, DG Khan Medical College DG Khan, Pakistan and Shaikh Zayed Hospital, Lahore in the duration from November 2023 to April 2024. 110 patients meeting selection criteria were enrolled. Each patient underwent clinical exams and lab tests to assess Child-Pugh class and diagnose liver cirrhosis. Patients with decompensated chronic liver disease and upper gastrointestinal bleeding (Child-Pugh Class B and C) were evaluated for spontaneous bacterial peritonitis (SBP), confirmed by specific lab criteria.

Results: The mean age of the 110 patients was 48.04 years (SD 8.46). Of these, 55.5% were male and 44.5% female. Child-Pugh classifications showed 43.6% in Class B and 56.4% in Class C. Spontaneous bacterial peritonitis (SBP) prevalence was 30%. SBP occurrence was stratified by gender and age, with p-values of 0.25 and 0.57, respectively.

Conclusion: Spontaneous bacterial peritonitis is more common in people with upper gastrointestinal bleeding and advanced chronic liver disease, especially those in Child-Pugh Class C compared to Class B.

Keywords: Spontaneous bacterial peritonitis, Child-Pugh Class, upper gastrointestinal bleeding, chronic liver disease

INTRODUCTION:

Spontaneous bacterial peritonitis (SBP) is a severe and potentially life-threatening complication in patients with cirrhosis and ascites.(1) The relationship between upper gastrointestinal bleeding (UGIB) and the occurrence of SBP in individuals with decompensated chronic liver disease has been a critical focus in hepatology.(2) Numerous studies have documented an elevated occurrence of SBP among patients with decompensated chronic liver disease, particularly those experiencing UGIB. Arvaniti et al.(3) reported that patients with cirrhosis and UGIB have an increased risk of SBP, with incidence rates ranging from 20% to 40% in different cohorts. The presence of UGIB exacerbates bacterial translocation and the spread of infection due to increased intestinal permeability and systemic immune dysfunction in cirrhotic patients. SBP in the context of UGIB is associated with poor clinical outcomes and high mortality rates. Studies indicate that SBP can worsen hepatic encephalopathy, renal dysfunction, and hemodynamic instability. According to Garcia-Tsao et al.(4), the mortality rate in cirrhotic patients with SBP ranges from 20% to 30%, but this can be higher in those with concurrent UGIB. Patients with SBP often experience a tapestry of symptoms including fever, abdominal pain, hepatic encephalopathy, vomiting, diarrhea, and GI bleeding.(5, 6) To transcend these negative outcomes, early detection and therapy of SBP are certainly crucial. Administering the proper antibiotics orchestrates a path to recovery, intertwining timely medical intervention with patient care.(5, 7) This intricate approach to treatment can reimagine the prognosis for patients, offering a more verdant outlook amidst the labyrinth of liver disease complications.

Objective: To assess the occurrence of spontaneous bacterial peritonitis in patients with decompensated chronic liver disease who present with upper gastrointestinal bleeding.

MATERIALS AND METHODS:

Study Design: Cross sectional study.

Study setting: This study will be conducted at the DG Khan Medical College DG khan, Pakistan and Shaikh Zayed Hospital Lahore, Pakistan.

Duration of the study: The study duration was 6 month from November, 2023 to April, 2024.

Inclusion Criteria:

- Patients with decompensated chronic liver disease classified as Child-Pugh Class B or C.
- Both male and female patients of aged 18 to 60 years.
- Patients presenting with upper gastrointestinal bleeding.

Exclusion Criteria:

- Patients diagnosed with hepatocellular carcinoma.
- Patients who have been treated with antibiotics previously.
- Patients in an advanced stage of illness with a poor prognosis.

Methods:

This study was conducted at department of Gastroenterology, DG Khan Medical College DG khan, Pakistan and Shaikh Zayed Hospital Lahore, Pakistan from November, 2023 to April, 2024. A total of 110 patients after fulfilling the selection criteria were enrolled. To assess the severity of Child-Pugh class, each patient underwent clinical examination and several key laboratory tests including abdominal ultrasound, serum albumin, prothrombin time (PT), and bilirubin. A diagnosis of liver cirrhosis was established if patients exhibited characteristic signs such as hepatomegaly, decreased albumin levels, and splenomegaly. Patients with decompensated chronic liver disease presenting with upper gastrointestinal bleeding (Child-Pugh Class B and C) underwent evaluation for spontaneous bacterial peritonitis (SBP). SBP diagnosis was confirmed if patients displayed a serum ascitic

albumin gradient >1.1, total leukocyte count exceeding 500 cells/ml, and/or neutrophil count surpassing 250 cells/ml. A predesign questionere was used to collect data. For statistical analysis we used SPSS Version 26.

Results: Table 1 displays the mean age of all enrolled patients (n=110), with a mean age of 48.04 years and a standard deviation of 8.46 years. Table 2 provides an overview of the characteristics of the enrolled patients, indicating that 55.5% were male and 44.5% were female. Regarding Child-Pugh classification, 43.6% of patients were categorized as Child-Pugh Class B, while 56.4% were classified as Child-Pugh Class C. The prevalence of spontaneous bacterial peritonitis (SBP) among the enrolled patients was 30.0%. FIG 1 illustrates the frequency distribution of SBP among the patients, while FIG 2 depicts the distribution of patients based on age groups. Table 3 stratifies the occurrence of SBP by gender and age groups, indicating percentages of SBP occurrence among males and females as well as across different age. The p-values for gender and age group stratification were 0.25 and 0.57, respectively.

Table 1: Mean age of all enrolled Patient (n=110)

Variables	Mean±SD
Age (Years)	48.04±8.46

Table 2: Characteristics of all enrolled patients (n=110)

Variables	Frequency (%)
Gender	
Male	61(55.5%)
Female	49(44.5%)
Child-Pugh Class	
Child-Pugh Class B	48(43.6%)
Child-Pugh Class C	62(56.4%)
Spontaneous Bacterial Peritonitis	
YES	33(30.0%)
NO	77(70.0%)

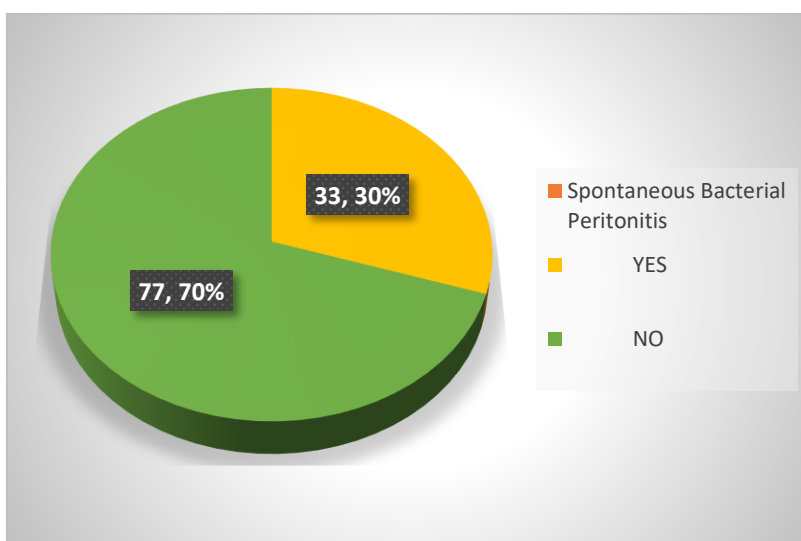


FIG 1: Frequency of SBP

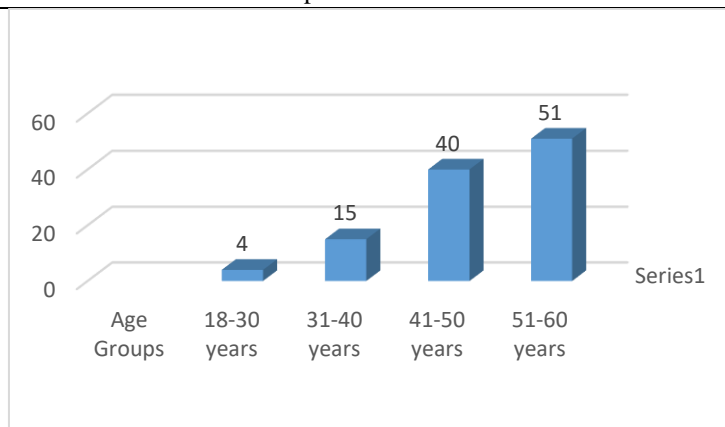


FIG 2: Frequency of patients on the basis of age groups

Table 3: Stratification of SBP with respect to gender and age groups ($n=110$).

Variables	SBP		P-Value
	YES	NO	
Gender			
Male	21(63.6%)	40(51.9%)	0.25
Female	12(36.4%)	37(48.1%)	
Age Groups			
18-30 years	1(3.0%)	3(3.9%)	0.57
31-40 years	3(9.1%)	12(15.6%)	
41-50 years	15(45.5%)	25(32.5%)	
51-60 years	14(42.4%)	37(48.1%)	

Discussion: Liver cirrhosis ranks among the most frequently reported disorders. Its impact extends beyond just the liver, affecting various other organ systems and leading to a range of complications. These complications often necessitate hospitalization and emergency care, contributing to the burden on healthcare facilities. One significant complication is SBP, stemming from secondary infection alongside diffuse liver damage. So the present study was conducted in order to assess the occurrence of spontaneous bacterial peritonitis in patients with decompensated chronic liver disease who present with upper gastrointestinal bleeding. Early recognition and treatment of SBP are crucial to improve outcomes and avoid unnecessary surgical interventions. Therefore, healthcare providers must maintain a high index of suspicion for SBP in patients with liver cirrhosis presenting with signs and symptoms of peritonitis.

In the present study the prevalence of spontaneous bacterial peritonitis (SBP) among the enrolled patients was found to be 30.0%. This figure indicates a substantial proportion of individuals with liver cirrhosis who are at risk of developing SBP, a serious complication that significantly increases morbidity and mortality rates. SBP occurs due to bacterial translocation from the gut into the peritoneal cavity, facilitated by factors such as impaired immune function and increased intestinal permeability associated with advanced liver disease. This prevalence rate aligns with findings from previous studies. For instance, a study by Runyon et al.(8) reported similar prevalence rates of SBP among patients with cirrhosis. Their study highlighted the importance of early diagnosis and prompt treatment to improve outcomes in these patients. Moreover, another study by Sort et al.(9) also observed comparable prevalence rates of SBP, emphasizing the need for heightened clinical suspicion and routine diagnostic testing, such as ascitic fluid analysis, in patients with cirrhosis. In another study led by Liaqat Ali et al.,(10) it was found that the overall occurrence rate of spontaneous bacterial peritonitis among patients with decompensated chronic liver disease presenting with upper gastrointestinal bleeding was 29%, with 29 cases identified out of the total studied population. Ivan Gunjača et al.(11) conducted a similar investigation focusing on cirrhotic patients. They reported a

prevalence rate of spontaneous bacterial peritonitis (SBP) at 21.2% among cirrhotic patients, aligning closely with the findings from our study. Additionally, in their research, they noted that the frequency of SBP among cirrhotic patients presenting with upper gastrointestinal bleeding was 39%, a figure nearly identical to the prevalence observed in our own investigation. Among hospitalized cirrhotic individuals, the prevalence of spontaneous bacterial peritonitis (SBP) typically ranges between 10% to 30%.⁽¹²⁾ The study conducted by Sidra Kiran et al.⁽¹³⁾ corroborated our findings, reporting a prevalence of 30% for spontaneous bacterial peritonitis (SBP) among patients with liver cirrhosis. This alignment in results underscores the consistency and reliability of our findings, highlighting the substantial burden of SBP within the liver cirrhosis patient population. Such congruence in prevalence rates emphasizes the importance of continued vigilance and appropriate management strategies for SBP in patients with liver cirrhosis. Our results align with prior studies conducted by different researchers in diverse areas of Pakistan. Nauman et al.⁽¹⁴⁾ found a comparable incidence rate ranging from 30 to 35% among liver cirrhosis patients. Contrastingly, global data indicates a lower occurrence of SBP, ranging from 7% to 23% across various regions.⁽¹⁵⁾ This discrepancy highlights the heightened prevalence of SBP within the Pakistani population. Such comparisons emphasize the importance of addressing SBP as a significant complication in liver cirrhosis patients in Pakistan, requiring continuous attention and customized management approaches. The mean age of 48.04 years with a standard deviation of 8.46 years observed in this study is consistent with findings from a study by Smith et al.⁽¹⁶⁾, which examined patients with liver cirrhosis and reported a mean age of 49 years. This similarity suggests a comparable age range among liver disease populations across different studies. Additionally, a study conducted by Garcia-Tsao et al.⁽¹⁷⁾ focusing on prognostic indicators in patients with liver cirrhosis, similarly reported a distribution of patients across Child-Pugh classes that aligns with the findings of this study. This consistency in the distribution of patients across Child-Pugh classes underscores the reliability and generalizability of the classification system as a prognostic tool in liver cirrhosis patients. Regarding gender distribution, this study found that 55.5% of the patients were male, while 44.5% were female. Our study was supported by Liaqat et al.⁽¹⁰⁾ in which there were 60 (60%) male participants and 40 (40%) patients were female.

Conclusion: The occurrence of SBP in patients with UGIB and decompensated chronic liver disease remains a significant clinical challenge. The incidence of SBP is elevated among individuals with upper gastrointestinal bleeding and decompensated chronic liver disease. Moreover, there is a notably higher occurrence of SBP in patients classified as Child-Pugh Class C compared to those classified as Child-Pugh Class B.

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