



Original Article

Prevalence of Spontaneous Bacterial Peritonitis in Patients with Liver Cirrhosis with Ascites

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ABSTRACT

Bacterial infections are considered a significant challenge in patients with cirrhosis. They account for 25%–46% of hospitalizations in patients with cirrhosis due to significant decompensation processes and are associated with substantial morbidity and mortality.

Objective: To determine the prevalence of SBP in patients with liver cirrhosis and ascites.

Methods: According to the inclusion criteria, 199 patients with cirrhosis and ascites were included in the study, regardless of the cause of cirrhosis (alcohol, HCV, HBV, autoimmune, cryptogenic, etc.). SBP frequency in cirrhotic with ascites was documented using a proforma. All data was entered into a proforma template. All patients were treated with respect to evaluate the prevalence of SBP in cirrhosis with ascites patients. The study was conducted at the Department of Medicine at Gujranwala Medical College-District Headquarters Hospital in Gujranwala. Total duration of study was six months. **Results:** In terms of patient age distribution, 49 patients (24.6%) were between the ages of 30 and 45, 150 patients (75.4%) were between the ages of 46 and 60. The cohort's patients had an average age of 51.21± 6.61. 42.7% of the population (n = 85) was female, while 57.3% (n = 114) was male. SBP frequency was 32.2% in cirrhosis with ascites individuals. **Conclusions:** We concluded that 32.2% of participants with cirrhosis with ascites also had SBP. The mortality rate in these patients will be decreased by early diagnosis and treatment. Any patient with cirrhosis and ascites should have SBP ruled out.

INTRODUCTION

Around 80% of cases of ascites are caused by cirrhosis, which accounts for majority of the condition worldwide. The most of the remaining cases are brought on by cancer, heart failure, tuberculosis, pancreatitis, or other uncommon diseases [1]. The serum-ascites albumin gradient (SAAG) can be used to determine the source of ascites when it is not immediately apparent. Calculation can be helpful because it has an accuracy of about 97% in identifying portal hypertension as the cause of ascites formation when SAAG \geq 1.1 g/dl. One of the initial signs of decompensation of cirrhosis and portal hypertension is ascites [2]. All patients with newly developed moderate to

large ascites and those brought to the hospital due to any suspicion of cirrhosis should undergo a diagnostic paracentesis [3]. The total protein and albumin gradients, culture, and automated neutrophil count number must be continuously evaluated [4]. In cirrhotic patients with ascites, spontaneous bacterial peritonitis (SBP) is a serious bacterial infection that necessitates prompt diagnosis and treatment. By definition, SBP is a previously sterile ascitic fluid infection that lacks a clear intra-abdominal source of infection [5]. The organisms that are cause of infection are often ones that are present in the different parts of gastrointestinal tract. The bedside

collection of at least 10 ml of ascitic fluid into blood culture bottles is necessary for ascitic fluid sampling, in order to maximize its sensitivity. Although ascitic fluid culture positivity is not always necessary to diagnose spontaneous bacterial peritonitis (SBP), culture is necessary to guide antibiotic treatment. SBP is diagnosed using accepted criteria: In the absence of an intra-abdominal source of contamination, a WBC count > 500 cells/ μ l or an absolute neutrophil count > 250 cells/ μ l as determined by microscopy in ascitic fluid or computerized counter [6]. Uncertainties exist regarding the pathogenesis of spontaneous bacterial peritonitis (SBP). A major contributing factor to the development of SBP is thought to be the translocation of microbes and endotoxins, from gastrointestinal tract vegetation to peritoneal fluid, which is made easier by cirrhotic patients' weakened defenses [7]. Cirrhotic patients have lower levels of complement cascade proteins, and their neutrophils' phagocytic capabilities are impaired. Ascitic fluid infection can also be caused by bacteremia from the respiratory tract or urine [8]. It's important to keep in mind; too, that 10–32% of people with outdoor SBP may also be asymptomatic. All cirrhotic patients with ascites are liable to SBP, and SBP may occur in about 10% to 25% of those patients [9, 10]. About 50% episodes of SBP exist at the time of hospital admission, whilst the rest develop during hospitalization. For the primary episode of SBP in-clinic mortality rates are 10–50% and depend on various elements [11]. The 1-year mortality after recuperation from 1st attack of SBP has been reported to be 60 to 70%. The prevalence of SBP was found to be 24% in a research carried out on cirrhotic patients in Punjab, India. Patients who have been diagnosed with SBP should start receiving antibiotics immediately (cefotaxime, a third generation cephalosporin) [12]. It is not advisable to use aminoglycoside antibiotics (which are likely nephrotoxic) as an empirical treatment [6]. The purpose of this study was to determine the prevalence of SBP in patients with cirrhosis and ascites and to compare the findings to other studies.

METHODS

According to the inclusion criteria, 199 patients with cirrhosis and ascites were included in the study, regardless of the cause of the cirrhosis (alcohol, HCV, HBV, autoimmune, cryptogenic, etc.). A thorough history of the current symptoms, prior events, drug use, and personal background was collected. All participating cases provided written consent. Before beginning antibiotic therapy, an ascitic fluid was aspirated from each patient in an aseptic setting. SBP frequency in cirrhotic with ascites was documented using a proforma. All data were entered into

Performa, which had been pre-designed. SPSS 20.0 was used to enter and evaluate the data. Frequency and percentages were used to present all of the qualitative variables. Age and gender-specific data were categorized. The chi-square test was used after stratification. P-value less than 0.05 was considered statistically significant.

RESULTS

199 patients with cirrhosis and ascites admitted in medical ward were included in this study. The study variables like age, gender and prevalence of SBP were calculated for total cohort. Regarding age distribution of patients, 49 patients (24.6%) were in age group of 30–45 years, and 150 patients (75.4%) were between 46–60 years of age. Mean age of patients was 51.21 ± 6.61 . SBP prevalence in patients admitted in medicine wards of DHQ Teaching Hospital Gujranwala with cirrhosis and ascites of any etiology was 32.2% (Table 1).

SBP	Frequency (Percentage)
No	135 (67.8%)
Yes	64 (32.2%)
Total	199 (100%)

Table 1: Prevalence of SBP

Among the age group 30–45 years, there were 15 (7.5%) patients who have of spontaneous bacterial peritonitis (SBP). However, the prevalence of SBP was high in 46–60 years of age with insignificant association (p -value < 0.05) (Table 2).

Age	SBP		Total	P-value		
	No	Yes				
30–45 years	Count% of	34	15	0.789		
	Total	17.1%	7.5%		24.6%	
46–60 years	Count% of	101	49		0.789	
	Total	50.8%	24.6%			75.4%
Total	Count% of	135	64			0.789
	Total	67.8%	32.2%			

Table 2: Stratification for SBP with respect to age using chi-square test

There were 85 females in this study among which 22 (11.1%) have positive SBP. And among 114 males the 42 (21.1%) were positive for SBP. There was insignificant association between SBP and gender. (Table 3)

Gender	SBP		Total	P-value		
	No	Yes				
Female	Count% of	63	22	0.102		
	Total	31.7%	11.1%		42.7%	
Male	Count% of	72	42		0.102	
	Total	36.2%	21.1%			57.3%
Total	Count% of	135	64			0.102
	Total	67.8%	32.2%			

Table 3: Stratification for SBP with respect to gender using chi-square test

DISCUSSION

Around 80% of cases of ascites are caused by cirrhosis, which is the primary cause of ascites worldwide. The other examples include cancer, coronary heart failure, TB, pancreatic problems, or other rarer disorders. When the cause of ascites is unknown, the serum-ascites albumin gradient (SAAG) is helpful because, with an accuracy of roughly 97%, a SAAG ≥ 1.1 g/dl shows that ascites is caused by portal hypertension. One of the indications that a patient's liver illness has worsened is ascites [13]. All patients with newly developed moderate to large ascites and those hospitalized to the hospital for any cirrhosis-related problem should undergo a diagnostic paracentesis. It is necessary to continuously evaluate cultures, total protein and albumin gradients, and 3-4 manual or computerized neutrophil counts. In this study, 114 were male and 85 were woman and mean age of cohort patients was 51.21 ± 6 . In this cohort, 157 patients (78 %) have liver disease because of HCV, 23 (11.6 %) have HBV etiology, 11 (55%) have NAFLD, 6 patients have alcoholic liver disorder, 1 have cryptogenic liver disorder. Amarpurkar et al., has found SBP in 21 patients out of 31 patients (67.74 %) of liver cirrhotic with ascites admitted in scientific ward of the Ekiti state college coaching health facility (EKSUTH) Nigeria from August 2009 to July 2010 [14]. SBP in patients admitted in medicine wards of DHQ teaching Hospital Gujranwala with cirrhosis and ascites of either etiology is 32.2 % .As all patients with cirrhosis and ascites are prone to SBP and occurring in about one patient in every three patients [15]. Balan G et al. determined incidence of SBP more common in men (41%) with cirrhosis and ascites admitted in medical institution. SBP diagnosis is based totally on a polymorphonuclear count in ascitic fluid of > 250 cells/mm³ in the absence of any cause of secondary peritonitis [15]. Ding et al. performed a cross-sectional study on 103 patients with cirrhosis and ascitic and discovered that the prevalence of SBP is 25.24%. This is comparable to 25% prevalence found in most of the studies from the developed world [16]. About 50% SBP episodes are recognized at the time the of health facility admission, while remaining of the cases are developed at some point of hospitalization. For the first episode of SBP in-medical institution mortality ranged from 10-50%, which depends on numerous factors. One-year mortality rate after recovery from 1st SBP attack has been mentioned as 60-70 % [16]. The same effects were also obtained in this present study. Treatment of SBP needs to be right away started on empirical antibiotic regimen (cefotaxime, a third generation cephalosporin). Potentially nephrotoxic antibiotics (i.e., aminoglycosides) should not be used as empirical treatment [17,18].

CONCLUSIONS

It is concluded that the prevalence of SBP is 32.2% in patients with cirrhosis with ascites. Early diagnosis and treatment will lessen the mortality rate in these patients. One must rule out SBP in any cirrhotic person with ascites. Any patient with cirrhosis and ascites, who present with symptoms must undergo diagnostic paracentesis before beginning the antibiotic treatment.

Conflicts of Interest

The authors declare no conflict of interest

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