



CLINICAL AND MICROBIOLOGIC PROFILE OF SPONTANEOUS BACTERIAL PERITONITIS (SBP) IN PATIENTS OF CIRRHOSIS WITH ASCITES.

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ABSTRACT **Aim:** To study the Clinical and Microbiologic profile of Spontaneous bacterial peritonitis (SBP).
Methods: The present cross sectional study entitled "Clinical and Microbiologic profile of Spontaneous bacterial peritonitis (SBP) in patients of Cirrhosis with ascites" was carried out in the department of Medicine, Acharya Vinoba Bhavne Rural Hospital of Jawaral Neharu Medical College, Sawangi (Meghe), Wardha during the period of 2 year (September 2014 to September 2016). A total of 50 cases of cirrhosis with SBP were studied.
Result: Mean age of study subjects was 46.84 ± 12.4 . Most common aetiology for cirrhosis was alcoholism (72%), predominant symptoms in SBP was fever (64%) followed by abdominal pain (16%). Most common organism isolated was E.Coli (44%) followed by Kliebsella (18%), Strep. Viridians (6%), and Enterococcus (6%) and 26% cases had CNNA.
Conclusion: It is imperative to do diagnostic paracentesis for cell count and culture in every cases of cirrhosis with ascites and suggestive symptoms compatible or suggestive of SBP.

KEYWORDS : .SBP, cirrhosis, organism, paracentesis

Introduction:

Cirrhosis is a condition that is defined histopathologically as the development of regenerative nodules surrounded by fibrous bands in response to chronic liver injury, that leads to portal hypertension and end stage liver disease^[1]. It has a variety of clinical manifestations and complications, some of which can be life-threatening. In the past, it has been thought that cirrhosis was never reversible; however, it has become apparent that when the underlying insult that has caused the cirrhosis has been removed, there can be reversal of fibrosis. Spontaneous bacterial peritonitis (SBP) is an acute bacterial infection of ascitic fluid. Spontaneous bacterial peritonitis is an ominous complication in patients with cirrhosis. No race predilection is known for spontaneous bacterial peritonitis. In patients with ascites, both sexes are affected equally. Harold Conn first recognized the disorder in the 1960s. Enteric organisms have traditionally been isolated from more than 90% of infected ascites fluid in spontaneous bacterial peritonitis, suggesting that the GI tract is the source of bacterial contamination.^[2]

Spontaneous bacterial peritonitis is known to affect patients with cirrhosis from any cause. The preponderance of enteric organisms, in combination with the presence of endotoxin in ascitic fluid and blood, once favored the argument that SBP was due to direct transmural migration of bacteria from an intestinal or hollow organ lumen, a phenomenon called bacterial translocation. The usual predisposing factor is the intestinal bacterial overgrowth found in people with cirrhosis, mainly attributed to delayed intestinal transit time. Impaired phagocytic function, low serum and ascites complement levels, and decreased activity of the reticuloendothelial system, contributes to an increased number of microorganisms and decreased capacity to clear them from the bloodstream, resulting in their migration into and eventual proliferation within ascites fluid.^[3] An alternative proposed mechanism for bacterial inoculation of ascites is hematogenous transmission in combination with an impaired immune system. Patients with cirrhosis who are in a decompensated state are at the highest risk of developing spontaneous bacterial peritonitis.^[4]

Majority of spontaneous bacterial peritonitis infections have been caused by aerobic gram-negative organisms (50% of these being *Escherichia coli*). Other organisms are aerobic gram-positive organisms (19% streptococcal species). One study cites a 34.2% incidence of streptococci, ranking in second position after Enterobacteriaceae.^[5,6] Viridans group streptococci (VBS) accounted for 73.8% of these streptococcal isolates.

Anaerobic organisms are rare because of the high oxygen tension of ascitic fluid. A single organism is noted in 92% of cases, and 8% of cases are polymicrobial.

This study aims to identify the potential etiologic agents in SBP.

Aims: To study the Clinical and Microbiologic profile of Spontaneous bacterial peritonitis (SBP)

Material And Methods:

The present study entitled "Clinical and Microbiologic profile of Spontaneous bacterial peritonitis (SBP) in patients of Cirrhosis with ascites" was carried out in the department of Medicine, Acharya Vinoba Bhavne Rural Hospital of Jawaral Neharu Medical College, Sawangi (Meghe), Wardha during the period of 2 year (September 2014 to September 2016). Ethical committee clearance was taken.

Study Design: Cross sectional study.

Duration of Study: September 2014 to September 2016 (2 years).

Study Set Up: Acharya Vinoba Bhavne Rural Hospital of Jawaral Neharu Medical College, Sawangi (Meghe), Wardha. Study population: A total of 50 cases of cirrhosis with SBP were studied.

Definition Of Cases:

Fifty cases of cirrhosis with ascites who satisfied the criteria of SBP. The definitive diagnosis of SBP was made if there was a positive ascitic fluid bacterial culture and an elevated ascitic fluid absolute polymorphonuclear leukocyte (PMN) count of ≥ 250 cells/mm, in absence of any intra-abdominal source of infection.^[7]

Patients with Culture Negative Neutrocytic Ascites (CNNA) with a PMN cell count ≥ 250 cells/mm³ without any intra-abdominal source of infection and who were not treated with antibiotics 30 days prior to presentation were also considered as SBP.^[8]

Sources of Data: Patients were selected for study after evaluating them by;

1. History – Patient general information (name, age, sex, address) was noted. A detailed history regarding duration of cirrhosis, amount and duration of alcohol intake, blood transfusions, intravenous drug abuse, promiscuous sexual behaviour, drug intake.

Investigation history in form of (serologic evaluation/USG of liver confirming cirrhosis), and prior treatment history was taken. History

of fever, abdominal pain, hematemesis, melena, hematochezia, altered mentation, oliguria was noted.

2. Investigations: Hemoglobin, TLC, Serum bilirubin, AST, ALT serum creatinine, INR, was estimated in all cases.

Ultrasonography

The diagnostic evaluation of cirrhosis with ultrasonography is based on the direct relation between the extent of fibrosis and the ultrasonographically determined degree of liver stiffness. Transient elastography and the acoustic radiation force impulse (ARFI) technique are now well-established methods for the staging of fibrosis in various liver diseases. These two techniques can be performed repeatedly on an outpatient basis, and they can also be combined.^[9]

All the patients underwent diagnostic/ therapeutic paracentesis with all aseptic precautions. Immediately 10 ml of ascitic fluid was inoculated into an anaerobic and aerobic blood culture bottles. Bottle incubation and subsequent testing were carried out according to the hospital microbiology laboratory protocol. Blood culture bottles has been shown to increase the culture-positivity of the ascitic fluid of patients with an ascitic fluid PMN count ≥ 250 cells/mm³ from about 50-77% with delayed inoculation, to about 80-100% with immediate inoculation.^[10,11] 10 to 20 ml of fluid was placed in a sterile container for direct microscopic examination, gram-stained film, and culture on routine laboratory media including blood, MacConkey, Mannitol salt agar plates, and thioglycollate broth. Culture positive samples were then identified. Approximately 3 ml of fluid was placed in an EDTA tube for estimation of the total cell count and PMNL count using an automated cell counter model Sysmex KxN21.

OBSERVATIONS.

Table 1: Clinical profile of the study subjects.

Signs and symptoms in SBP	N 50
Fever	32 (64%)
Abdominal pain	8 (16%)
Tenderness	4 (8%)
Rebound tenderness	4 (8%)
Altered mental status	2 (4%)

Table 2: Etiology of Cirrhosis:

Etiology	(n = 50)
Alcoholism	36 (72.0%)
HBV	10 (20%)
HCV	1 (2%)
HCV + HBV	2 (4%)
Cryptogenic	1 (2%)

Table 3: Microbiologic profile of SBP.

Organism(N 50)	No. of SBP Patient
Escherichia Coli	22 (44%)
Klebsiella	9 (18%)
Strep. Viridians	3 (6%)
Enterococcus Sp.	3 (6%)
CNNA	13 (26%)

DISCUSSION:

A total of 88 patients with decompensated cirrhosis admitted in medicine ward and ICU were studied. Out of total, 50 were patients having spontaneous bacterial peritonitis (cases) were studied.

Mean age of study subjects was 46.84 ± 12.46 . In a similar study on cirrhosis patients by Gill AS et al.^[12], mean age of cases and controls was 48.7 and 49.3 years respectively. In another study by Yuri Cho et al.^[13] mean age of study subjects was 60.7 years with 77% male subjects.

Literature shows that in India most cases of cirrhosis are due to alcohol and viral hepatitis B and C [106]. In a study by Ahmed S et al.^[14] a total 160 cases of cirrhosis were included. Of them, 110 cases were alcohol related (68.7%), 18 each were related to hepatitis B and hepatitis C, 2 autoimmune, and 12 cryptogenic. These results were in accordance with the present study, where most common aetiology for cirrhosis was alcoholism (72%) followed by viral infections (26%, that includes isolated HBV, HCV)

Symptoms and Signs

In our study the predominant symptoms was fever (64%) followed by abdominal pain (16%) and tenderness of abdomen on palpation (8%).

Syed VA et al.^[15] in his study found that the most common presenting symptom was upper gastrointestinal (UGI) bleeding (75%) followed by pain abdomen (65%). Fever was found in 45% of cases.

Minhas et al.^[16] reported fever 54%, pain abdomen 57% and Hepatic encephalopathy 67%. In another study, Pelletier et al.^[17] found 89% of patients were having fever, UGI bleed (42%), pain abdomen 53% and hepatic encephalopathy in 50% of cases. Completely asymptomatic cases have been reported between 14% - 100%. Great variation in symptoms and signs have been reported in different studies. Especially in our study no cases had upper GI bleeding but 8 patients had hepatic encephalopathy.

Culture

In our study most common organism isolated was E.Coli (44%) followed by Klebsiella (18%), Strep. Viridians (6%), and Enterococcus (6%) and 26% cases had CNNA.

In a study by Yuri Cho et al.^[13] out of 132 patients, Escherichia coli was the most common etiologic microorganism (37.9%, 50 patients), followed by Klebsiella (15.2%), Streptococcus species (12.1%), and Enterococcus faecalis (12.1%).

Gill AS et al.^[12] in a study concluded that in 50-60% cases of SBP, the predominant organism was E. coli followed by Klebsiella, Streptococcus, Staph. Aureus and other gram negative organisms.

In Syed A et al.^[15] study out of 20 cases of SBP, organisms were isolated in 7 cases (35%). Most of them were gram negative, mainly Escherichia coli (42.59%), Klebsiella Pneumoniae (14.28%) and Acinetobacter Spp (28%). Gram-positive organisms were S. Pneumoniae (28.4%) and Coagulase.Negative Staphylococcus (14.28%).

CONCLUSION

In this study the most common etiology for cirrhosis was alcoholism (72%) followed by HBV infection and the most common organism isolated was E.Coli (44%) followed by Klebsiella (18%), Strep. Viridians (6%), and Enterococcus (6%) and 26% cases had CNNA. It is imperative to do diagnostic paracentesis for cell count and culture in every cases of cirrhosis with ascites and suggestive symptoms compatible or suggestive of SBP.

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