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Original Research Article

Correlationship of hypoalbuminemia with spontaneous bacterial peritonitis in patients of liver cirrhosis: A prospective study

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Abstract:
Background & Method: The aim of the study is to correlate hypoalbuminemia with spontaneous bacterial peritonitis in patients of liver cirrhosis. A detailed clinical history was obtained from the study population and thorough examination of the patient was done. Ascites was graded as per the International Ascites Club criteria. The study group was subjected to the Biochemical, microbiological, and radiological investigations.
Result: All the study population in this group had moderate to severe ascites, among them 30% of cases had tense ascites. Icterus was seen in 12% of cases. Serum Bilirubin level ranged from 0.3–4.6 mg/dl (mean value of 1.70). Pedal edema was seen in 48% patients. Fever was the inclusion criteria and was present in all cases. Asterixis was seen in 12% of patients. Hepatomegaly was seen in 4% of patients only those who were in early phase of cirrhosis and was having moderate ascites. Hypoalbuminemia was present in 22% patients. Abdominal tenderness was seen in 22% of patients. There were 6% SBP (culture positive), 12% CNNA (only high cell count), Mono-bacterial ascites was present in 2% (only organism grown in culture, PMN <250/mm^3).
Conclusion: Presence of hypoalbuminemia may be associated with increased risk of developing spontaneous bacterial peritonitis. Further studies are needed in this direction.

Keywords: Cirrhosis, Spontaneous bacterial peritonitis, Hypoalbuminemia.

Study Designed: Observational Study

1. Introduction

Spontaneous bacterial peritonitis is the most frequent and important complication of cirrhosis with ascites[1]. SBP is most frequently seen in severely decompensated cirrhotic patients. Since the infection occurs in the absence of a source of infection like intraabdominal inflammatory focus eg: abscess, acute pancreatitis, cholecystitis, intestinal perforation, it is called Spontaneous. Correia and Conn coined the term spontaneous bacterial peritonitis in 1975[2].

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The prevalence of SBP in decompensated cirrhosis varies from 10% – 40% specifically in Asia. Among Arab patients, it was documented that about 10.4% of patients with cirrhotic ascites of NAFLD origin had culture-positive ascitic fluid infection, whereas in another study about 29.0% had culture-negative neutrocytic ascites (CNNA). Another report from north India population reported that 30% of hospitalized decompensated liver diseased individual patients had SBP or its variants[3].
In various studies, ascitic fluid analysis has reported a prevalence of SBP is 10 - 27%. Andreu et al reported a prevalence of SBP was 28%, found it to be 22.5%. Romney et.al, in a study involving 67 ascitis patients has not found a single case CNNA and only 10 of mono - bacterial ascites. Obstein, KL et.al, in a retrospective study of patients with cirrhosis and ascites reported the prevalence of SBP was 29 (26%) of 111 patients with cirrhosis[4].

2. Material & Method

Present study was conducted at Jayarogya Group of Hospitals, Gwalior for 06 months. A detailed clinical history was obtained from the study population and thorough examination of the patient was done. Ascites was graded as per the International Ascites Club criteria. The study group was subjected to the Biochemical, microbiological, radiological investigations and endoscopy.
Blood investigations includes haemoglobin, WBC count, platelet count, serum bilirubin – total, direct, indirect, SGOT, SGPT, SAP, serum proteins total, albumin, globulin, PT, INR, renal function tests including serum urea, serum creatinine, and viral markers like HBsAg, Anti HCV were done in all the patients.

Inclusion Criteria:
1. Documented cirrhosis with ascites on ultrasonography
2. Presence of fever at presentation,
3. An absence of a primary source of infection in blood stream (Pneumonia, UTI etc).

3. Results

Table No. 1: Gender Distribution

Gender	No.	Percentage
Male	**41**	**82**
Female	**09**	**18**

In the present study males were 82% and 18% of cirrhotic population were females. Alcoholism was common in Male populations. Alcoholics are more prone to develop cirrhosis with Ascites.

Table No. 2: Duration of Cirrhosis

Duration	No.	Percentage
Upto 2 Years	**09**	**18**
03 to 05 Years	**30**	**60**
Above 05 Years	**11**	**22**
Total	**50**	**100**

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Among the 50 study population, duration of documented liver cirrhosis in 16% patients was less than 2 yrs, in 60% was between 3 to 5 yrs and 22% was above 5 yrs.

Table No. 3: Signs & Biochemical correlation with SBP

Signs	No. of Patients	Positive SBP	PMN >250/m m^3	Culture Positive	Percentage of SBP
Jaundice	**6**	**2**	**4**	**0**	**33%**
Fever	**50**	**3**	**6**	**1**	**06%**
Abdominal tenderness	**11**	**2**	**5**	**0**	**18.2%**
Asterixis	**6**	**1**	**4**	**1**	**16.67%**
Altered sensorium	**8**	**3**	**5**	**0**	**37.5%**
S. Albumin <2.5 gm/dL	**11**	**3**	**4**	**0**	**27.27%**

All the study population in this group had moderate to severe ascites, among them 30% of cases had tense ascites. Icterus was seen in 12% of cases. Serum Bilirubin level ranged from 0.3–4.6 mg/dl (mean value of 1.70). Pedal edema was seen in 48% patients. Fever was the inclusion criteria and was present in 100% patients. Asterixis was seen in 12% of patients. Hepatomegaly was seen in 4% of patients only those who were in early phase of cirrhosis and was having moderate ascites. Hypoalbuminemia was present in 22% patients. Abdominal tenderness was seen in 22% of patients.

Table No. 4: Varients of SBP in our study

TYPES OF SBP	PMN COUNT	CULTURE	NO. OF CASES
SBP	**>250**	**Positive**	**03**
CNNA	**>250**	**Negative**	**06**
MNB	**<250**	**Positive**	**01**
Secondary Bacterial peritonitis	**250**	**Positive**	**00**
Poly microbial peritonitis	**<250**	**Positive**	**00**

There were 06%SBP (culture positive), 12%CNNA (only high cell count), Mono-bacterial ascites was 02% (only organism grown in culture).

4. Discussion

This study conducted in tertiary care medical college hospital in Gwalior regarding the prevalence, clinical spectrum and risk factors identification in the case of ascites who presented with fever was done in a period of 6 months. 50 cases were selected as per the inclusion and exclusion criteria[5].

The samples were analysed sent for analysis and the results were taken for the study purpose with benefit to the patient[6]. Among the 50 patients studied, majority of the study cases were

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consisting of males about 82%. Also, it was found that the around 70% of the study group were alcoholics. Hypoalbuminemia was present in 22% patients. The duration of cirrhosis was varying from 2 to 10 years and as shown in chart above, the duration of the cirrhosis has no correlation with the occurrence of SBP[7].

Spontaneous Bacterial Peritonitis is a life-threatening complication of cirrhosis of liver. The main pathophysiology is attributed to the translocation of the gut microorganisms via the mesenteric lymph nodes that gain access to the peritoneal cavity. SBP was coined by Fennel. One of the most common organisms attributed to the infection is Escherichia coli. In general, Gram-negative bacilli occupy the majority of causative organism with Gram positive cocci like streptococci next and lastly by Anaerobic organism[8].

The mortality SPB is very high. In hospital mortality generally ranges from 10 to 30 % before the advent of antibiotics, the mortality was as high as up to 90%[9].

5. Conclusion

The prevalence of Spontaneous Bacterial Peritonitis in this study was 06%, 12% CNNA (only high cell count), Mono-bacterial ascites was 02% (only organism grown in culture). Hypoalbuminemia was present in 100% patients with SBP & 66% patients with CNNA.Presence of hypoalbuminemia may be associated with increased risk of developing spontaneous bacterial peritonitis. Further studies are needed in this direction.

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