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Original Research Article

"A CROSS SECTIONAL STUDY ON SPONTANEOUSBACTERIAL PERITONITIS IN PATIENTS WITHCIRRHOSIS OF LIVER"

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ABSTRACT:

Background: Spontaneous bacterial peritonitis the term was coined by Correia& Conn in 1975. The term was coined to distinguish this form of infection from surgical peritonitis. Although many patients with SBP have a focus of infection (eg - urinary tract infection or pneumonia), they are labeled as having SBP unless the focus requires surgical intervention

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 Medicine,Subbaiah Institute Of Medical Sciences, Shimoga, Karnataka.**Study Period:**Apr. 2021 – March 2022. **Study population:** Patients of cirrhosis of liver with ascitis of varied etiology admitted in medical wards**Sample size:** 100 cases were included in our study.**Sampling method:** Simple Random sampling method.**Ethical consideration:** Institutional Ethical committee permission was taken prior to the commencement of the study. **Study tools and Data collection procedure:**All the patients thus selected underwent a thorough history taking with regard to their symptoms pertaining to etiology. A complete physical examination was made to look for the various stigmata and signs of complications of cirrhosis.

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

CONCLUSION: From our study it can be concluded that, SBP is a common and recurrent complication of cirrhosis.Fever is the most common symptom of spontaneous bacterial peritonitis. Hepatic encehalopathy is a common feature in patients with SBP. Bad Prognostic indicators in SBP are Renal Failure, high Serum bilirubin, low total serum proteins, low ascitic fluid protein content.

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Key words: Spontaneous bacterial peritonitis; norfloxacin; cirrhosis of liver.

INTRODUCTION:

Spontaneous bacterial peritonitis the term was coined by Correia& Conn in 1975. The term was coined to distinguish this form of infection from surgical peritonitis. Although many patients with SBP have a focus of infection (eg - urinary tract infection or pneumonia), they are labeled as having SBP unless the focus requires surgical intervention (eg - ruptured viscus).

The diagnosis of SBP is made when there is a positive ascitic fluid culture and there is an elevated ascitic fluid absolute polymorphonuclear count (i.e. > 250 cells/mm^3) without an evident intraabdominal surgically treatable source of infection[1].

Spontaneous Bacterial Peritonitis occurs only in the setting of severe liver disease. The liver disease is usually chronic (Cirrhosis) but may be acute (fulminant hepatic failure) or sub acute (alcoholic hepatitis)[2].

Most patients with SBP have symptoms and / or signs clearly suggestive of peritoneal infection especially abdominal pain, fever, alterations in gastrointestinal motility[3,4,5]. In other patients the development of SBP may be clinically manifested by impairment of liver function (eg -development of Hepatic encephalopathy) or renal failure as the predominant or only features.

E Coli, streptococci &Klebsiella cause most episodes of SBP and monomicrobialbacterascitis. Although earlier studies report approximately 6% prevalence of anaerobes among SBP flora, this is probably a reflection of the presence of unrecognized cases of Secondary Bacterial peritonitis. In a recent series, anaerobes caused approximately 1% of SBP and monomicrobialbacterascitis.

Empirical antibiotic treatment is indicated in all cases of clinically compatible ascitic fluid infection with ascitic fluid PMN counts equal to or higher than 250 cells/mm^3. Because spontaneous ascitic fluid infection is a good marker of end stage liver disease, it has been proposed as an indication for liver transplantation[6,7].

In the past 48% to 95% of patients with spontaneous ascitic fluid infection died during the hospitalization in which the diagnosis was made, despite antibiotic treatment. Now a reduction in mortality has been attributed to early detection and treatment of infection as well as avoidance of nephrotoxic antibiotics. The mortality showed a strong correlation with age and intensive care unit stay.

Hence the present study was undertaken to study the spontaneous bacterial peritonitis in patients with cirrhosis of liver.

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 Medicine, Subbaiah Institute Of Medical Sciences, Shimoga, Karnataka.

Study Period: Apr. 2021 – March 2022.

Study population: Patients of cirrhosis of liver with ascitis of varied etiology admitted in medical wards

ISSN:0975-3583,0976-2833 VOL13,ISSUE05,2022

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 etiology of above 15 years with ascitis.

Exclusion criteria:

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

Ethical consideration: Institutional Ethical committee permission was taken prior to the commencement of the study.

Study tools and Data collection procedure:

All the patients thus selected underwent a thorough history taking with regard to their symptoms pertaining to etiology. A complete physical examination was made to look for the various stigmata and signs of complications of cirrhosis. All the patients then underwent following investigations.

1. Hematology - Hb%, RBC count, platelet count, WBC, TC, DC, ESR, BT, CT, PT with INR, Blood Grouping and typing.
2. CUE - bile salts & pigments, protein
3. Blood urea, Blood Sugar, Serum Na+, K+, Creatinine
4. Serum albumin, Serum globulin, SAAG, SGOT, SGPT, Alkaline phosphatase.
5. ECG, X-Ray Chest PA view
6. Ascitic fluid:

Cytology : Total Count: PMN Count: Malignant Cells:
Biochemistry : Total Proteins: Albumin: ADA level:
Culture: Conventional Method: Modified Method :

7. Ultrasound / CT Abdomen
8. Viral markers :HbsAg / Anti HCV
9. Liver biopsy

Cirrhosis was said to be present if patient satisfied two out of following threecriteria.

i) Ascitis with splenomegaly either clinically or on ultrasonographic examination.
ii)Demonstration of esophageal varices by upper Gastrointestinal endoscopy.
iii) Liver biopsy.

STATISTICAL ANALYSIS:

The data was entered in Microsoft Excel in tabulated form. Data on continuous scale was represented as MEAN and STANDARD DEVIATION. Categorical data were represented as NUMBERS and PERCENTAGES. Results were represented as Graphs and Tables. $p < 0.05$ was considered statistically significant.

ISSN:0975-3583,0976-2833 VOL13,ISSUE05,2022

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

Table2:Distributionofpatientsaccordingtogender

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

ISSN:0975-3583,0976-2833 VOL13,ISSUE05,2022

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 :

Hemoglobin ≤ 6 gm% was found in 28 patients, blood urea values ≥40mg% found in 38 patients, serum creatinine ≥ 1.5 mg% found in 36 patients. Hepatitis B surface antigen was positive in 22 patients. Total serum proteins ≤ 5 gm% was found in 19 patients. None of the patients were having SOL in liver. On ultrasound examination liver was shrunken in 73% of patients. Cirrhosis was macronodular in 90% cases, micronodular in 10% cases. Upper G.I. endoscopy revealed Grade-I esophageal varices in 35%, Grade-II in 27%, Grade-III in 38%. Among the 22 patients who had spontaneous ascitic fluid infection at admission, 8 patients had SAAG > 2 gm%, 14 patient had SAAG between 1.1 – 2.0.
In 22 patients with SBP 9 patients had ascetic fluid total protein ≤ 1 gm%.

6 patients out of 19 had total ascitis fluid cell count > 1000 cells/mm^3 at admission.Among

ISSN:0975-3583,0976-2833 VOL13,ISSUE05,2022

the 3 patients who died in hospital all had total ascitic fluid cell count>2000 cells/mm^3.

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 asciticfluid infection at admission – 14 patients(23.3%).
No. of patients having culture negative neutrocyticascitis (CNNA) – 3
No. of patients having SBP – 10
No. of patients having MNBA – 1

Total of 22 patients who developed spontaneous asciticfluid infection were treated during hospital stay and were put on oral norfloxacin prophylaxis 400mg Bid at discharge and later followed up for 6months.
Ascitic fluid analysis at 6 months of followup 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 followup – 25

Percentage of patients who are not on norfloxacin prophylaxis developing SBP are

$$\frac{25}{75} \times 100 = 33.33\%$$

DISCUSSION:

In the present study cirrhosis is more common in 45-54 years age guoup in contrast to reports by Bhatia et al (30 - 39 yrs. - 32.3%). In this study males were found to be having cirrhosis predominantly ratio of males : females 2.55: 1. It is in keeping with reports by

ISSN:0975-3583,0976-2833 VOL13,ISSUE05,2022

Rollenston&McNee 3:1. The Probable cause of preponderance of cirrhosis in males may be due to fact that alcoholism in very common in men than women.

Number of patients having spontaneous ascitic fluid infection at the time of admission were 22). This value is consistent with that stated by Rimolaet al[8].Number of patients who acquired spontaneous ascitic fluid infection during hospital stay is 3 out of 100 which is slightly less than that quoted by Rimolaet al[8].Among the symptoms fever was the most common symptoms. 41.4 % in contrast to that quoted by Mihas A.A. et al (54%)[9,10].

Hepatic flapping tremor is seen in 8 out of 14 patients, having spontaneous ascitic fluid infection at admission similar to statement in consensus document (Rimola et al 2000[32])Blood urea, serum creatinine valves were high in all patients having (SBP, CNNA, MNBA) Similar to that stated by Toussaint J et al [9].Renal failure was present in 3 patients who died contributing to high mortality similar to that stated by Mihas et al (87% mortatity)[9].

No patient of SBP was Asymptomatic in this study. This is also similar to 3.5% which is the percentage of patients of SBP who are asymptomatic quoted by Boixedaet al[4].

Among the 3 patients who died in hospital all were culture positive and having ascitic fluid PMN count > 250 cells/mm^3, there were no deaths in CNNA group. This is similar to higher in hospital mortality rates quoted by Amri SM et al.

22 patients who developed SAI has high serum Bilirubin levels, increased serum liver enzymes, reduced total serum protein concentrations. This is comparable with study conducted by Llachet al[10].

Among the 22 patients who received oral norfloxacin prophylaxis two patients developed recurrence. With gram positive organism (S. aureus) recurrence rate ~ 7%, which is slightly more than that stated by Novelle et al. 2%[35]. The same study hadconfirmed the preponderance of Gram positive organism in recurrences of SBP on oral Norfloxacin prophylaxis.

Recurrence rate in patients on Norfloxacin prophylaxis is quite less compared to cirrhotics who are on no prophylaxis (33.33). This is nearer to figure quoted by Bleichner G. et al[25].

CONCLUSION:

From our study it can be concluded that, SBP is a common and recurrent complication of cirrhosis.Fever is the most common symptom of spontaneous bacterial peritonitis. Hepatic encehalopathy is a common feature in patients with SBP. Bad Prognostic indicators in SBP are Renal Failure, high Serum bilirubin, low total serum proteins, low ascitic fluid protein content.SBP is associated with higher mortality rates than CNNA (culture negative neutrocyticascitis). Norfloxacin prophylaxis in all cirrhotics in beneficial as it is associated with low recurrence rates compared to no prophylaxis.

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ISSN:0975-3583,0976-2833 VOL13,ISSUE05,2022

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