



STUDY OF PROGNOSTIC INDICATORS IN PATIENTS WITH CIRRHOSIS OF LIVER WITH ASCITIS AND SPONTANEOUS BACTERIAL PERITONITIS

General Medicine

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ABSTRACT

Spontaneous bacterial peritonitis (SBP) is defined as ascitic fluid infection in the absence of any obvious intraabdominal source of infection. The mortality rate is approximately 30-50%. The objective of this study is to study predictors of mortality on patients with spontaneous bacterial peritonitis in cirrhosis of liver patients. **Methods:** Fifty patients diagnosed with cirrhosis of liver reporting to ACSR GGH, Nellore were included in the study. SBP was diagnosed based on ascitic fluid ascitic fluid PMN count >250. Serial ascitic fluid cell count was done at 24 hours, 48 hours and 5 days. The results were compared between survivors and non survivors. **Results:** Male: female ratio was 2:1. Study showed 42% mortality. TLC above 11000/mm³, total bilirubin above > 4 mg/dl, serum creatinine >1.5 were associated with increased mortality. **Interpretation & Conclusion:** Ascitic fluid PMN count > 600 at the time of diagnosis, 700 at 24 hrs, 450 at 48 hrs was associated with poor prognosis. A Progressive fall in serial ascitic fluid cell PMN count was associated with good prognosis.

KEYWORDS

SBP, serial ascitic fluid cell count.

INTRODUCTION

Cirrhosis of liver is a common hepatological disorder. Spontaneous bacterial peritonitis is a common complication of cirrhosis of liver manifested by sudden onset of fever, chills, abdominal pain with rebound tenderness over abdomen, absent bowel sounds and leucocytosis. Enteric group of organisms constitute 75%, remaining causes include anaerobes. Paracentesis shows cloudy ascitic fluid with many PMN cells. Outcome is grave and causes of death include infection as most common cause followed by vatical bleeding and hepato renal syndrome. SBP has varied presentations such as fever of unknown origin, hypothermia, encephalopathy of unknown cause or unexplained clinical deterioration. So, diagnostic paracentesis with PMN cell count and culture should be performed in these cases even if there is slightest doubt as it increases the mortality. SBP is treated with antibiotics aggressively. This study is done to evaluate the importance of serial ascitic fluid PMN cell count showed that serial ascitic fluid cell count can be used to monitor treatment and in determining the duration of antimicrobial therapy in SBP.

Inclusion Criteria

Age group >12 years

Diagnosed cirrhosis of liver with ascitis with SBP

Exclusion Criteria

Patients with past history of tuberculosis, other genitourinary infections.

Patients with other causes of fever and deterioration of clinical status.

METHODS

The study group comprised of 50 patients reporting to ACSR Govt general hospital, Nellore diagnosed with cirrhosis of liver and SBP. This study was conducted for period of 1 year for Nov 2020- Nov 2021. A detailed history, Physical examination, Hb, TC, DC, ESR, Blood Urea, Serum Creatinine, Urine examination, a blood sample for analysis for CRP, ascitic fluid analysis including cell count and cell type, ascitic fluid culture was performed. Response to treatment, prognosis and out come during hospitalisation was studied. Serial ascitic fluid cell count and its relation to prognosis was studied.

Statistical analysis was done using SPSS 11.0 package, med calc 9.0.1, Stata 8.0, systat 11.0 and effect size calculator were used for analysis of the data.

90% confidence interval was used for significance of study

characteristics, Student t test for studying significance between survivors and death. Receiving operating characteristics tool was used to find diagnostic performance of study parameters.

RESULTS

Total of 50 patients of age group > 12 years, diagnosed as SBP were studied thoroughly.

Observations of the study were as follows.

Table 1 Sex Distribution Of Patients Studied

Sex	Number	%
Male	33	66.0
Female	17	34.0
Total	50	100.0

SBP is predominantly in male population. i.e; 33 cases (66%), and only 17 (34%) females. This was mainly because of the similar sex distribution in patients of cirrhosis.

Table 2 Age Distribution Of Patients Studied

Age in years	Number	Percentage
21-30	3	6
31-40	7	14
41-50	11	22
51-60	17	34
61-70	9	18
>70	7	14
Total	50	100
Mean +/- SD	50.96 +/- 11.48	

Age distribution ranged widely with youngest patient being 28 years and oldest patient being 78 years. Cirrhosis of liver and SBP was seen predominantly in older age group with 66% of patients >50 years. Mean age was 51 years.

Table 3 Out Come In SBP Patients

Outcome	Number	%
Survived	42%	42%
Death	42%	42%

This study showed 42% mortality. Most of the patients died due to SBP and hepatic encephalopathy, while some of the patients died due

to hemetemesis, hepatorenal syndrome and other complications.

Table 4 Comparison of investigations between patients of SBP-died and survived

Investigations	outcome				P value
	Survived		Died		
	Mean	SD	Mean	SD	
Total count	8088.62	4158.89	11032.38	6066.31	0.046*
Total bilirubin	3.90	2.90	6.44	3.65	0.009**
SGOT	107.83	46.23	136.43	53.39	0.049*
SGPT	64.28	26.06	97.57	44.55	0.002**
Sr.Albumin	2.24	0.37	2.07	0.25	0.068
Sr. creatinine	1.41	1.03	2.58	2.06	0.011*
AF protein	1.19	0.37	1.20	0.54	0.907

Total leucocyte count was raised above 11000/mm³ in 40 % of cases. Higher total leucocyte count was significantly associated with increased mortality. Mean bilirubin in patients who survived was 3.9 mg/dl while in patients who expired was 6.44 mg/dl. An increase in bilirubin level above >4 mg/dl was associated with poor prognosis. There was no much difference in levels of SGOT between the survived and expired patients while elevation of SGPT was associated with increased mortality in this series of patients. Most of the patients have SGOT >> SGPT, which is a feature alcoholic cirrhosis indicating alcoholism as a major etiology of cirrhosis. All patients had reduced serum albumin levels. There was no statistically significant difference between the patients who survived and expired. Mean serum creatinine levels were 1.4 in survived while 2.56 in expired patients. Elevation of creatinine >1.5 was associated with increased mortality and was a poor prognostic marker. Ascitic fluid protein was 1.19 with majority of patients having ascitic fluid protein levels <1 mg/dl.

Table 5 Comparison of Ascitic fluid PMN cell count at the time of Diagnosis And Serial Analysis At Time Of Admission, 24 hrs, 48 hrs and 5 days in patients who died and survived

Investigations	Outcome				P value
	Survived		Died		
	Mean	SD	Mean	SD	
AF cells (PMNs) 0 hrs	571.03	407.83	1119.05	903.52	0.007**
AF cells (PMNs) 24 hrs	566.89	402.55	992.50	549.95	0.003**
AF cells (PMNs) 48 hrs	325.17	199.29	881.58	433.41	<0.001**
AF cells (PMNs) 5 days	124.14	98.07	408.33	399.27	<0.001**

Table 6 Comparison of Ascitic fluid cells between the patients who died and survived

Investigations	Outcome	
	Survived	Died
	% change	% Change
AF cells(PMN) 0 hrs	-	-
AF cells(PMN) 24 hrs	0.72%	11.3%
AF cells(PMN) 48 hrs	43.1%	21.2%
AF cells(PMN) 5 days	78.3%	63.5%

Mean ascitic fluid PMN cell count at the time of diagnosis was 571 in patients with SBP who survived, while it was 1119 in patients who died. Thus a high ascitic fluid cell count at the time of diagnosis was associated with poor prognosis. A fall in ascitic fluid cell count from the time of diagnosis to, at 24 hours, at 48 hrs and at 5 days was associated with good prognosis. Achievement of ascitic fluid PMN cell count of <200 at 5 days of treatment was associated with good outcome.

DISCUSSION

This study was carried out on patients admitted to ACSR govt general hospital, Nellore, diagnosed with cirrhosis of liver and SBP. This study was conducted for period of 1 year for Nov 2020- Nov 2021. SBP was diagnosed based on the following criteria.

An ascitic fluid PMN count greater than 250 cells/mm³ or An ascitic fluid cell count greater than 500 cells/mm³ with >50 % neutrophils and an absence of a primary source of infection.¹

Age and sex in different studies

SBP was seen in predominantly male population i.e: 33 cases (66%)

and only 17 (34%) females. Mean age group was 51 years. Mean age at the time of diagnosis in Filik L, Unal S² was 49.9 while 39 in N Rawat, MK Bhatnagar^{3,4} series and 44 in Mihas AA⁵ study. Our study showed slightly higher age compared to other series. Males and females distribution was almost similar in all the studies.

Mortality

Older studies including Jose P⁶ (1975) and Hoefs JC⁷ (1984) showed very high mortality rate like 96% and 78% respectively. This can be attributed to non availability of antibiotics. Recent series by DN Amrapurkar⁸ and Filik L, Unal S² showed 43% and 37.4% mortality which is similar to our study 42%. This can be due to presentation at the advanced stage of cirrhosis.

Factors predicting mortality in SBP

Increased total leucocyte count, bilirubin >4 mg/dl and creatinine >1.5 mg/dl was significantly associated with increased mortality in our study with is similar to previous studies by Filik L, Unal S² and N Rawat, MK Bhatnagar⁴

In present study serum albumin and ascitic fluid protein did not reach significance level though it showed decreasing trend with increasing mortality. Significant correlation was noted in study done by Unal S² while MK Bhatnagar⁴ and our study did not show significant correlation with serum albumin and ascitic fluid protein.

Ascitic fluid cell count

In the present series the ascitic fluid cell count and % fall in ascitic fluid cell count at the time of diagnosis as well as that done at 48 hours was significantly related to the mortality. A very high cell count at the time of diagnosis was associated with increased mortality. Attainment of ascitic fluid cell count of <200/ dl after starting treatment was associated with better outcome.

The fall in ascitic fluid cell count <200 and fall in ascitic fluid cell count from 0 hours to 48 hours can be used as guide to monitor treatment and serves as guide to duration of antibiotic therapy.

CONCLUSION

All patients with cirrhosis of liver with ascots should be screened for SBP as it presents with minimum signs and symptoms. Increased total count, high levels of bilirubin, and increased creatinine levels are associated with poor prognosis. Once SBP is diagnosed serial ascitic fluid cell count is helpful in predicting prognosis and should be used to monitor treatment. SBP carries a very high mortality and should be treated aggressively.

REFERENCES

- Wyle RJ. SBP a common complication of chronic active hepatitis. European ASS. Study liver, 1979;13
- Filik L, Unal S: Clinical and laboratory features of spontaneous bacterial peritonitis. East Afr Med J; 2004 Sep; 81 (9): 474-9
- MK Bhatnagar, N Rawat; To assess the role of serial ascitic fluid cell. Count in treatment of spontaneous bacterial peritonitis; J Assoc Physicians India; April 2006;53;350.
- N. Rawat, MK Bhatnagar Study of prognostic factors in spontaneous bacterial peritonitis in Indian population; J Assoc Physicians India; April 2006;53;350.
- Mihas AA, Toussaint J, Hsu HS, Dotherow P, Achord JL. Spontaneous bacterial peritonitis in cirrhosis. Clinical and laboratory features, survival, and prognostic indicators. Hepatogastroenterology 1992;39:520-522.
- Jose Pinto correira, Conn HO. SBP in cirrhosis endemic or epidemic? Med coin of North America, 1975; 59: 963.
- Hoefs JG Runyon. SBP disease a month 1985; 9:1-48
- Amarapurkar DN, Viswanathan N, Parikh SS, Kalro RH, Desai HG: Prevalence of spontaneous bacterial peritonitis. J Assoc Physicians India. 1992 Apr; 40 (4): 236-8