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Original Article

EVALUATION OF PREVALENCE AND RISK FACTOR OF SPONTANEOUS BACTERIAL PERITONITIS (SBP) IN CIRRHOTIC PATIENTS

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Abstract

Introduction: *Liver cirrhosis and chronic liver disease (CLD) is the global burden of disease. In Bangladesh, liver disease has increased over the last few decades. The trends of morbidity and mortality from liver disease have increased considerably. Spontaneous bacterial peritonitis (SBP) is one of the common and life-threatening complications of patients with cirrhotic ascites. Factors associated with the risk of developing SBP in cirrhotic patients include upper gastrointestinal bleeding, poor liver function, low ascitic fluid protein levels, prior SBP and hospitalization. Assessing the prevalence and risk factors of spontaneous bacterial peritonitis (SBP) is pivotal for proper treatment, prognosis in patients of liver cirrhosis for reducing the mortality and morbidity.*

Materials and Methods: *This study was a cross sectional observational study, conducted at Shaheed Suhrawardy Medical College Hospital, over a consecutive 6-month period. Samples were selected by purposive sampling technique. Sample size was 50. Detail demographic data were collected from the patients and recorded in structured case. report form. Clinical examination and relevant investigation were done meticulously. All collected questionnaire checked very carefully to identify the error in the data. Data processing work consist of registration schedules, editing computerization, preparation of dummy table, analyzing and matching of data.*

Result: *In this study maximum number of patients 22(44.0%) were between 31-45 years of age group, mean age of the patient was 37.05 ± 9.32 years. Large numbers of respondents came from urban area 32(64.0), followed by rural area 18(36.0%). Among the patients, poor class 24(48%) comprises the major percentage of the patients. Out of 50 cases 34(68.0%) of patients were male and 16(32.0%) were female. Male – female ratio was 2.1:1. Abdominal distension was the commonest presentation (100%), followed by jaundice (82%), vague abdominal pain (76%), vomiting (44%) and haematemesis 18%. Among the all clinical sign, ascites (100%) were commonest sign, followed by icterus (86%) and loss of body hair 60%. Maximum number of CLD patients was Child's B class 27(54.0%). Followed by 11(22.0%) of patients Child's C class and 12(24.0%) of patients Child's A class. Mean values serum bilirubin of the study population was 2.83 ± 1.52 (mg/dl), serum albumin was 24.90 ± 4.08 (gm/L), ALT was 45.94 ± 24.64 (IU/L), AST was 50.89 ± 30.18 (IU/L), INR was 1.52 ± 0.29. Present study demonstrated that prevalence of SBP was 13(26.0%) in cirrhotic patients. Among this, 9 cases were CPNA, 4 cases were CNNA. None of the case detected MNB. Predisposing factor revealed that low total protein level (61.5%), Child–Pugh class C (61.5%) and Sepsis (46.1%) were significant factors for SBP. The difference between groups was statistically significance (p<0.05).* ***Conclusion:*** *Spontaneous bacterial peritonitis (SBP) is a common complication encountered in patients with liver cirrhosis. Present study demonstrated that prevalence of SBP was 13(26.0%) in cirrhosis patients. Early detection and appropriate management of spontaneous bacterial peritonitis is a pivotal in patients with liver cirrhosis for reducing the mortality and morbidity.*

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Keywords:
Chronic liver disease, Spontaneous bacterial peritonitis CPNA, Culture Positive Neutrocytic Ascites; CNNA, Culture Positive Neutrocytic Ascites; MNB, monobacterialbacterascites

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Introduction

Liver cirrhosis or chronic liver diseases (CLD) are leading causes of morbidity and mortality in developed and developing country. Chronic liver diseases (CLD) are defined by the following triad: 1) prolonged course of a hepatic disease >6 months; 2) inflammatory and/or degenerative morphological findings; and 3) uncertain prognosis.[1] Cirrhosis results from end stage chronic liver disease, and is characterized by advanced fibrosis, scarring, and formation of regenerative nodules leading to architectural distortion. It is a leading cause of morbidity and mortality around the world.[2] Regardless of the etiology of cirrhosis, the development of portal hypertension is nearly universal and results from an increased resistance to portal flow secondary to scarring, narrowing, and compression of the hepatic sinusoids. When the portal pressure exceeds a certain threshold, it results in the development of varices and other complications. Spontaneous bacterial peritonitis (SBP) is a complication of liver cirrhosis, characterized by infection in ascitic fluid without an apparent source. Manifestations may include fever, malaise, and symptoms of ascites and worsening hepatic failure.[3]

The natural history of chronic liver disease in a subset of patients is progression to cirrhosis. Cirrhosis has two broad stages. The onset of jaundice, ascites, variceal bleeding, or hepatic encephalopathy heralds the onset of decompensated cirrhosis; the stage where there is absence of any of these complications is compensated cirrhosis.[4] Majority of patients develop ascites within 10 years of the diagnosis of cirrhosis. Spontaneous Bacterial Peritonitis (SBP) is a frequent and severe complication in such patients with liver disease and ascites. Reported prevalence of SBP was 25.0% in patients with liver cirrhosis.[5] Owing to the advances in the diagnosis and treatment, a significant decrease in the mortality associated with SBP has been observed in recent year.

Clinical presentation of SBP is highly variable and nonspecific. A significant proportion of patients with SBP may be even completely asymptomatic. Common symptoms and signs that are reported to have some association with SBP include fever, diarrhea, gastro-intestinal bleeding, abdominal pain/tenderness, vomiting, diarrhea, hepatic encephalopathy etc.[6,7] A classic case of SBP is diagnosed on the basis of a positive ascitic fluid culture and a neutrophil count greater than 240/cmm. Previous study reported that ascitic fluid culture was positive in 19 (50%) patients. E. coli (65%) was the predominant pathogen followed by Enterococcus species (15%). Resistance was high against cephalosporins (78%) and fluoroquinolones (69.6%) and least against amikacin (13%) and meropenem (12%).[5] Two variants of SBP i.e. Culture Negative Neutrocytic Ascites (CNNA) and Bacterascites (BA) have been described based on the ascitic fluid analysis (cell count and C/S) results. CNNA has a negative culture with a higher neutrophil count (i.e. > 240/cmm) while in bacterascites, ascites fluid culture is positive but neutrophil count is < 240/cmm.[8] Besides the symptoms or ascitic fluid cell count, different biochemical tests like serum proteins, albumin, Serum Ascites Albumin Gradient (SAAG), ascitic fluid proteins/albumin and ascitic fluid glucose levels are also shown to predict or suggest the presence of SBP in cirrhotics. Bacterial translocation from the intestinal lumen is mainly considered the preceding factor for the development of SBP that is why gram negative aerobic bacteria from the family of enterobacteriaceae (60%) are reported as the predominant cause of SBP. Non-enterococcal Streptococcal species particularly Streptococcus pneumoniae (35%) are the second most common bacterial pathogens isolated from ascitic fluid [9, 10] but recently SBP episodes caused by gram positive bacteria are being increasingly reported. These changes in bacteriological spectrum are proposed to be due to indiscriminate use of antibiotics, increasing number of invasive procedures and hospitalization in intensive care units and suggest a need for the constant assessment of common bacterial pathogen and their antibiogram to guide empirical treatment of SBP patients.

International data or reports document an incidence of 8 - 30% in CLD patients presenting with ascites11 which suggests that this study results are in concordance with these reports. Study conducted in Lahore which reported an incidence of 22%, [12] another study conducted in a private sector hospital of Karachi also had comparable results i.e. 28%11 . Regarding SBP variants, CNNA was the most common picture followed by bacterascites and classical SBP in descending order.[5] SBP is one of the major causes of morbidity and mortality in cirrhotic patients. Lethality is high. Older studies reported 80-100% lethality in SBP, which is probably given partly by the worse therapeutic possibilities in cirrhotic patients and lack of availability of effective antibiotics. Better results with

only 20%-40% lethality reported in more recent studies are, to a certain extent, due to early diagnosis and treatment.[13] Aim of the study was to assess the prevalence and risk factors of spontaneous bacterial peritonitis (SBP) in cirrhotic patients.

Materials and Methods

This cross-sectional observational study aimed to evaluate prevalence and risk factor of spontaneous bacterial peritonitis in cirrhotic patients admitted to the Department of Medicine, Shaheed Suhrawardy Medical College Hospital, Dhaka, Bangladesh, over a period of six months, from 17th September 2021 to 16th March 2022. Samples were selected by purposive sampling technique. Sample size was 50. Detail demographic data were collected from the patients and recorded in structured case. report form. Clinical examination and relevant investigation were done meticulously. All collected questionnaire checked very carefully to identify the error in the data. Data processing work consist of registration schedules, editing computerization, preparation of dummy table, analyzing and matching of data.

Inclusion criteria

- Confirm cases of cirrhotic ascites
- Age >18 years, both sexes
- Patients giving informed consent

Exclusion criteria

- Sepsis, septic shock patients
- Patients who had already been started on antibiotics at the time of recruitment or who had taken antibiotics up to 2 weeks preceding recruitment
- Patients of CLD with hepatocellular carcinoma.
- Seriously, terminally ill patients, (such as malignancy, severe infection, respiratory disease).
- Patients with preexisting haematological and coagulation disorder.

Risk factors:

- Low total protein level: The total protein test measures the total amount of two classes of proteins found in the serum. These are albumin and globulin. Normal range is 6.0 to 8.3 grams per deciliter (g/dL) or 60 to 83 g/L
- Low ascitic fluid protein level: Traditionally, peritoneal fluid has been classified on the basis of the total protein (TP) content into either an exudate or transudate, attempting to reflect the different processes of fluid formation. The cut-off values used have varied but mostly lie between 25 and 30 g/L. The majority of the variation in fluid TP concentration in patients with ascites due to CLD has been shown to be due to differences in the serum protein concentration and in portal pressure, and to be relatively independent of peritoneal permeability. Thus, a transudative process will generate a relatively low ascitic protein concentration(<25g/L) provided the blood oncotic pressure, determined chiefly by the albumin, is preserved. Ascitic fluid protein does not increase during episodes of SBP and indeed those with the lowest protein concentration were found to be the most likely to develop SBP.
- Child–Pugh classification: advanced Child-Pugh B or C
- Sepsis: Sepsis is defined as the presence (probable or documented) of infection together with systemic inflammatory response (SIRS) to infection. Patients who will meet two or more of the following criteria will be regarded as having SIRS:

1. Temperature: > 38°C - < 36°C
2. Heart rate >90 beat/min
3. Respiratory rate >20 breaths/min
4. WBC count <4000 cells/mm or >12000 cells/mm

- Previous history of SBP: Patients having previous history of SBP and hospitalization.

Sample Processing

This study was a cross sectional observational study, conducted at Shaheed Suhrawardy Medical College Hospital, over a consecutive 6-month period. Patients of liver cirrhosis and age >18 years of both sexes were enrolled for study. Exclusion criteria were patients who had already been started on antibiotics at the time of recruitment or who had taken antibiotics up to 2 weeks preceding recruitment, as well as refusal of consent. After fulfilling the inclusion and exclusion criteria, patients were enrolled with unique ID. Subjects briefed about the objectives of the study, risk and benefits, freedom for participating in the study and confidentiality. Informed consent was obtained accordingly. The study protocol was approved by the Institutional Review Board/Ethics Committee of the

hospital, ensuring adherence to ethical research standards involving human subject. Data were recorded on a predesigned format and managed on Microsoft excel spread sheet. Continuous variables were summarized by means and standard deviations. Categorical variables were summarized by percentages. After collection of all information, these data were checked, verified for consistency and edited for finalized result. After editing and coding, the coded data were directly entered into the computer by using SPSS version 16. Data cleaning validation and analysis was performed using the SPSS/PC software and graph and chart by MS excel. The result was presented in tables. A "P" value <0.05 is considered as significant.Results:

Table-I

Age distribution of the patients (n=50)

Age (years)	Frequency	Percentage (%)	Mean ± SD
18-30	8	16.0	
31-45	22	44.0	37.05 ± 9.32
46-60	15	30.0	
>60	5	10.0	

In this series, the maximum number of patients 22(44.0%) were between 31-45 years of age group, next 15(30.0%) were between the age group of 46-60 years. Mean age of the patient was 37.05 ± 9.32 years.

Table-II

Gender distribution of the patients (n=50)

Gender	Frequency	Percentage (%)
Male	34	68.0
Female	16	32.0
Total	50	100.0

Out of 50 cases 34(68.0%) of patients were male and 16(32.0%) were female. Male– female ratio was 2.1:1.

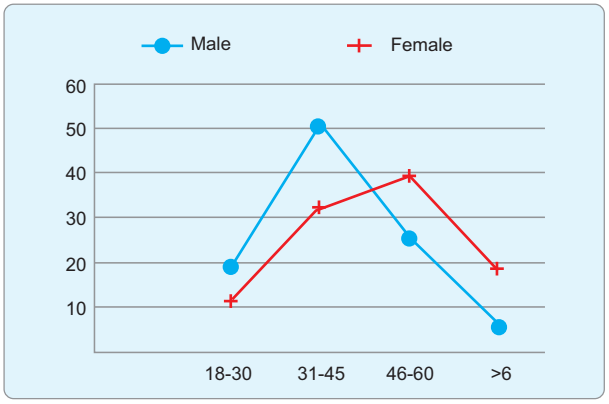

Figure 1: *Frequency of disease with age variation (n=50)*

Line chart shows the prevalence of disease gradually increased with age. More female is affected in elderly age

Table-III

Distribution of patients according to residence (n=50)

Residence	Frequency	Percentage (%)
Rural	18	36.0
Urban	32	64.0
Total	50	100.0

Large numbers of respondents came from urban area 32(64.0), followed by rural area 18(36.0%).

Table-IV

Distribution of the patients according to occupation category (n=50)

Occupation	Frequency	Percentage (%)
Service holder	6	12.0
Business	9	18.0
Worker	12	24.0
House wife	13	26.0
Farmer	10	20.0

Large number of respondents were house wife (26.0%) followed by worker (24.0%). A considerable portion of the respondents (20.0%) were farmer.

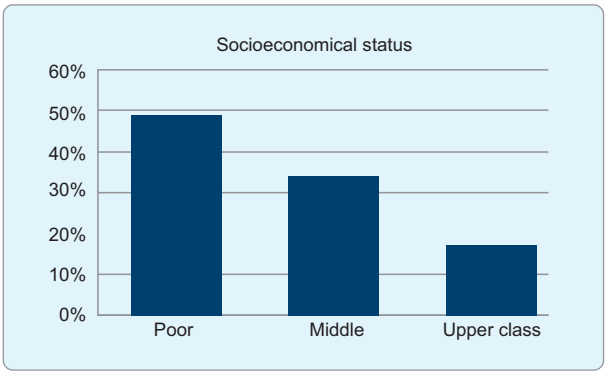

Figure- 2: *Socioeconomic status of the study patients (n=50)*

Among the patients' poor class 24(48%) comprises the major percentage of the patients which is followed by middle class 17(34%) and remaining are upper class or high income class 9(18%).

Table-V

Clinical symptoms of respondents (n=50)

Symptoms	Frequency	Percentage (%)
Abdominal distension	50	100
Jaundice	41	82.0
Vague abdominal pain	38	76.0
Vomiting	22	44.0
Altered consciousness	15	30.0
Haematemesis	9	18.0
Respiratory distress	8	16.0
Melaena	6	12.0
Scanty micturation	4	8.0

Abdominal distension was the commonest presentation (100%), followed by jaundice (82%), vague abdominal pain (76%), vomiting (44%) and haematemesis 18%.

Table-VI

Clinical sign of respondents (n=50)

Sign	Frequency	Percentage (%)
Ascites	30	100.0
Icterus	43	86.0
Loss of body hair	30	60.0
Spider naevi	24	48.0
Palmar erythema	7	14.0
Clubbing	5	10.0

Among the all clinical sign, ascites (100%) were commonest sign, followed by icterus (86%) and loss of body hair 60%.

Table-VII

Aetiology of chronic liver disease (n=50)

Aetiology	Number of patients	Percentage (%)
Hepatitis B virus	37	74.0
Hepatitis C virus	10	20.0
Alcoholic	1	2.0
Others	2	4.0

In this study (94%) had viral related cirrhosis. Overall HBV related cirrhosis is the most common cause of cirrhosis in (74.0%) of patients while HCV related cirrhosis was only in 20%. Alcoholic cirrhosis was (2.0%) cases.

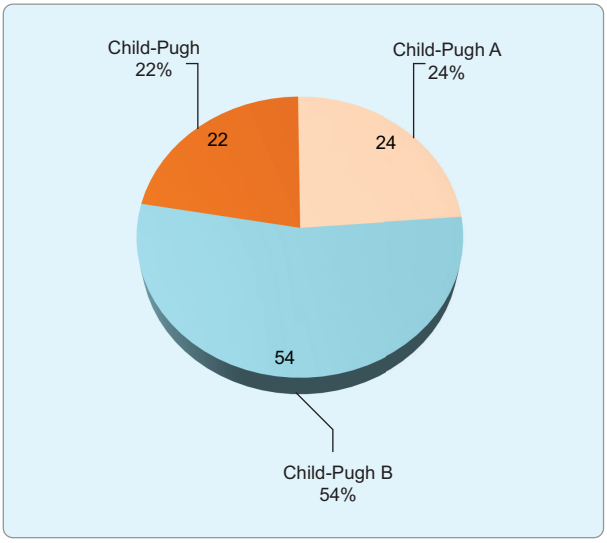

Figure-3: *Categorization of cases according to Child–Pugh classification (n=50)*

The severity of cirrhosis is assessed based on the Child-Pugh score. In this study maximum number of CLD patients was Child's B class 27(54.0%). Followed by 11(22.0%) of patients Child's C class and 12(24.0%) of patients Child's A class.

Table-VIII

Biochemical findings of the study population (n=50)

Laboratory findings	Mean ± SD	Min – Max
Bilirubin (mg/dl)	2.83 ± 1.52	0.43 - 9.40
Albumin (gm/L)	24.90 ± 4.08	15.00 - 32.00
ALT (IU/L)	45.94 ± 24.64	17.00 - 152.00
AST (IU/L)	50.89 ± 30.18	24.00 - 236.00
Alkaline phosphatase (IU/L)	104.40 ± 17.98	64.00 - 182.00
Prothrombin time		
Control (sec)	11.54 ± 1.28	9.20 - 19.20
Pt (sec)	16.00 ± 2.50	11.50 - 24.00
INR	1.52 ± 0.29	1.01 - 2.45

ALT, Alanine aminotransferase; AST, Aspartate aminotransferase; INR, international normalized ratio; Na, Sodium; K, potassium; Cl, Chloride ; TC02 ,Total carbon dioxide.

Table shows that the mean values serum bilirubin of the study population was 2.83 ± 1.52 (mg/dl), serum albumin was 24.90 ± 4.08 (gm/L), ALT was 45.94 ± 24.64(IU/L), AST was 50.89 ± 30.18 (IU/L), INR was 1.52 ± 0.29.

Table-IX

Ascitic fluid study (n=50)

Ascitic fluid study	Number of patients	Percentage (%)
Neutrophil count		
<250/mm^3	37	74.0
>250/mm^3	13	26.0
Ascitic fluid culture		
Positive		
CPNA	9	18.0
MNB	0	0
Negative		
CNNA	4	
Culture negative	37	74.0

CPNA, Culture Positive Neutrocytic Ascites; CNNA, Culture Positive Neutrocytic Ascites; MNB, monobacterialbacterascites

Table shows the ascitic fluid study. Neutrophil count >250/mm3 was detected in 13(26.0%) patients. Ascitic fluid culture was positive in 9(18.0%) cases. Depending upon the cell count and culture of ascitic fluid, it has been further classified into its following variants, e.g, culture Positive Neutrocytic Ascites (CPNA), Culture Negative Neutrocytic Ascites (CNNA) and monobacterialbacterascites (MNB). CPNA is defined neutrophils >250/mm3 with positive blood culture. In this study 9 cases were CPNA. CNNA is defined neutrophils >250/mm3 with negative blood culture. In this study 4 cases were CNNA. Patients with positive cultures on ascitic fluid but without neutrocytic ascites will be classified as having monobacterialbacterascites (MNB). In this study none of the case have MNB.

Figure shows the prevalence of spontaneous bacterial peritonitis (SBP). Present study demonstrated that prevalence of SBP was 13(26.0%) in cirrhotic patients.

Table shows association of SBP with severity of cirrhosis. SBP was detected in 13(26.0%) of patients with predominantly in Child pugh score C. Study demonstrated that, SBP was determined with severity of cirrhosis, in CPS A 2(16.7%) of cases, in CPS B 4(14.8%) and in CPS C 7(63.6%) of cases developed SBP.

Present study revealed that more patients of Child Pugh class C cases developed SBP in comparison to rest of group.

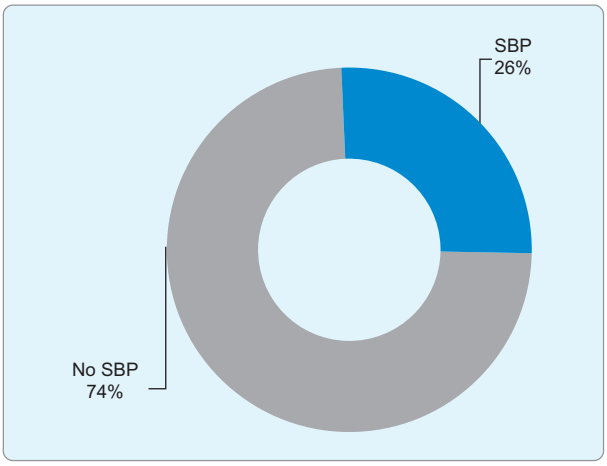

Figure-4: *Prevalence of spontaneous bacterial peritonitis (SBP) in cirrhotic patients (n=50)*

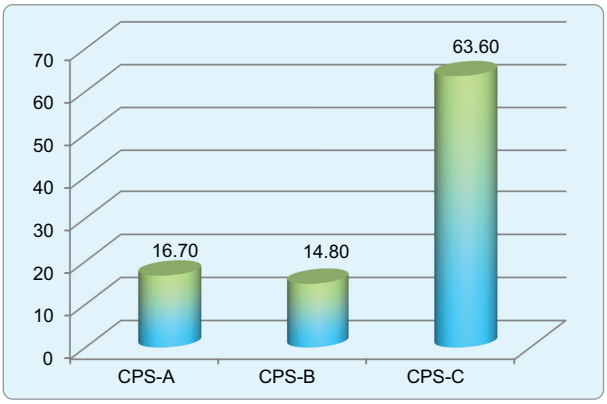

Figure- 5: *Bar chart showing the association of SBP with Child pugh score (n=13)*

Table shows the different risk factors of SBP. Predisposing factor revealed that low total protein level (61.5%), Child–Pugh class C (61.5%) and Sepsis (46.1%) were significant factors for SBP. The difference between groups was statistically significance (p<0.05.

Table-X

Association of SBP with severity of cirrhosis (n=50)

SBP	Frequency			Total
	CPS A(n=12)	*CPS B(n=27)*	*CPS C(n=11)*	
Absent	10(83.3%)	23(85.1%)	4(36.3%)	37
Present	2(16.7%)	4(14.8%)	7(63.6%)	13

Table-XI

Evaluation of different risk factors of SBP (n=50)

Risk factors	Frequency*		p-value
	No SBP(n, %)	*SBP(n, %)*	
Low total protein level	11(29.7)	8(61.5)	0.044
Low ascitic fluid protein level	18(48.6)	5(38.4)	0.529
Child–Pugh class C	3(8.1)	8(61.5)	0.001
Sepsis	*0*	*6(46.1)*	*0.001*
Previous history of SBP	*5(13.5)1*	*2(15.3)*	*0.873*
Total	*37*	*13*	

*multiple respondents

Discussion

This prospective cross sectional observational study was conducted in Department of Medicine, Shaheed Suhrawardy Medical College Hospital, Dhaka, to assess the prevalence and risk factors of spontaneous bacterial peritonitis (SBP) in cirrhotic patients. A total of 50 patients of liver cirrhosis were selected. In this study maximum number of patients 22(44.0%) were between 31-45 years of age group, mean age of the patient was 37.05 ± 9.32 years. Large numbers of respondents came from urban area 32(64.0), followed by rural area 18(36.0%). Among the patients' poor class 24(48%) comprises the major percentage of the patients. Findings are consistent with result of other study. Study in a tertiary care hospital, Dharan, Nepal reported that the mean age of the patients was 49.06 ±11.27 years (range 23-73 years). Ninety patients were adult cirrhotic (agee"35 years) and the remaining 15 patients were young (age d"35 years).[32] Other study revealed that cirrhosis can occur at any age and often causes prolonged morbidity. It is generally believed that cirrhosis occurs much less frequently in young adults than in older patients. A number of reports from the West and Japan, it was found that less than 5% of cirrhosis was under 30-35 years of age.[33] Novic DM did a study of young intravenous drug abusers and found that 43% of cirrhotic were below the age of 35 years.[34] In India, however 37% were patients of d"35years.[35]

In this study out of 50 cases 34(68.0%) of patients were male and 16(32.0%) were female. Male – female ratio was 2.1:1. In a study done by E Halleys Kumar and colleage (2014)[36] studied in India (Tamil Nadu) total no of 100 cases was taken out of which 70 males and 30 females of chronic liver disease. Sex wise ratio of this study was almost similar to our present study. In a study done in Nepal done by Om K Pathak et al (2009)[37] 181 patients of ALD was analyzed out of which 146 males and 35 are female. Mean age was 52.08 ± 13.11 years. So all reports are similar with this study.

In this study, maximum number of CLD patients was Child's B class 27(54.0%). Followed by 11(22.0%) of patients Child's C class and 12(24.0%) of patients Child's A class. Present study demonstrated that prevalence of SBP was 13(26.0%) in cirrhotic patients. Predisposing factor revealed that low total protein level (61.5%), Child–Pugh class C (61.5%) and Sepsis (46.1%) were significant factors for SBP. The difference between groups was statistically significance ($p<0.05$).

Patients with chronic liver disease (CLD) are particularly susceptible to infections with a higher prevalence in cirrhotics. Ascites is a frequent complication of cirrhosis. Spontaneous bacterial peritonitis (SBP) is defined as infected ascites in absence of recognizable secondary cause of infection[13]. Epidemiological meta-analysis reported that Spontaneous Bacterial Peritonitis (SBP) is a common and potentially fatal complication of liver cirrhosis. Pooled prevalence of SBP was found to be 17.12% globally, highest in Africa (68.20%), and lowest in North America (10.81%).[38] SBP occurs in CLD patients with ascites because of bacterial overgrowth with translocation through a more permeable small intestinal wall and impaired defense mechanism. Spontaneous Bacterial Peritonitis (SBP) is a frequent and severe complication in such patients with liver disease and ascites. Reported prevalence of SBP was 25.0% in patients with liver cirrhosis.[5] International data or reports document an incidence of 8 - 30% in CLD patients presenting with ascites[11] which suggests

that this study results are in concordance with these reports. Study conducted in Lahore which reported an incidence of 22%, [12] another study conducted in a private sector hospital of Karachi also had comparable results i.e. 28%.[11] Regarding SBP variants, CNNA was the most common picture followed by bacterascites and classical SBP in descending order.[5]

In this study 9 cases were CPNA, 4 cases were CNNA. None of the case detected MNB. In a study, thirty children with CLD and ascites were studied for evidence of peritonitis, five (16.7%) of them diagnosed as SBP and 8 (26.7%) had CNNA, i.e., total cases with evidence of peritonitis were 43.4%[13]. Dehghani et al., reported an incidence of SBP in 36.1% children with chronic end-stage liver disease.[18] The prevalence of SBP was 20.6% in a similar study conducted by Haghighat and colleagues[19]. Factors associated with the risk of developing SBP in cirrhotic patients include upper gastrointestinal bleeding, poor liver function, low ascitic fluid protein levels, prior SBP and hospitalization [5 13].SBP is a common yet debilitating complication of decompensated liver cirrhosis, inflicting a significant global burden. In a large-scale study by Niu et al. which examined 88,167 SBP hospitalizations with 29,963 deaths, it was found that older age, female gender, hepatic encephalopathy, coagulopathy, variceal hemorrhage, sepsis, pneumonia, and acute kidney injury were associated with increased in- patient mortality.[39] Randomized control trials have demonstrated that patients with increased Child-Pugh scores, impaired renal function, or low ascitic protein count considered as predisposing factor and associated with short-term survival.[40] Socioeconomic status was found to be a significant factor in SBP development, with significantly higher SBP prevalence in patients from middle-income countries compared to patients from higher-income countries.[38]

Limitations of the Study

Chronic liver disease and its several complications continue to have a great impact on public health. It is frequent, more often disabling than fatal. Several risk factors were also observed to develop SBP with due significance in this study, which needs maximum concern for the appropriate management of CLD. Finally, I would request all researchers to make initiatives for large scale community based control study in this regard to find out exact statistical data with the help of health professionals and government and non-government support to make awareness in general populations for reduction & prevention of liver disease and its complications in general to make the saying “prevention is better than cure”.

Conclusion

Liver cirrhosis is physical, social & economic burden and a large number of people suffer from liver cirrhosis every year. A substantial proportion of these patients develops SBP with other complications sometimes in the course of their illness and ultimately increases the morbidity and mortality of the disease. Present study demonstrated that prevalence of SBP was 13(26.0%) in patients with liver cirrhosis. Low total protein level, sepsis and Child Pugh class C cases had significant association with development of SBP. Apart from fever, symptoms and signs are not always conclusive of the diagnosis and a high index of suspicion is needed in all cases with ascites for early diagnosis of cases. Routine culture of the ascitic fluid is not always diagnostic of infection. Biochemical parameters of the ascitic fluid will add to the diagnostic accuracy

Recommendations

1)Chronic Liver Disease continues to have a great impact on public health. It is frequent, more often disabling than fatal. So preventive measures and investigation facility should be available at all health care level.

2)Prioritizing the routine haematological, biochemical test adopted for regular follow up and monitoring of CLD patients.

3)Facilities for prompt and adequate treatment of CLD and CLD follow-up facility, routine haematological, biochemical test should be available in all hospitals.

4)Regular updated training program within health care providers and community level.

Data Availability Statement

Available on request to the corresponding author.

Conflict Of Interest

The authors declare that they have no known conflict of interests or personal relationships that could have appeared to influence the work reported in this paper.

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