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Original Research Article

Evaluation of Occurrence of Bacterial Infection in Cirrhosis Patients: A Retrospective Study at a Tertiary Care Centre

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ABSTRACT

Background: Among hospitalized patients suffering from liver cirrhosis, more than thirty percent are reported to be affected by various infectious pathologies. With the persistence of infection, a mortality rate of approximately fifty percent has been reported. Under the light of above evidence, we planned the present study to assess the incidence of bacterial infections occurring in liver cirrhosis patients.

Materials & Methods: The present study included assessment of clinical profile and incidence of bacterial infections occurring in liver cirrhosis patients. Complete reviewing of the medical records and data of all the patients was done, in which confirmed diagnosis of hepatic liver cirrhosis was made. Complete clinical and laboratory details of all the patients were obtained by analysing their data record files. A total of 200 patients were selected for the present study. All the results were compiled and analysed by SPSS software.

Results: A total of 200 cases were included in the present study. Infection was seen in 20 cases while 180 cases of liver cirrhosis were infection free. Alcohol was the most common aetiology for causation of cirrhosis in both infection and non-infection group. Most common type of infection encountered was urinary tract infection.

Conclusion: Among the hospitalized patients suffering from cirrhosis, bacterial infections do occur in considerable number.

Key words: Bacterial, Cirrhosis, Infection.

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INTRODUCTION

Cirrhosis is defined as the histological development of regenerative nodules surrounded by fibrous bands in response to chronic liver injury, that leads to portal hypertension and end stage liver disease.[1,2] Recent advances in the understanding of the natural history and pathophysiology of cirrhosis, and in treatment of its complications, resulting in improved management, quality of life and life expectancy of cirrhotic patients.[3,4]

Candidates suffering from end- stage liver disease and advocated for liver transplantation are significantly affected by bacterial infections. Approximately thirty three percent of hospitalized patients suffering from liver cirrhosis, as indicated by previous studies, are infected. With the persistence of infection, a mortality rate of approximately fifty percent have been reported.[5,6] Under the light of above evidence, we planned the present study to assess the incidence of bacterial infections occurring in liver cirrhosis patients.

MATERIALS & METHODS

The present study was conducted in the Department of General Medicine, Sri Lakshmi Narayana Institute of Medical Sciences, Osudu, Puducherry (India) and included assessment of clinical profile and incidence of bacterial infections occurring in liver cirrhosis patients. Ethical approval was taken from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. Complete reviewing of the medical records and data of all the patients was done, in which confirmed diagnosis of hepatic liver cirrhosis was made. Complete clinical and laboratory details of all the patients were obtained by analysing their data record files. Presence of more than two hundred and fifty neutrophils in the ascetic fluid or positive microbiological cultural report confirmed the diagnosis of bacterial peritonitis.[7]

Record of clinical signs and symptoms obtained from the data files were used for confirming the diagnosis of urinary tract infection and respiratory tract infection based on criteria given previously in the literature.[8]

Presence of fever and other inflammatory signs and symptoms confirmed the diagnosis of soft tissues infection.[9] A total of 200 patients were selected for the present study. All the results were compiled and analysed by SPSS software. Chi- square test and student t test were used for assessment of level of significance. P-value of less than 0.05 was taken as significant.

RESULTS

A total of 200 cases were included in the present study, out of which 108 were males and 92 were females. Out of 200 cases, infection was seen in 20 cases while 180 cases of liver cirrhosis were infection free. Among infection group cases, 12 were males and 8 were females (Table 1). Alcohol was the most common aetiology for causation of cirrhosis in both infection and non-infection group. Most common type of infection encountered was urinary tract infection which was found in 30 percent of the subjects, followed by bacterial peritonitis, which was seen in25 percent of the subjects (Table 2). Klebsiella spp. and E. Coli were the most common etiologic agents responsible for causing urinary tract infection (Graph 1).

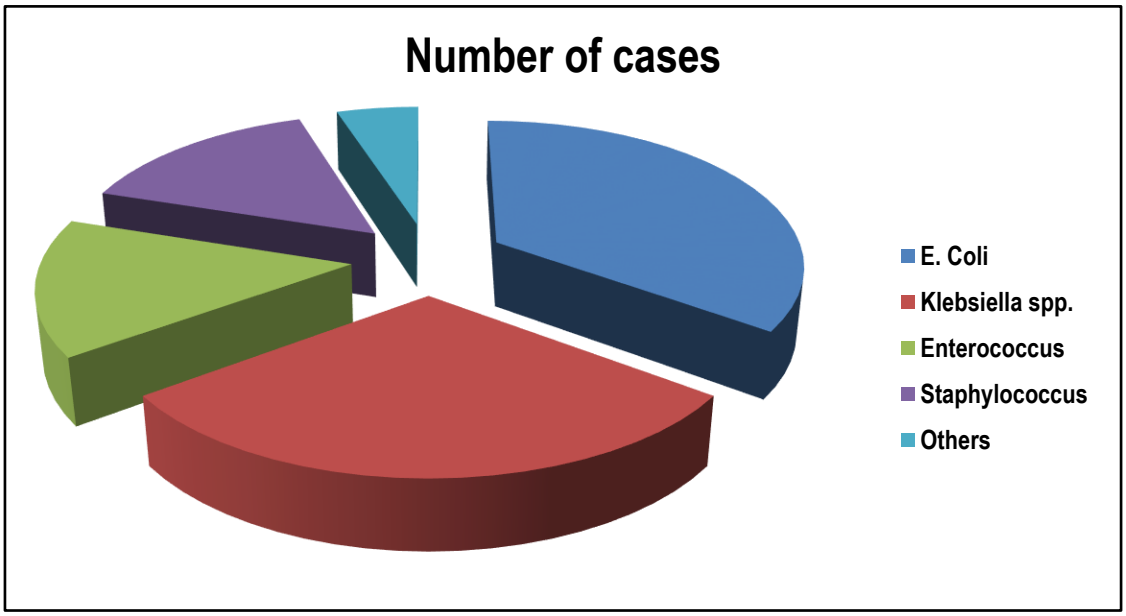
Table 1: Incidence of bacterial infection in cirrhosis patients

Parameter		Without infection (N= 180)	With infection (N=20)
Gender	**Male**	96	12
	Female	84	8
	Total	180	20
Aetiology	**Viral B**	50	6
	Viral C	51	5
	Alcoholic	78	8
	Other	1	1
	Total	180	20

Table 2: Incidence of various types of infections

Infection type	Number of subjects	Percentage
Bacterial peritonitis	5	25
Urinary tract infection	6	30
Cutaneous infection	2	10
Bacteraemia	1	5
Respiratory tract infection	4	20
Others	2	10

Graph 1: Various aetiologic agents in causation of urinary tract infection



DISCUSSION

In the present study, we observed that ten percent of the cases included in the present study were affected by various bacterial infections (Table 1). De Mattos AA et al evaluated the prevalence of bacterial infections in cirrhotic patients at a general hospital and determine its correlation with alcoholic etiology of liver disease; degree of hepatic dysfunction and upper gastrointestinal bleeding. Five hundred and forty one admissions were retrospectively evaluated in 426 cirrhotic patients at years 1992 to 2000. The mean age was 50.5 years (15-95), being 71.2% male. The alcoholic etiology of cirrhosis was 35.4%. The main outcome considered was discharge or death during admission. One hundred and thirty five episodes of bacterial infections (25%) were

diagnosed. The most frequent are urinary tract infection (31.1%), spontaneous bacterial peritonitis (25.9%) and pneumonia (25.2%). The association between urinary tract infection and pneumonia occurred in 3.7% and erysipelas or cellulites in 11.1%. Bacteremia occurred in 2.9%. There was a correlation between bacterial infection and alcoholic etiology of liver disease, hepatic dysfunction and upper gastrointestinal bleeding. The mortality was higher in the infected patients (8.9%) and in those with a poor hepatic function. Bacterial infections are common complications in cirrhotic patients and are correlated with alcoholic etiology, Child Pugh classification and upper gastrointestinal bleeding. Furthermore, bacterial infections are correlated with poor prognosis.[10]

Mathurin S et al evaluated the prevalence and the clinical relevance of bacterial and nonbacterial infections in predominantly alcoholic cirrhotic patients, admitted to an intermediate complexity hospital, and we also compared the clinical characteristics, laboratory and evolution of these patients with and without bacterial infection in a prospective study of cohort. A total of 211 consecutive admissions in 132 cirrhotic patients, between April 2004 and July 2007, were included. The mean age was 51.8 (+/- 8) years, being 84.8% male. The alcoholic etiology of cirrhosis was present in 95.4%. One hundred and twenty nine episodes of bacterial infections were diagnosed in 99/211 (46.9%) admissions, community-acquired in 79 (61.2%) and hospital-acquired in 50 (38.8%): spontaneous bacterial peritonitis (23.3%); urinary tract infection (21.7%); pneumonia (17.8%); infection of the skin and soft parts (17.1%), sepsis by spontaneous bacteremia (7.7%); other bacterial infections (12.4%). Gram-positive organisms were responsible for 52.2% of total bacterial infections documented cases. There were eight serious cases of tuberculosis, fungal and parasitic infections; the prevalence of tuberculosis was 6% with an annual mortality of 62.5%; 28.1% (9/32) of the coproparasitological examination had Strongyloides stercolaris. The in-hospital mortality was significantly higher in patients with bacterial infection than in non-infected patients (32.4% vs. 13.2%; p=0.02). The independent factors associated with mortality were bacterial infections, the score of Child-Pügh and creatininemia > 1.5 mg/dl. By the multivariate analysis, leukocytosis and hepatic encephalopathy degree III/IV were independent factors associated to bacterial infection. This study confirmed that bacterial and nonbacterial infections are a frequent and severe complication in hospitalized cirrhotic patients, with an increase of in-hospital mortality.[11] In the present study, we also observed that urinary tract infection was the most commonly encountered infection among all the patients (Table 2). Rosa H et al compared the frequency and evolution of bacterial infection among alcoholic and nonalcoholic cirrhotics. To observe this relationship, they retrospectively studied a cohort of 382 cirrhotic inpatients, 201 of whom were alcoholic (alcohol intake > or =80 g/day for > or =10 yr) and 181 of whom were nonalcoholic. A total of 128 (33.5%) patients presented with infection upon hospitalization, 78 of whom were alcoholic and 50 of whom were nonalcoholic (p = 0.02). A total of 157 cases of infection were diagnosed, with spontaneous bacterial peritonitis as the most prevalent one (54.1%), followed by pneumonia (18.5%), infection of the soft parts (10.8%), and urinary tract infection (7.0%). Infection and deaths were more frequent in patients with Child-Pugh C than in those with Child-Pugh A/B (p = 0.003, p = 0.0002 respectively). Alcoholic patients with Child-Pugh A/B were more susceptible to infection compared to nonalcoholic patients (p = 0.02), although no difference was noted as to the number of deaths (p = 0.1). With regard to patients with Child-Pugh C, no statistical difference was found in the infections or deaths among alcoholics and nonalcoholics. Their findings suggested that, despite the fact that bacterial infections are more common in cirrhotic alcoholics, its seems that the mortality rate is associated more with the severity than with the etiology of the hepatic disease.[12]

Almeida D et al evaluated a group of cirrhotic patients (child B and C Pugh groups) by chart reviews regarding the prevalence of bacterial infection during hospitalization to determine whether upper gastrointestinal bleeding (UGB) was a risk factor. An infection was considered present if a specific organ system was identified or if fever (> 38(o)C) persisted for more than 24 hours with associated leukocytosis. Spontaneous bacterial peritonitis was based on classical criteria. Eighty-nine patients were evaluated. Fourty-six patients presented with UGB, and 43 patients had no UGB (control). There were infections recorded in 25/46 (54%) patients with UGB, and 15/43 (35%) in those without UGB. The ratio of the number of infections/admitted patients was significantly larger in the group with UGB since patients had more than one infection. In the UGB group compared to non UGB group, ascites was more frequent; they were more likely to have undergone endoscopic procedures and the mean +/- SD for platelets count was smaller. The results showed that UGB is an important contribution to bacterial infection among Child B and C cirrhotic patients.[13]

CONCLUSION

From the above results, the authors concluded that among the hospitalized patients suffering from cirrhosis, bacterial infections do occur in considerable number. However, future studies are recommended.

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