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RENAL IMPAIREMENT FOLLOWING SPONTANEOUS BACTERIAL PERITONITIS AMONG PATIENTS SUFFERING FROM CIRRHOSIS: ASESSMENT OF INCIDENCE AND MORTALITY RATE

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Abstract:

Background: *Spontaneous bacterial peritonitis (SBP) is an important complication in cirrhotic patients. Despite it being recognized as a precipitating factor of renal impairment in cirrhosis, no study specifically addressing this problem has been reported.* ***Objective:*** *The aim of the present study is to assess the incidence and mortality rate of renal impairment (RI) after SBP among cirrhotic patients.* ***Methods:*** *This cross-sectional, observational analysis was carried out at the Dept. of Medicine at Indus Medical College and Liaquat University Hospital, Hyderabad from January 2017 to July 2018 on a sample of 582 cirrhotic patients (chosen via non-probability, consecutive sampling) admitted to the study settings. SBP diagnosis was established when the ascitic fluid polymorphonuclear cell count was equal to or greater than 250 cells/mm³. After taking written informed consent from the study subjects, data was collected using a pre-structured, interview based questionnaire containing inquiries about basic sociodemographic details, clinical examinations details and particulars of laboratory investigation. The data obtained was analyzed using MS. Excel 360 and SPSS v. 21.0.* ***Result:*** *The mean age of sample stood at 51 years (SD ±7.5) and most of the subjects (70.96%) were males. The incidence of SBP was 23.02%. Among the 134 total cases of SBP, in 61 (45.52%) episodes, SBP was associated with RI (transient in 50.82%; steady in 21.31%; and progressive in 27.87%). The mortality rate associated with progressive RI was 100%; 53.85% with steady RI; and 9.68% with transient RI. The mortality rate in patients with or without RI was 44.26% and 8.06%, respectively (P<0.01).* ***Conclusion:*** *After carefully considering the results, it can be concluded that RI after SBP is a common complication, and indicates a poor prognosis for this infection.*

Keywords: *Renal Impairment, Spontaneous Bacterial Peritonitis, Incidence Rate, Mortality Rate & Liver Cirrhosis.*

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INTRODUCTION:

Chronic hepatitis C virus infection affects an estimated 170 million people worldwide. An estimated 3% of the global population is infected with hepatitis C, although the prevalence ranges from 0.1 to 12%, depending on the country. This equates to approximately 170 million chronic carriers worldwide. New infections occur at a rate of 1 to 3 cases per 100,000 persons per year, although the actual incidence is probably much higher because most new infections are asymptomatic. **[1, 2]**

The seroprevalence of hepatitis C in different parts of Pakistan reported in last 5 years is from 2.2% to 13.5%. The highest seroprevalence of hepatitis C is reported from Lahore (13.5%), Jamshoro and Mardan (9%). Hepatitis C Infection can lead to Chronic Liver Disease and Cirrhosis and is the most frequent indication for liver transplantation. Cirrhosis is characterized by triad of parenchymal necrosis, regeneration and scarring. Cirrhosis and its disease-related complications are the 12th leading cause of mortality among adults worldwide and are responsible for nearly as many fatalities as diabetes mellitus. **[3, 4]**

Ascites is the accumulation of free fluid in peritoneal cavity and among the major complications of cirrhosis, along with hepatic encephalopathy and the hemorrhage caused by the rupture of the esophageal varices. Patients with cirrhosis and ascites show a higher susceptibility to bacterial infections. Spontaneous bacterial peritonitis (SBP) is the infection of the ascetic fluid that occurs in the absence of a visceral perforation and in the absence of and intra-abdominal inflammatory focus such as abscess, acute pancreatitis or cholecystitis. For diagnosis of SBP, the number of polymorphonuclear leucocytes (PMN) in the ascitic fluid obtained by paracentesis must exceed 250 cells/mm3 and from bacteriological cultures only one germ must be isolated. **[5, 6]**

Spontaneous bacterial peritonitis (SBP) is an important clinical complication affecting patients with cirrhosis and ascites. It is associated with a poor short term and long-term prognosis, with an in-hospital mortality rate ranging from 20% to 40%, and a recurrence rate of 70% after one year. Renal impairment (RI) after SBP has been described in 25% to 38% of the reported cases. It probably occurs as a result of an accentuation of the circulatory dysfunction (common in patients with cirrhosis and ascites) induced by the infection. Recently, RI has been shown to be the best predictor of in-hospital mortality in patients with SBP. **[7, 8]**

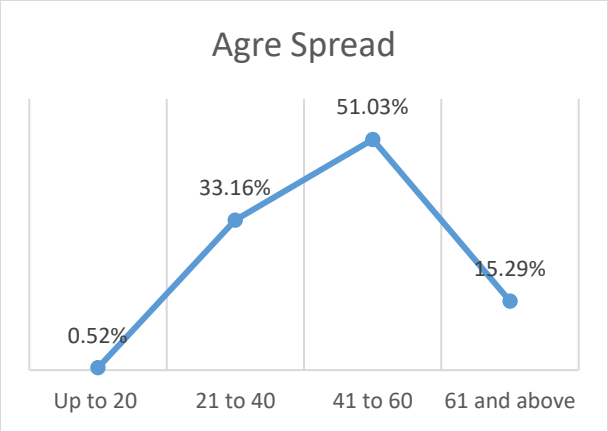
Although SBP is traditionally considered a precipitating factor of kidney failure in cirrhosis, very few studies specifically addressing this problem have been reported and that too from far corners of the globe (Spain and Brazil). Therefore, we wanted to investigate whether similar results would be observed in others areas of the world, namely Pakistan. **[9, 10]** The aim of the present study was to assess the incidence and prognosis of RI after SBP in cirrhotic patients.

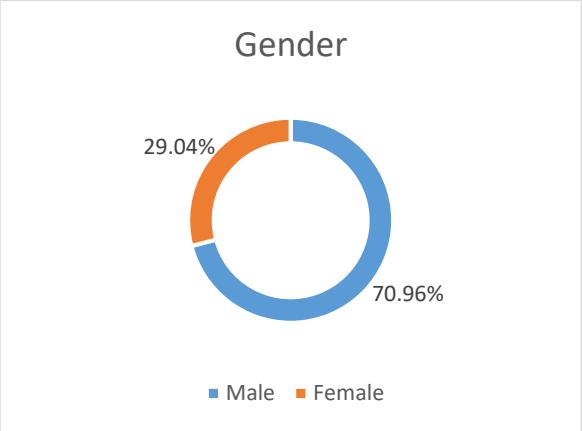
METHODOLOGY:

This cross-sectional, observational analysis was carried out at the Dept. of Medicine at Indus Medical College and Liaquat University Hospital, Hyderabad from January 2017 to July 2018 on a sample of 582 cirrhotic patients (chosen via non-probability, consecutive sampling) admitted to the study settings. SBP diagnosis was established when the ascitic fluid polymorphonuclear cell count was equal to or greater than 250 cells/mm^3. After taking written informed consent from the study subjects, data was collected using a pre-structured, interview based questionnaire containing inquiries about basic sociodemographic details, clinical examinations details and particulars of laboratory investigation. The data obtained was analyzed using MS. Excel 360 and SPSS v. 21.0.

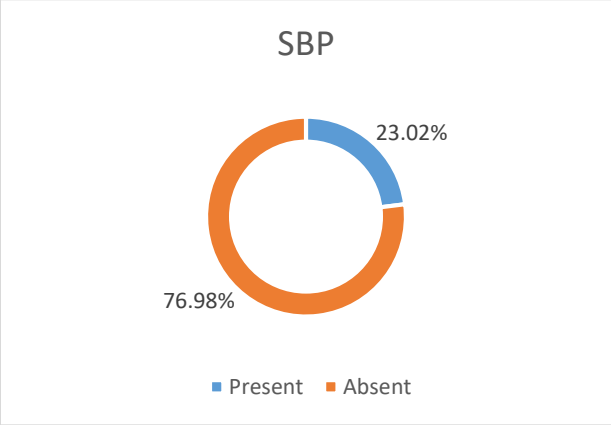
RESULTS:

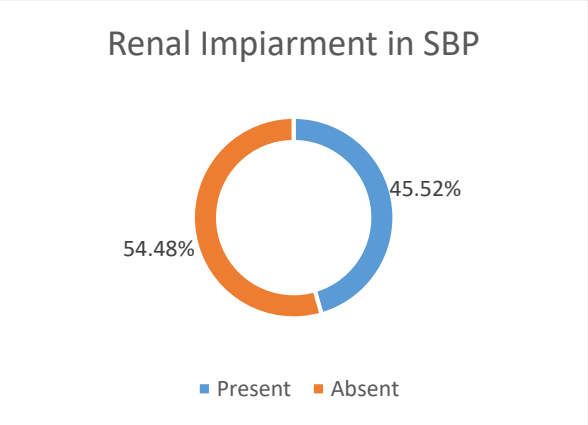
The mean age of sample stood at 51 years (SD ±7.5). 70.96% (413) of the subjects were males, while the remaining 29.04% (169) were females.





The incidence of SBP was 23.02%. Among the 134 total cases of SBP, in 61 (45.52%) episodes, SBP was associated with RI.





RI was classified as transient in 50.82%; steady in 21.31%; and progressive in 27.87%. The mortality rate associated with progressive RI was 100%; 53.85% with steady RI; and 9.68% with transient RI. The mortality rate in patients with or without RI was 44.26% and 8.06%, respectively (P<0.01).

TYPE OF R.I	**PREVALENCE**	**MORTALITY**
TRANSIENT	*50.82%*	*100%*
STEADY	*21.31%*	*53.85%*
PROGRESSIVE	*27.87%*	*9.68%*

DISCUSSION:

No studies have addressed the development of RI after SBP in areas of Pakistan. The fact that etiology of liver disease due to lack of alcoholism and greater incidence of hepatitis infection in the country is very different from the western world, makes it important for such investigations to be conducted and results be produced. **[11]**

The incidence of RI observed in the present study was slightly higher than that observed in the literature, although most authors do not consider cases of transient failure as cases of RI. When our cases of transient renal failure are excluded, the incidence drops down, which is in agreement with the literature. **[12]**

The higher incidence of transient renal failure observed in our patients could be the result of a delay in hospitalization, which is a common fact in most developing countries. On the other hand, our study showed that RI after SBP is an important predictor of SBP prognosis also in Pakistan, particularly in cases of steady and progressive renal failure. This finding is similar to that described by others in literature. **[13]**

CONCLUSION:

After carefully considering the results, it can be concluded that RI after SBP is a common complication, and indicates a poor prognosis for this infection.

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