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Original Research Article.

Assessment of Renal Profile in Liver Cirrhosis Patients: An Observational Study

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ABSTRACT

Background: In patients with liver cirrhosis, renal function has important prognostic impact along with hepatic function. Hence; we planned the present study to assess renal profile in liver cirrhosis patients.

Materials & Methods: A total of 40 liver cirrhosis patients were included in the present study. A total of 40 age and gender matched healthy controls were also included in the present study as study group. Mean serum creatinine levels and blood urea levels were assessed using an auto-analyzer.

Results: Mean serum creatinine levels of the subjects of the study group (38.13 mg/dl) were significantly higher than subjects of the control group (21.25 mg/dl). Blood urea levels of the subjects of the study group (1.98 mg/dl) were significantly higher than subjects of the control group.

Conclusion: Liver cirrhosis is significantly associated with altered renal profile.

Key words: Cirrhosis, Profile, Renal.

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INTRODUCTION

Patients with cirrhosis are prone to many complications including ascites, variceal hemorrhage, bacterial infections, and hepatic encephalopathy. The presence of these conditions in cirrhosis is associated with poor prognosis; however, the most feared complication of cirrhosis is the development of renal failure.[1-3]

In patients with liver cirrhosis, renal function has important prognostic impact along with hepatic function. Furthermore, a decreased glomerular rate of less than 60 mL/min/1.73 m^2 in liver cirrhosis may be related to the progression of end stage renal disease even after liver transplantation.

From this point of view, knowledge of renal function impairment is of great importance for predicting mortality and guiding a decision for combined liver and kidney transplantation in liver cirrhosis.[4-6] Hence; we planned the present study to assess renal profile in liver cirrhosis patients.

MATERIALS & METHODS

The present study was conducted in the Pacific Medical College, Udaipur, Rajasthan (India) and it included assessment of renal profile in patients with liver cirrhosis. A total of 40 liver cirrhosis patients were included in the present study. A total of 40 age and gender matched healthy controls were also included in the present study as study group. A pre-framed Performa was given to all the patients for collecting the detailed clinical profile. Demographic data of all the patients was collected. Blood samples were obtained from all the subjects and were sent to the laboratory for analysis. Mean serum creatinine levels and blood urea levels were assessed using an auto-analyzer. All the results were compiled in Microsoft excel sheet and were assessed by SPSS software. Chi-square test was used for assessment of level of significance. P-value of less than 0.05 was taken as significant.

Table 1: Demographic data

Parameter	Study group	Control group
Number of subjects	40	40
Mean age (years)	52.1	50.8
Males	29	28
Females	11	12

Table 2: Distribution of subjects of the study group according to Etiology factors

Etiologic factors	Number of subjects	Percentage
Alcohol	24	60
NASH	8	20
Hepatitis C	4	10
Others	4	10
Total	40	100

Table 3: Comparison of renal parameters

Parameter	Study group	Control group	p- value
Blood Urea (mg/dl)	38.13	21.25	0.00*
Serum Creatinine (mg/dl)	1.98	1.11	0.04*

*: Significant

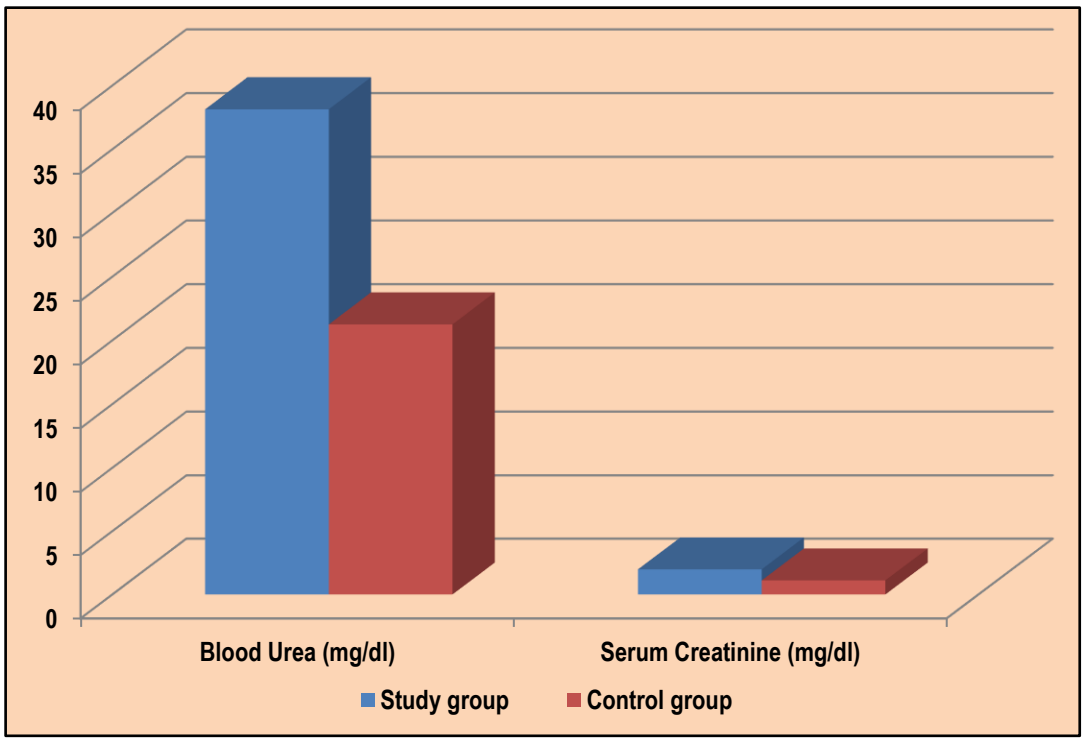

Fig 1: Comparison of renal parameters

RESULTS

In the present study, a total of 40 liver cirrhosis subjects and 40 healthy controls were included in the present study. Mean age of the patients of the study group was 52.1 years and of the control group was 50.8 years respectively.

There were 29 males and 11 females in the study group while there were 28 males and 12 females in the control group. Alcohol was responsible for occurrence of 60 percent of the liver cirrhosis patients in the present study.

Mean serum creatinine levels of the subjects of the study group (38.13 mg/dl) were significantly higher than subjects of the control group (21.25 mg/dl). Blood urea levels of the subjects of the study group (1.98 mg/dl) were significantly higher than subjects of the control group (1.11 mg/dl).

DISCUSSION

Renal dysfunction is a common and serious problem in patients with advanced liver disease. In particular, alterations in renal physiology in acute liver failure or cirrhosis with ascites can predispose patients to a specific functional form of renal failure known as hepatorenal syndrome. Patients with cirrhosis and portal hypertension develop circulatory dysfunction characterized by disturbances in systemic and renal hemodynamics. It has been shown that the severity of circulatory dysfunction correlates with the severity of cirrhosis.[7- 9]

Hence; we planned the present study to assess renal profile in liver cirrhosis patients.

In the present study, mean age of the patients of the study group was 52.1 years and of the control group was 50.8 years respectively. There were 29 males and 11 females in the study group while there were 28 males and 12 females in the control group. Alcohol was responsible for occurrence of 60 percent of the liver cirrhosis patients in the present study. Das N et al assessed the association of alteration of renal function among the cases of chronic liver disease of different aetiology. 50 patients were interviewed with a pre-designed and pre-tested schedule, examined clinically, followed by some laboratory investigations relevant to diagnose the aetiology of chronic liver disease, and to assess the severity of liver and renal dysfunction. Eighty six percent of the patients were male and the mean age of study population was 43.58 y, 68% patients suffered from alcoholic liver disease, followed by 14% patients had chronic Hepatitis-B, 10% patients developed acute kidney injury, 20% had hepato renal syndrome and 14% had IgA deposition. The distribution of serum urea and creatinine across the categories of Child Pugh classification tested by Mann-Whitney test and the distribution was statistically significant. Their study has found significant association between severity of liver dysfunction and certain parameters of renal dysfunction.[10]

In the present study, mean serum creatinine levels of the subjects of the study group (38.13 mg/dl) were significantly higher than subjects of the control group (21.25 mg/dl). Blood urea levels of the subjects of the study group (1.98 mg/dl) were significantly higher than subjects of the control group (1.11 mg/dl).

In chronic liver disease, the reduction in the serum creatinine pool is due to a 50% decrease in hepatic production of creatine; increases in the volume of distribution due to the accumulation of extracellular fluid, edema, and ascites; malnutrition and loss of muscle mass, which is related to repeated episodes of sepsis and large volume ascites affecting satiety. Ultimately, patients with chronic liver disease have a significantly lower baseline serum creatinine concentration than the general population (35-75 µmol/l).[11,12]

Fasolato S et al investigated the prevalence and clinical course of renal failure that was induced by the various types of bacterial infections in patients with cirrhosis and ascites. Three hundred and nine patients, who were consecutively admitted to the 3 major hospitals of Padova, Italy, during the first 6 months of 2005, were studied prospectively. Of these, 233 patients (75.4%) had evidence of ascites. In 104 patients with cirrhosis and ascites (44.6%) a bacterial infection was diagnosed. The prevalence of renal failure was higher in biliary or gastrointestinal tract infections and in spontaneous bacterial peritonitis (SBP) and in than in other types of infections. In addition, the progressive form of renal failure was only precipitated by biliary or gastrointestinal tract infections, SBP, and urinary tract infections (UTI). In a multivariate analysis only MELD score (P = 0.001), the peak count of neutrophil leukocyte in blood (P = 0.04), and the lack of resolution of infection (P = 0.03) had an independent predictive value on the occurrence of renal failure. The results of their study showed that the development of bacterial-induced renal failure in patients with cirrhosis and ascites is related to the MELD score, and to both the severity and the lack of resolution of the infection.[13]

CONCLUSION

Under the light of above obtained data, the authors conclude that liver cirrhosis is associated with altered renal profile. Hence; prompt diagnosis and application of treatment therapies seems to be pivotal in potentially reducing the severity of kidney injury in liver cirrhosis patients.

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