ORIGINAL RESEARCH

Renal function in patients with chronic liver diseases

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ABSTRACT

Background: Chronic liver disease is a common clinical problem in our country. In chronic liver disease, the liver parenchyma gradually deteriorates and regenerates, leading to cirrhosis and fibrosis. The present study was conducted to assess renal function in patients with chronic liver diseases. **Materials & Methods:** 104 patients with chronic liver disease of both genders were selected. Aspartate amino transferase S, alanine amino transferase, alkaline phosphatase, total bilirubin with both conjugated and unconjugated fraction, total protein, albumin, globulin, prothrombin time, anti-nuclear antibody, and anti-liver kidney microsomal antibodies 1, 2, and 3 were among the many laboratory tests that were performed. Ascitic fluid was examined in order to ascertain the etiology and severity of chronic liver disease. Kidney function was assessed by measuring serum potassium, sodium, urea, and creatinine. **Results:** Out of 104 patients, 64 were males and 40 were females. Various liver diseases were alcoholic liver disease in 48, autoimmune hepatitis in 12, chronic Hepatitis- B in 32, and chronic Hepatitis- C in 12 patients. The difference was significant ($P< 0.05$). Serum albumin <3 gm/dl was seen in 62, 3-3.5 gm/dl in 13 and >3.5gm/dl in 29 patients. Serum globulin <2.5 gm/dl was seen in 76, 2.5-4 gm/dl in 14 and >4 gm/dl in 14 patients. Serum urea 15-40 mg/dl was seen in 86 and >40 mg/dl in 18 patients. Creatinine 1 mg/dl was seen in 89 and 2 mg/dl in 15 patients. The difference was significant ($P< 0.05$). **Conclusion:** The severity of liver dysfunction and some renal dysfunction measures have been discovered to be significantly correlated by the authors.

Keywords: chronic liver disease, cirrhosis, renal function

INTRODUCTION

Chronic liver disease is a common clinical problem in our country. In chronic liver disease, the liver parenchyma gradually deteriorates and regenerates, leading to cirrhosis and fibrosis.[1] Extensive research is still being conducted in a variety of patient populations on acute renal injury, chronic kidney disease, and numerous exogenous and endogenous indicators of kidney function. If renal impairment is present in both groups, it is a poor prognostic indicator.[2] Hepato-renal syndrome, a unique form of renal failure associated with severe liver disease or cirrhosis, is characterized by functional renal impairment without noticeable changes in renal histology.[3]

Chronic liver disease and cirrhosis frequently result in renal failure, which greatly raises morbidity and mortality.[4] There is strong evidence that the main cause of renal failure in individuals with cirrhosis is changes in circulatory function, particularly a decrease in system vascular resistance due to primary arterial vasodilatation in the splanchnic circulation caused by portal hypertension.[5] Intrinsic renal abnormalities can develop in patients with hepatitis B or C and alcoholic cirrhosis. A specific kind of acute renal failure known as type-I hepatorenal syndrome can also occur in people with cirrhosis. Even in the absence of an acute renal failure episode, patients with cirrhosis may suffer from chronic renal injury due to diseases such as diabetes mellitus, hypertension, and atherosclerosis.[6] The present study was conducted to assess renal function in patients with chronic liver diseases.

MATERIALS & METHODS

The present study was conducted on 104 patients with chronic liver disease of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Blood work for hemoglobin, total and differential counts, ESR, fasting, and postprandial sugar levels were among the biochemical tests carried out. Aspartate amino transferase S, alanine amino

transferase, alkaline phosphatase, total bilirubin with both conjugated and unconjugated fraction, total protein, albumin, globulin, prothrombin time, anti-nuclear antibody, and anti-liver kidney microsomal antibodies 1, 2, and 3 were among the many laboratory tests that were performed. Ascitic fluid was examined in order to ascertain the etiology and severity of chronic liver disease. Kidney function was assessed by measuring serum potassium, sodium, urea, and creatinine. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 104		
Gender	**Male**	**Female**
Number	64	40

Table I shows that out of 104 patients, 64 were males and 40 were females.

Table II Various liver diseases

Liver diseases	Number	P value
Alcoholic liver disease	48	0.05
Autoimmune hepatitis	12	
Chronic Hepatitis- B	32	
Chronic Hepatitis- C	12	

Table II, graph I shows that various liver diseaseswere alcoholic liver disease in 48, autoimmune hepatitis in 12, chronic Hepatitis- B in 32, and chronic Hepatitis- C in 12 patients. The difference was significant (P< 0.05).

Graph I Various liver diseases

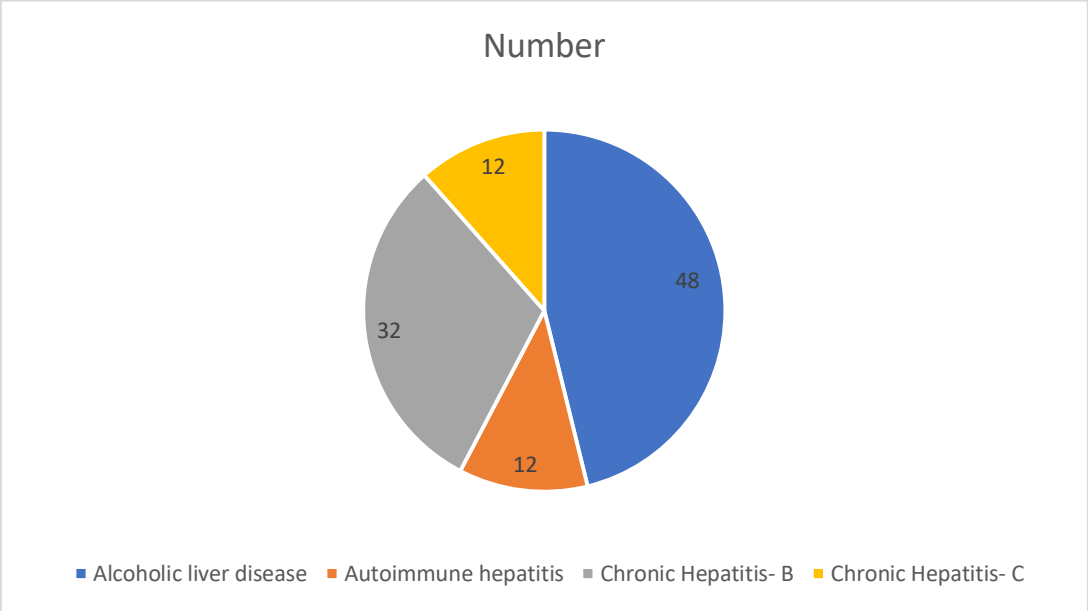

Table III Renal function profile in patients with chronic liver disease

Parameters	Variables	Number	P value
Serum albumin (gm/dl)	<3	62	0.04
	3-3.5	13	
	>3.5	29	
Serum globulin (gm/dl)	<2.5	76	0.05
	2.5-4	14	
	>4	14	
Serum urea (mg/dl)	15-40	86	0.02
	>40	18	
Creatinine (mg/dl)	1	89	0.01
	2	15	

Table II shows that serum albumin <3 gm/dl was seen in 62, 3-3.5 gm/dl in 13 and >3.5gm/dl in 29 patients. Serum globulin <2.5 gm/dl was seen in 76, 2.5-4 gm/dl in 14 and >4 gm/dl in 14 patients. Serum urea 15-40

mg/dl was seen in 86 and >40 mg/dl in 18 patients. Creatinine 1 mg/dl was seen in 89 and 2 mg/dl in 15 patients. The difference was significant (P< 0.05).

DISCUSSION

When discussing chronic liver disease (CLD), the term "renal failure" usually refers to hepatorenal syndrome (HRS). Hepatorenal syndrome is a dangerous side effect of advanced liver disease in which kidney function gradually and frequently rapidly deteriorates.[7] Changes in blood flow and circulation inside the kidneys and liver cause hepatorenal syndrome. Reduced effective blood volume and perfusion to the kidneys are the results of systemic vasodilation and increased resistance to blood flow through the liver (portal hypertension) in advanced liver disease.[8] Hepatorenal syndrome is divided into two categories. Type 1: Serum creatinine doubles to more than 2.5 mg/dL in less than two weeks, indicating rapidly progressing renal failure. Type 2: Serum creatinine levels may increase more gradually in this kind of renal failure, which progresses more slowly.[9] Hepatorenal syndrome patients usually exhibit oliguria (lower urine production), retention of fluids and salt, and decreasing renal function (increasing serum creatinine). Additionally, they could exhibit symptoms of advanced liver disease, such as hepatic encephalopathy (liver failure-related cognitive impairment) and ascites (fluid accumulation in the abdomen).[10] The present study was conducted to assess renal function in patients with chronic liver diseases.

We found that out of 104 patients, 64 were males and 40 were females.The prevalence and clinical progression of renal failure were examined by Fasolato S. et al.[11] There was ascites evidence in 233 patients (75.4%). A bacterial infection was identified in 104 patients (44.6%) who had both cirrhosis and ascites. 35 out of 104 patients (33.6%) had renal failure brought on by a bacterial infection. illnesses of the gastrointestinal system, biliary tract, and spontaneous bacterial peritonitis (SBP) were more likely to cause renal failure than other illnesses. Furthermore, only urinary tract infections (UTI), biliary or gastrointestinal tract infections, and SBP were responsible for the progressive form of renal failure. Only the MELD score (P = 0.001), the blood's peak neutrophil leukocyte count (P = 0.04), and the absence of infection resolution (P = 0.03) hadan independent predictive value on the occurrence of renal failure.

We found that various liver diseases were alcoholic liver disease in 48, autoimmune hepatitis in 12, chronic Hepatitis- B in 32, and chronic Hepatitis- C in 12 patients. We found that serum albumin <3 gm/dl was seen in 62, 3-3.5 gm/dl in 13 and >3.5gm/dl in 29 patients. Serum globulin <2.5 gm/dl was seen in 76, 2.5-4 gm/dl in 14 and >4 gm/dl in 14 patients. Serum urea 15-40 mg/dl was seen in 86 and >40 mg/dl in 18 patients. Creatinine 1 mg/dl was seen in 89 and 2 mg/dl in 15 patients. Al-Mamun A et al[12]assessed the renal functions in patients with liver cirrhosis with ascites. Sixty patients with uncomplicated cirrhosis of liver with ascites with normal renal function were included in this study. All patients were examined physically and biochemical. Main biochemical variables were serum bilirubin, serum albumin, serum creatinine and prothrombin time. Enrolled patients were categorized according to Child-Pugh class B and C. Serum creatinine levels were measured in all cases. Mean level of serum albumin, serum creatinine and prothrombin time among Child B and C classes of liver cirrhosis patients were 27.36 vs 26.84 gm/dl, 0.79 vs 0.93 mg/dl, 15.97 vs 19.26 seconds respectively. No statistically significant change in the serum creatinine level among Child B and C were noticed.

The shortcoming of the study is small sample size.

CONCLUSION

The severity of liver dysfunction and some renal dysfunction measures have been discovered to be significantly correlated by the authors.

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