

Original Research

Assessment of renal profile in liver cirrhosis patients

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ABSTRACT:

Background: Liver fibrosis results from the perpetuation of the normal wound healing response resulting in an abnormal continuation of fibrogenesis. Physicians involved in the care of patients with cirrhosis recognize that the development of renal dysfunction is associated with significant morbidity and mortality. Hence; the present study was undertaken for assessing renal profile in liver cirrhosis patients. **Materials & methods:** A total of 50 patients with cirrhosis of liver were enrolled. Physical examination was done to look for any evidence of renal involvement. Patients were graded according to Child Pugh Grade with Grade A indicating minimal severity while grade C indicating maximum severity. **Results:** Mean blood urea levels and serum creatinine levels were found to be 39.3 mg/dL and 1.5 mg/dL respectively. While assessing statistically, a significant positive correlation was observed between deranged renal profile and severity of liver cirrhosis. **Conclusion:** Renal profile is severely altered with increasing severity of cirrhosis of liver.

Key words: Liver, Cirrhosis, Renal

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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. Liver fibrosis results from the perpetuation of the normal wound healing response resulting in an abnormal continuation of fibrogenesis (connective tissue production and deposition). The etiology of cirrhosis can usually be identified by the patient's history combined with serologic and histologic evaluation. Alcoholic liver disease and hepatitis C are the most common causes in the Western world, while hepatitis B prevails in most parts of Asia and sub-Saharan Africa. After the identification of the hepatitis C virus in 1989 and of non-alcoholic steato-hepatitis (NASH) in obese and diabetic subjects, the diagnosis of

cirrhosis without an apparent cause (cryptogenic cirrhosis) is rarely made.¹⁻³

The clinical consequences of cirrhosis-related cardiovascular dysfunction are evident during and after Liver transplantation, because the hemodynamic system is further compromised by the effect of anesthesia, mechanical ventilation, and surgical clamping, with a significant reduction in the cardiac output. Physicians involved in the care of patients with cirrhosis recognize that the development of renal dysfunction is associated with significant morbidity and mortality. Special care should be given for the recognition of the acute or chronic character of renal disease; the causes of renal injury; the clinical conditions leading concomitantly to acute kidney injury (AKI) and liver dysfunction, and the prognostic factors associated with the progression of AKI.⁴⁻⁶

Hence; the present study was undertaken for assessing renal profile in liver cirrhosis patients.

MATERIALS & METHODS

The present study was undertaken for assessing renal profile in liver cirrhosis patients. A total of 50 patients with cirrhosis of liver were enrolled. Physical examination was concentrated to detect stigmata of chronic liver disease like clubbing in fingers and toes, central and peripheral cyanosis, presence of spider angioma, telangiectasia, jaundice, collateral veins in abdomen, ascites, level of consciousness, splenomegaly, dyspnoea, peripheral edema, palmar erythema and pleural effusion for underlying etiology. Second part of physical examination was done to look for any evidence of renal involvement. Patients were graded according to Child Pugh Grade with Grade A indicating minimal severity while grade C indicating maximum severity. All the results were compiled and analyzed by SPSS software. Chi- square test and one-way ANOVA were used for assessment of level of significance. P- value of less than 0.05 was taken as significant.

RESULTS

A total of 50 patients with cirrhosis of liver were analyzed. Mean age of the patients was 48.2 years. Out of 50 patients, 41 were males while the remaining were females. Alcohol was the most common etiologic factor responsible for cirrhosis. According to Child Pugh Grading, 12 patients were of grade A, 30 patients were of Grade B and 8 patients were of Grade C. Mean blood urea levels and serum creatinine levels were found to be 39.3 mg/dL and 1.5 mg/dL respectively. While assessing statistically, a significant positive correlation was observed between deranged renal profile and severity of liver cirrhosis.

Table 1: Descriptive results of renal profile

Renal profile	Mean	SD
Blood Urea (mg/dL)	39.3	12.4
Serum Creatinine (mg/dL)	1.5	0.6

Table 2: Correlation of patients with Blood urea and severity of liver cirrhosis

Variable	Value	Df	P- value
Pearson Chi-Square	10.23a	2	0.001 (Significant)
Likelihood Ratio	13.15	2	0.001 (Significant)

DISCUSSION

Hepato-Renal syndrome (HRS) is defined as the development of renal failure in patients with advanced liver failure (acute or chronic) in the absence of any identifiable causes of renal pathology.¹¹ HRS type-1 is a prevalently functional disease observed in patients with decompensated cirrhosis, which might remain in a chronic form with less severe renal impairment

(HRS-type 2), or progress to acute tubular necrosis and exaggerate systemic inflammatory response resulting in multiorgan failure. Recently, patients with cirrhosis who have decreased renal plasma flow with normal or low/normal glomerular filtration rate (GFR) before to develop HRS were defined to be in “Pre-HRS” renal disease. The appropriate clinical, biochemical and radiological markers with proven sensitivity for the diagnosis of renal disease in patients with cirrhosis have not been established yet.⁷⁻¹⁰ Hence; the present study was undertaken for assessing renal profile in liver cirrhosis patients.

Table 3: Correlation of patients with serum creatinine and severity of liver cirrhosis

Variable	Value	df	P- value
Pearson Chi-Square	10.635a	2	0.000 (Significant)
Likelihood Ratio	14.335	2	0.000 (Significant)

A total of 50 patients with cirrhosis of liver were analyzed. Mean age of the patients was 48.2 years. Out of 50 patients, 41 were males while the remaining were females. Alcohol was the most common etiologic factor responsible for cirrhosis. According to Child Pugh Grading, 12 patients were of grade A, 30 patients were of Grade B and 8 patients were of Grade C. Our results were in concordance with the results obtained by previous authors who also reported similar findings. According to Fede et al, approximately 20% of cirrhotic patients with diuretic-resistant ascites potentially develop HRS, while a prospective study by Ginès et al on 229 patients with cirrhosis found an 18% incidence of HRS at one year, rising to 39% at five years after initial diagnosis.⁸⁻¹⁰ HRS may also arise in patients with acute liver failure as shown by previous authors. They considered 101 patients with alcoholic hepatitis of whom 28 developed HRS after a four-week follow-up. In another study enrolling 263 cirrhotic patients with a follow-up of 41 ± 3 months after the onset of ascites, found prevalence rates of 2.6% and 5% for HRS types I and II respectively, with a cumulative probability of 11.4% at five years. The prevalence of HRS increases with liver disease progression, previous authors reported a rate of 48% in patients on the waiting list for liver transplant.¹⁰⁻¹⁴

In the present study, mean blood urea levels and serum creatinine levels were found to be 39.3 mg/dL and 1.5 mg/dL respectively. While assessing statistically, a significant positive correlation was observed between deranged renal profile and severity of liver cirrhosis. In another study the systemic hemodynamics, measured by Doppler-echocardiography, atrial natriuretic factor, plasma renin activity and plasma norepinephrine, was evaluated in 10 patients with cirrhosis and ascites and 10 healthy controls, after 2 h of standing and during

lying down for a further 2 h. Standing hemodynamic patterns of controls and patients with cirrhosis did not differ significantly. Thus, after 2 h in the supine position, patients with cirrhosis showed hyperdynamic circulation with increased cardiac index and heart rate and reduced systemic vascular resistance. Norepinephrine, plasma renin activity and atrial natriuretic factor were also elevated. The hyperdynamic circulation in advanced cirrhosis appears during or is enhanced by lying down. This finding suggested that this syndrome is, at least in part, attributable to excessive blood volume translocation towards the central area. However, the persistent activation of renin-angiotensin and sympathoadrenergic systems suggested that a concomitant reduced vascular sensitivity to vasoconstrictors concurs in its development.¹⁴

CONCLUSION

Renal profile is severely altered with increasing severity of cirrhosis of liver.

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