

## Original Article

### Renal profile assessment in liver cirrhosis patients

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#### ABSTRACT:

**Background:** The present study was conducted for assessing renal profile in patients with cirrhosis of liver. **Materials & methods:** 100 patients with presence of cirrhosis of liver were enrolled. Complete demographic and clinical details of all the patients was obtained. Categorization of patients was done according to Child-Pugh score (CPS) grading on the basis of severity of cirrhosis of liver as follows: Class A, Class B and Class C. Serum samples were obtained and renal profile was assessed using auto-analyser. **Results:** Mean age of the patients was 46.2 years. Mean blood urea levels was 39.14 mg/dL while mean serum creatinine levels was 1.35 mg/dL. Deranged renal profile was seen in 32 percent of the patients. Significant results were obtained while correlating deranged renal profile with severity grading of cirrhosis of liver i.e. CPS. **Conclusion:** Cirrhosis of liver is accompanied by deranged renal profile.

**Key words:** Renal, Cirrhosis, Liver

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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. There are, however, ways to prevent cirrhosis, because the diseases that most commonly lead to it progress slowly, and measures are available to prevent and treat them. Moreover, most cases of hepatocellular carcinoma (HCC) arise in a cirrhotic liver, so cirrhosis prevention is, in fact, also HCC prevention.<sup>1, 2</sup> The risk of developing HCC depends on the underlying disease: It is low, for example, when the underlying disease is autoimmune hepatitis (2.9% in 10 years), and high when the underlying disease is chronic hepatitis B with a viral burden greater than 107copies/mL (19.8% in 13 years). Aside from chronic viral hepatitis, fatty liver disease due to any of the very common underlying disorders (obesity, diabetes, alcohol abuse) commonly progresses to cirrhosis and thus merits both specialized medical treatment and close follow-up by the primary-care physician.<sup>3-5</sup>

The best known cause of azotemia in patients with decompensated liver cirrhosis is functional vascular renal insufficiency, which is an indirect consequence of severe peripheral arterial vasodilatation with coexistent hyperstimulation of powerful vasoconstrictor systems. Acute kidney injury (AKI) linked to this mechanism may assume a prerenal form, hepatorenal syndrome (HRS) or acute tubular necrosis (ATN). Differentiation among these three main causes of AKI has important prognostic and therapeutic implications. The diagnosis may be, however, difficult because the clinical presentations are similar and one form may convert to another. Patients with cirrhosis may also have chronic renal failure resulting from different mechanisms including renal hypoperfusion (type 2 HRS) and glomerulonephritis, related to immune or metabolic factors.<sup>6-9</sup> Hence; the present study was conducted for assessing renal profile in patients with cirrhosis of liver.

#### MATERIALS & METHODS

The present study was conducted for evaluating the renal profile in liver cirrhosis patients. 100 patients

with presence of cirrhosis of liver were enrolled. Complete demographic and clinical details of all the patients was obtained. Categorization of patients was done according to Child-Pugh score (CPS) grading on the basis of severity of cirrhosis of liver as follows: Class A, Class B and Class C. Serum samples were obtained and renal profile was assessed using auto-analyser. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software. P-value of less than 0.05 was taken as significant.

## RESULTS

Mean age of the patients was 46.2 years. Mean blood urea levels was 39.14 mg/dL while mean serum creatinine levels was 1.35 mg/dL. Deranged renal profile was seen in 32 percent of the patients. Significant results were obtained while correlating deranged renal profile with severity grading of cirrhosis of liver i.e. CPS.

**Table 1: Descriptive variables**

Variable	Mean	SD
Age (years)	46.2	13.7
Random Blood Sugar (mg/dL)	119.2	23.8
Body Mass Index (Kg/m <sup>2</sup> )	25.1	3.1
Blood Urea (mg/dL)	39.14	5.69
Serum Creatinine (mg/dL)	1.35	0.84

**Table 2: Incidence of deranged renal profile**

Parameter		Number	Percentage
Blood urea	Normal	68	68
	Raised	32	32
	Total	100	100
Serum creatinine	Normal	68	68
	Raised	32	32
	Total	100	100

**Table 3: Correlation of CPS and deranged renal profile**

Variable	CPS	
	r-value	p-value
Deranged renal profile	-1.002	0.001 (Significant)

## DISCUSSION

Renal failure is a frequent complication of patients with liver cirrhosis which is associated with increased mortality and morbidity, occurring in one of every 5 patients with cirrhosis. Renal dysfunction is detected in 20–50% of patients who are admitted to the hospital. It is one of the most serious complications of decompensated cirrhosis and leads to a rapid progress towards death or to liver transplantation. There are different causes of renal dysfunction. Besides acute kidney injury (AKI), chronic kidney failure induced by comorbidities like diabetes mellitus, arterial hypertension, or specific causes such as immunoglobulin A nephropathy or glomerulopathy is frequent; however, the prevalence

is still unknown. Outcome depends on the cause of AKI.<sup>8-10</sup> Hence; the present study was conducted for assessing renal profile in patients with cirrhosis of liver.

Mean age of the patients was 46.2 years. Mean blood urea levels was 39.14 mg/dL while mean serum creatinine levels was 1.35 mg/dL. Deranged renal profile was seen in 32 percent of the patients. Significant results were obtained while correlating deranged renal profile with severity grading of cirrhosis of liver i.e. CPS. In a meta-analysis including data from seven studies with 193 cirrhotic patients, Proulx et al found a mean bias of +13 mL/min per 1.73 m<sup>2</sup> between GFR estimated by the Creatinine Clearance method (CrCl) and GFR measured by the inulin clearance. The authors also found that the bias tended to be higher in patients with lower GFR with a mean overestimation of 18% in patients with GFR > 60 mL/min per 1.73 m<sup>2</sup> and of 49% in patients with GFR < 60 mL/min per 1.73 m<sup>2</sup>. The relationship between GFR level and overestimation could be explained by the secretion of creatinine by the tubule in patients with CKD. However, the importance of this overestimation does not seem to be related to the severity of cirrhosis. Some investigators have suggested that pharmacological inhibition of creatinine secretion by means of cimetidine could help to get more robust estimation of GFR with the CrCl.<sup>11-13</sup>

Hegde S et al studied the clinical and laboratory profile and evaluation of renal function in alcoholic liver disease. The mean age at presentation was 45.18 years. Fifty nine of them were male. Abdominal distension and jaundice were the most common presenting complaint. Fourteen (23%) patients presented with complications. Twenty six (43%) had severe anemia, 16 (27%) had thrombocytopenia and 23 (38.3%) had coagulopathy. The mean AST, ALT, bilirubin, ALP and albumin were 113.51 U/L, 62.16 U/L, 5.78 mg/dL, 211 U/L and 3.12 gm/dL respectively. On abdominal sonography fatty changes were seen in 20 (33%), Hepatomegaly in 20 (33%), Splenomegaly in 25 (41%) and PVD ≥13 mm in 11 (21%). The prevalence of renal dysfunction on the basis of reduced GFR was 30% which included all forms of renal failure in chronic liver disease. Serum creatinine level was increased in 20% of the patients. Blood urea was raised in 37%. The results of their study established most of the known facts about alcoholic liver disease in this part of the world.<sup>14</sup>

## CONCLUSION

Cirrhosis of liver is accompanied by deranged renal profile.

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