Original Research

Assessment of renal profile in liver cirrhosis patients

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ABSTRACT:
Background: The present study was conducted for evaluating renal profile in liver cirrhosis patients.**Materials & methods:** A total of 40 patients with presence of cirrhosis of liver were enrolled. Complete demographic and clinical details of all the patients was obtained. Patients with presence of any pre-existing co-morbid condition or pathology were excluded from the present study. Clinical examination of all the patients was carried out. Complete medical examination was done of all the patients. This was followed by grading according to Child-Pugh score. All the patients were recalled in the morning and renal profile was evaluated. **Results:**Deranged renal profile was seen in 57.5 percent of the patients with cirrhosis of liver. Among patients with Child Pugh score class A, B and C, 41.67 percent, 58.82 percent and 72.72 percent of the patients had deranged renal profile. Significant negative correlation was seen while correlating renal profile with severity of cirrhosis of liver.**Conclusion:**Renal profile of patients with cirrhosis of liver should be closely and regularly monitored for early identification of renal complications.
Key words: Cirrhosis, Renal, Liver

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INTRODUCTION

Cirrhosis is a substantial public health problem, accounting for approximately 770,000 deaths annually and, according to autopsy studies, affecting 4.5% to 9.5% of the global population.1 Pain management in patients with cirrhosis generates considerable misconception and apprehension among health care professionals. In patients with end-stage liver disease, adverse events from analgesics are frequent and can be severe. The most important and concerning complications include hepatic encephalopathy, acute renal failure, and gastrointestinal bleeding, which can lead to death in some patients.[1-3]

Cirrhosis is frequently indolent, asymptomatic and unsuspected until complications of liver disease present. A sizable proportion of these patients never come to clinical attention, and previously undiagnosed cirrhosis is still frequently found at autopsy. The diagnosis of asymptomatic cirrhosis is usually made when incidental screening tests such as liver transaminases or radiologic findings suggest liver disease and patients undergo further evaluation and liver biopsy.[4-6]The MELD score has shown that, besides markers of liver function, serum creatinine has a strong prognostic value in cirrhosis. However, even though creatinine has a good prognostic value, it is an inaccurate marker of renal function in cirrhosis. Creatinine and creatinine-based equations tend to overestimate glomerular filtration rate (GFR), and creatinine clearance from timed urine collection also overestimates GFR.[7-10]Hence; the present study was conducted for evaluating renal profile in liver cirrhosis patients.

MATERIALS & METHODS

The present study was conducted for evaluating renal profile in liver cirrhosis patients. A total of 40 patients with presence of cirrhosis of liver were enrolled. Complete demographic and clinical details of all the patients was obtained. Patients with presence of any pre-existing co-morbid condition or pathology were excluded from the present study. Clinical examination of all the patients was carried out. Complete medical examination was done of all the patients. This was

followed by grading according to Child-Pugh score. All the patients were recalled in the morning and renal profile was evaluated. All the results were recorded in Microsoft excel sheet and was subjected to statistical analysis using SPSS Software. Chi-square test was used for evaluation of level of significance.

RESULTS
A total of 40 patients with cirrhosis of liver were enrolled. Mean age of the patients was 51.8 years. Out of 40 patients, 32 were males and 8 were females. Out of 40 patients, 29 patients were of rural residence while the remaining 11 patients were of urban residence. Deranged renal profile was seen in 57.5 percent of the patients with cirrhosis of liver. Among patients with Child Pugh score class A, B and C, 41.67 percent, 58.82 percent and 72.72 percent of the patients had deranged renal profile. Significant negative correlation was seen while correlating renal profile with severity of cirrhosis of liver.

Table 1: Demographic data

Variable		Number	Percentage
Mean age (years)		51.8	
Gender	Males	32	80
	Females	8	20
Residence	Rural	29	72.5
	Urban	11	28.5

Table 2: Correlation of serum renal profile as assessed by abnormal serum creatinine and blood urea levels with severity of cirrhosis of liver

Child Pugh score grading	Renal profile					
	Deranged		Normal		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Class A	5	41.67	7	58.33	12	100
Class B	10	58.82	7	41.18	17	100
Class C	8	72.72	3	27.28	11	100
Total	23	57.5	17	42.5	40	100
p-value	0.0021 (Significant)					

DISCUSSION
Renal dysfunction is common in patients with liver cirrhosis, which occurs about 19% of hospitalized patients with cirrhosis, due to several reasons as follows: cirrhotic patients tend to be intravascular volume depletion state due to gastrointestinal bleeding, diuretics use, and lactulose-induced diarrhea. Furthermore, these patients are often exposed to nephrotoxic agents such as nonsteroidal anti-inflammatory drugs, contrast agents, and aminoglycoside. In addition, renal dysfunction usually progresses to hepatorenal syndrome (HRS) with progression of liver cirrhosis and portal hypertension. Patients with cirrhosis who develop HRS have very high mortality, and even with terlipressin and albumin only 40% respond and survive for 1 month after treatment. Therefore, because renal dysfunction is directly linked to the mortality rate of cirrhotic patients, a precise assessment of renal function is required to estimate the prognosis and determine the correct therapeutic intervention and response.[11-13]Hence; the present study was conducted for evaluating renal profile in liver cirrhosis patients.
A total of 40 patients with cirrhosis of liver were enrolled. Mean age of the patients was 51.8 years. Out of 40 patients, 32 were males and 8 were females. Out of 40 patients, 29 patients were of rural residence while the remaining 11 patients were of urban residence. Deranged renal profile was seen in 57.5 percent of the patients with cirrhosis of liver.The

reliance on serum creatinine concentration is pivotal to the problems with estimated GFR and the gulf between the original MDRD study population and patients with chronic liver disease. This has been highlighted by a meta-analysis that reviewed creatinine clearance and estimated GFR and demonstrated a mean overestimation of 18.7 ml/min/1.73 m^2. Timed urine creatinine clearance also performs poorly, significantly overestimating GFR in patients with chronic liver disease, particularly at the lower range of GFR measurements.[14, 15]Chen YW et al investigated the association between renal function and cirrhosis in a broader population. 3,857 patients were enrolled after the exclusion of patients with incomplete data. The most recent demographic data after the latest laboratory measurements obtained at outpatient or inpatient department were collected. In predicting renal function, estimated glomerular filtration rate (eGFR) was found to be dissociated from Child-Pugh points, different causes of cirrhosis, and presence of diabetes. In terms of predicting in-hospital mortality, the sensitivity (60-82%) and specificity (70-90%) of the model for end-stage liver disease (MELD) score increased with the decrease in eGFR. However, the blood urea nitrogen (BUN)/creatinine ratio was better than the MELD score in patients with normal eGFR. In contrast to prerenal causes of kidney injury, the underlying causes of cirrhosis or diabetes had relatively minor effects on renal function in cirrhotic patients. The

BUN/creatinine ratio was a better index than the MELD score in predicting in-hospital mortality in cirrhotic patients with normal renal function.[16]

In the present study, among patients with Child Pugh score class A, B and C, 41.67 percent, 58.82 percent and 72.72 percent of the patients had deranged renal profile. Significant negative correlation was seen while correlating renal profile with severity of cirrhosis of liver. Kim DJ et al evaluated the clinical significance of Cystatin C (CysC) in patients with cirrhotic ascites and normal Cr level. Eighty-nine patients with cirrhotic ascites were enrolled in the study. Forty-seven (52.8%) and 42 (47.2%) patients were in Child-Pugh grade B and C, respectively. Serum Cr and CysC levels and GFR were 0.8±0.2 mg/dL, 1.1±0.3 mg/L, and 73.4±25.5 mL/min, respectively. Significant and severe renal impairment were noted in 28 (31.5%) and 2 (2.2%) patients, respectively. GFR was well correlated with serum Cr, CysC, and e-GFRMDRD, while it was not correlated with e-GFRC&G. In multivariate analysis, only CysC was significantly correlated with GFR. Serum CysC level was the only independent predictor for significant renal impairment. Significant renal dysfunction was not rare in patients with cirrhotic ascites, even their serum Cr level is normal. Serum CysC is a useful marker for detecting significant renal dysfunction in these patients.[17]Agarwal M et al assessed the renal profile in liver cirrhosis patients. The study included investigation of renal parameters in liver cirrhosis patients. A total of 20 liver cirrhosis patients with mean age of 48.2 years were included in the present study. All the patients were graded on the basis of severity according to Child Pugh Score (CPS) grading system. Alcohol was the most common etiologic agent encountered in the present study. Significant correlation was observed in between renal parameters and severity of patients with liver cirrhosis. Significant correlation exists in between renal profile and severity of diseases in patients with liver cirrhosis.[18]

CONCLUSION
Renal profile of patients with cirrhosis of liver should be closely and regularly monitored for early identification of renal complications.

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