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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 subjects 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

Liver cirrhosis (LC) is a frequent disease with various causes and a severe prognosis. Thus, after a first episode of decompensation, the 5-year mortality in the absence of liver transplantation (LT) is as high as 85%.[1] Renal impairment, whether acute or chronic, is a highly prevalent comorbid condition in cirrhotic patients, which is associated with a poor prognosis.[2] In this clinical context, acute kidney injury (AKI)[3] is frequent and often of functional origin (around 70%). However, AKI of other origin are not rare, mainly secondary to hepato-renal syndrome (HRS), drug nephrotoxicity or severe sepsis.[4]Chronic Kidney Disease (CKD) is not infrequent as well and can be of various origins (glomerulonephritis, diabetic nephropathy or hypertensive nephrosclerosis). Although several studies assessed the frequency of renal impairment in patients with cirrhosis, it is not always clear whether it was acute or chronic kidney disease. About the prevalence of CKD, several studies suggest a prevalence of CKD stage 3 or higher (i.e., estimated Glomerular Filtration Rate (eGFR) < 60 mL/min per 1.73 m2) between 20% and 40%. In a study including more than 1400 cirrhotic patients who underwent an evaluation of renal function by a reference method in pre LT clinical assessment, 11.3% had a GFR below 40 mL/min.[5]

The detrimental clinical impact of the existence of either CKD and/or AKI on the outcomes of cirrhotic patients has been highlighted by several studies. About the impact on mortality, a recent systematic review summarized results from 74 studies that assessed the effect of renal failure on early mortality in cirrhotic patients and found an increased risk of death with a pooled odds ratio of 7.6. Whether the renal failure was acute or chronic in some studies included in the systematic review was not clear but an increased risk of death was found in studies in which renal failure was defined as an acute renal failure and in those which renal failure was not clearly defined as chronic or acute (pooled odds ratio of 6.38 and 7.39 respectively). Although analysis in this study found significant heterogeneity (consequence of the heterogeneous definition of the renal failure used in some studies) the majority of the studies found an increased odds ratio, which strongly suggests a negative impact of impaired renal function, either acute or chronic, on the survival of cirrhotic patients.[6] Hence; the present study was conducted for assessing renal profile in patients with cirrhosis of liver.

MATERIALS & METHODS

The goal of the current study was to assess patients with liver cirrhosis' renal profiles. There were 100 patients enrolled who had liver cirrhosis. All patients' complete demographic and clinical information was gathered. Patients were divided into three categories based on the severity of their liver cirrhosis using the Child-Pugh score (CPS): Class A, Class B, and Class C. The renal profile was evaluated using an auto-analyser after serum samples were collected. The results were all entered into a Microsoft Excel spreadsheet and statistical analysis was performed

using SPSS software. P-values lower than 0.05 were considered significant.

RESULTS

Mean age of the patients was 48.3 years. Mean blood urea levels was 42.19 mg/dL while mean serum creatinine levels was 1.97 mg/dL. Deranged renal profile was seen in 41 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)	48.3	14.2
Random Blood Sugar (mg/dL)	119.6	24.7
Body Mass Index (Kg/m^2)	26.3	4.0
Blood Urea (mg/dL)	42.19	5.96
Serum Creatinine (mg/dL)	1.97	1.1

Table 2: Incidence of deranged renal profile

Parameter		Number	Percentage
Blood urea	**Normal**	59	59
	Raised	41	41
	Total	100	100
Serum creatinine	**Normal**	59	59
	Raised	41	41
	Total	100	100

Table 3: Corelation of CPS and deranged renal profile

Variable	CPS	
	r-value	p-value
Deranged renal profile	-1.004	0.002 (Significant)

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 (HRS).[7] The first detailed description of HRS was made by Hecker and Sherlock[8] in 1956. These authors reported 9 patients with cirrhosis or acute hepatitis who developed renal failure without associated proteinuria and with very low urinary sodium excretion. On autopsy, these kidneys showed normal histology. It was later shown that kidneys from patients with HRS regain their function when transplanted into patients without cirrhosis,[9] and that HRS can be reversible following liver transplantation.[10] Hence; the present study was conducted for assessing renal profile in patients with cirrhosis of liver.

Mean age of the patients was 48.3 years. Mean blood urea levels was 42.19 mg/dL while mean serum creatinine levels was 1.97 mg/dL. Deranged renal profile was seen in 41 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 study carried out by Gines A et al[7], 18% of cirrhotic subjects having ascites developed type 1 hepatorenal syndrome at 1 year and 39% at 5 years. The predictive factors for the development of HRS include a low serum sodium, high plasma rennin, and absence of hepatomegaly.Until the recent development of effective therapies, the median survival following the development of type 1 HRS was 1.7 weeks, with only 10% of patients surviving more than 10 weeks.

In another study conducted by Arroyo V et al[11], the survival rate in type 2 hepatorenal syndromewas 50% at 5 months and 20% at 1 year.

CONCLUSION

Cirrhosis of liver is accompanied by deranged renal profile.

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