

ORIGINAL RESEARCH

Assessment of correlation of deranged renal profile with severity of cirrhosis of liver

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ABSTRACT**Background:** To assess of correlation of deranged renal profile with severity of cirrhosis of liver **Materials & methods:** A total of 100 patients were enrolled. Complete demographic details were obtained. Ultrasonography with Doppler study was done for all patients to find evidence for portal hypertension, size and echo-texture of liver and presence of ascites. Liver disease was staged according to Child-Pugh's grading. All the results were compiled and analyzed by SPSS software.**Results:** Deranged renal profile was seen in 29 percent of the patients. While assessing the correlation of deranged renal with severity grading of cirrhosis of liver, significant results were obtained. **Conclusion:** Renal profile is significantly affected in liver cirrhosis patients.**Key words:** Cirrhosis, Renal profile

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INTRODUCTION

Liver is an interesting organ with high regenerative capacity and complex functions. Liver receives all exiting circulation from the small and most of the large intestine, as well as spleen and pancreas, through the portal vein. Its "strategic" location in relation to the food supply via the portal vein, and the unique gene- and protein-expression patterns of hepatocytes (the main functional cells of the liver) allow it to function as a biochemical defense against toxic chemicals entering through the food and as a re-processor of absorbed food ingredients.¹⁻³

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). Fibrosis progresses at variable rates depending on the cause of liver disease, environmental and host factors.⁴

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.⁵

Hyperdynamic syndrome is a well-known clinical condition found in patients with cirrhosis and portal hypertension. In addition to the hyperdynamic circulation, impaired ventricular contractility in response to stimuli is also described in cirrhotic patients. 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.⁶

Physicians involved in the care of patients with cirrhosis recognize that the development of renal dysfunction is associated with significant morbidity and mortality. Patients with cirrhosis can develop three main forms of acute renal failure and may suffer also from underline chronic kidney disease. Hepatorenal syndrome 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.⁵⁻⁷ Hence; the present study was conducted for assessing the correlation of deranged renal profile with severity of cirrhosis of liver.

MATERIALS & METHODS

The present study was conducted for assessing the correlation of deranged renal profile with severity of cirrhosis of liver. A total of 100 patients were enrolled. Complete demographic details were obtained. 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. Physical examination was done to look for any evidence of cardiac or renal involvement in each and every patient. Ultrasonography with Doppler study was done for all patients to find evidence for portal hypertension, size and echo-texture of liver and presence of ascites. Liver disease

was staged according to Child-Pugh's grading. All the results were compiled and analyzed by SPSS software.

RESULTS

A total of 100 patients were enrolled. Mean age of the patients was 46.5 years. Majority proportion of the patients were males (76 percent). In 55 percent of the patients, etiologic profile cirrhosis was alcohol. According to Child-Pugh score grading, 34 percent and 41 percent of the patients were of grade A and grade B respectively. Raised blood urea levels and serum creatinine levels was seen in 29 percent of the patients with cirrhosis of liver. Hence; deranged renal profile was seen in 29 percent of the patients. While assessing the correlation of deranged renal with severity grading of cirrhosis of liver, significant results were obtained.

Table 1: Etiologic profile of liver cirrhosis

Cause of cirrhosis	Frequency	Percentage
Alcohol	55	55
NASH (Non-alcoholic Steatohepatitis)	18	18
Hepatitis C	13	13
Others	14	14
Total	100	100

Table 2: Distribution of patients according to severity grading of child-Pugh score

Child-Pugh score	Frequency	Percentage
Grade A	34	34
Grade B	41	41
Grade C	25	25
Total	100	100

Table 3: Distribution of subjects according to renal parameters

Parameter		Frequency	Percentage
Blood urea	Normal (<24 mg/dL)	71	71
	Raised(>24 mg/dL)	29	29
	Total	100	100
Serum creatinine	Normal(<1.3 mg/dL)	71	71
	Raised(>1.3 mg/dL)	29	29
	Total	100	100

Table 4: Correlation of deranged renal profile and severity grading of liver cirrhosis

Child-Pugh score grading	Deranged renal profile		
	Present	Absent	Total
Grade A	5	29	34
Grade B	8	33	41
Grade C	16	9	25
Total	29	71	100
Chi-square value	23.124		
p- value	0.001 (Significant)		

DISCUSSION

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%. Renal impairment, whether acute or chronic, is a highly prevalent comorbid condition in cirrhotic

patients, which is associated with a poor prognosis. Acute kidney injury (AKI) is frequent and often of functional origin (around 70%). However, AKI of other origin are not rare, mainly secondary to hepatorenal syndrome (HRS), drug nephrotoxicity or severe sepsis. Chronic Kidney Disease (CKD) is not infrequent as well and can be of various origins

(glomerulonephritis, diabetic nephropathy or hypertensive nephrosclerosis).⁸⁻¹⁰ Hence; the present study was conducted for assessing the correlation of deranged renal profile with severity of cirrhosis of liver.

A total of 100 patients were enrolled. Mean age of the patients was 46.5 years. Majority proportion of the patients were males (76 percent). In 55 percent of the patients, etiologic profile cirrhosis was alcohol. According to Child-Pugh score grading, 34 percent and 41 percent of the patients were of grade A and grade B respectively. Raised blood urea levels and serum creatinine levels was seen in 29 percent of the patients with cirrhosis of liver. Contreras-Omaña R et al, in a previous study, evaluated the initial renal function in patients with liver cirrhosis. Observational, cross-sectional, retrospective and analytical study, selecting 186 files with a diagnosis of liver cirrhosis evaluating renal function (MDRD-6, 24-hour urine creatinine clearance, KDIGO / CKD and Serum cystatin C) at the initial check-up appointment. 186 files were analyzed, 53.2% (n = 99) women; mean age of 63 years and a mean time since the diagnosis of cirrhosis of 2.2 years. 117 patients (63%) Child Pugh A. The main etiology of cirrhosis was metabolic fatty liver in 110 patients (53.8%). At the time of the first visit, 140 patients (75.3%) had serum creatinine levels between 1 and 2 mg/dl, with a mean of 1.3. Regarding 24-hour urine creatinine clearance, 93 patients (50%) showed levels greater than 90ml / min, and 47 (25.2%) had levels less than 45ml / min. When measuring filtration rate by MDRD-6, 86 (46.4%) showed levels higher than 90ml / min, and 40 (21.5%) had levels lower than 45ml / min. They found that up to 48% of patients with liver cirrhosis present some degree of kidney injury at the time of their first consultation with Hepatology.¹¹

In the present study, deranged renal profile was seen in 29 percent of the patients. While assessing the correlation of deranged renal with severity grading of cirrhosis of liver, significant results were obtained. Our study is in agreement with the Rocco Orlando et al. Their study showed that serum cystatin C had a good diagnostic sensitivity (88%) when compared to serum creatinine (23%) to detect renal dysfunction. In cirrhotic patients. Newman et al reported similar results that not only serum cystatin C is a better marker than serum creatinine and that it is more sensitive to detect smaller changes in GFR. In a meta analyses by Vikas Dharnika et al, Cystatin C has got a greater correlation coefficient than creatinine and the correlation of GFR with the reciprocal of Cystatin C increases as the renal function deteriorates. In our study measured creatinine clearance by timed urine collections was better than serum creatinine and estimated GFR by Cockcroft – Gault method but less accurate than cystatin based formulas. The study by Proulx et al showed that though Inulin clearance is the most accurate method for estimating renal function, it is practically impossible in resource limited settings

and though calculated GFR by timed urine collection methods overestimates true GFR it is preferable to that of Cockcroft Gault formula.¹²⁻¹⁵

CONCLUSION

Renal profile is significantly affected in liver cirrhosis patients.

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