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ORIGINAL ARTICLE

Renal Profile in Liver Cirrhosis Patients: An Observational Study

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***ABSTRACT*:**
Background: Cirrhosis is an advanced stage of liver fibrosis that is accompanied by distortion of the hepatic vasculature. Physicians involved in the care of patients with cirrhosis recognize that the development of renal dysfunction is associated with significant morbidity and mortality.Hence; we planned the present study to assess to correlation of renal manifestation with severity of disease in liver cirrhosis patients. **Materials & methods:** We planned the present study to assess correlation of renal manifestation with severity of disease in liver cirrhosis patients. A total of 30 patients with cirrhosis of liver were included in the present study. Complete clinical examination of all the patients was done. Detailed history of all the patients was obtained. Hematological tests like hemoglobin, white blood cell count, differential count, platelet count, prothrombin time, and erythrocyte sedimentation rate, along with complete renal and hepatic profile in all the patients was done. Child pugh score grading system was used for grading the severity of liver cirrhosis. All the results were compiled and analyzed by SPSS software. **Results:** Alcohol was the most common etiologic factor seen to be present in 60 percent of the patients of the present study. 19 patients out of the total 30 patients were graded as 'C' according to the child pugh score grading system. **Conclusion:** Renal profile is significantly associated with severity of diseases in liver cirrhosis patients.
Key words: Liver cirrhosis, renal profile

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INTRODUCTION

Liver fibrosis occurs due to perpetuation of the normal wound healing response leading to an abnormal continuation of fibrogenesis. Fibrosis advances at differential rates depending on the etiology of liver disease, environmental and host factors.[1-3] Cirrhosis is an advanced stage of liver fibrosis that is accompanied by distortion of the hepatic vasculature. It causes shunting of the portal and arterial blood supply directly into the hepatic outflow, compromising exchange between hepatic sinusoids and the adjacent liver parenchyma, i.e., hepatocytes[4,5] Various rhythm disturbances have been described in cirrhotic patients over the years including atrial fibrillation, atrial flutter, atrial and ventricular ectopy and ventricular arrythmias.Physicians involved in the care of patients with cirrhosis recognize that the development of renal dysfunction is associated with significant morbidity and mortality.[6,7]

Hence; we planned the present study to assess to correlation of renal manifestation with severity of disease in liver cirrhosis patients.

MATERIALS & METHODS

We planned the present study in the department of general medicine of the medical institute. It included assessment of correlation of renal manifestation with severity of disease in liver cirrhosis patients. We obtained ethical clearance from the institutional ethical committee and also obtained written consent from all the patients after explaining in detail the entire research protocol.

A total of 30 patients with cirrhosis of liver were included in the present study.Exclusion Criteria for the present study included:

- Patients of acute liver pathology
- Patients with chronic renal failure.
- Patients having hepatocellular carcinoma/ any malignancy.
- Patients with any other systemic illness

Complete clinical examination of all the patients was done. Detailed history of all the patients was obtained. Hematological tests like hemoglobin, white blood cell count, differential count, platelet count, prothrombin time, and erythrocyte sedimentation rate, along with complete renal and hepatic profile in all the patients was done. Child pugh score grading system was used for grading the severity of liver cirrhosis.[8] Patients were graded as A, B or C according to child pugh score, with 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 30 liver cirrhosis patients were included in the present study. Mean age of the patients of the present study was 52.4 years. 25 patients out of the total 30 patients were males while the remaining were females. Alcohol was the most common etiologic factor seen to be present in 60 percent of the patients of the present study.19 patients out of the total 30 patients were graded as 'C' according to the child pugh score grading system. We observed significant correlation of the renal profile with severity of diseases in patients with cirrhosis of liver.

Table 1: Etiologic profile of the liver cirrhosis patients

Etiology	**Number of patients**
Alcohol	18
NASH	5
Hepatitis C	4
Others	3
Total	30

NASH: Nonalcoholicsteatohepatitis

Table 2: Distribution of subjects according to Child Pugh Score

Child Pugh score grading	Number of patients
A	7
B	19
C	4
Total	30

Table 3: Distribution of patients with Blood urea and severity of liver cirrhosis

Blood urea	Child Pugh Score			Total	P- value
	A	B	C		
Normal	6	15	3	24	0.00
Raised	1	4	1	6	
Total	7	19	4	30	

*: Significant

Table 4: Distribution of patients with Serum creatinine and severity of liver cirrhosis

Serum creatinine	Child Pugh Score			Total	P- value
	A	B	C		
Normal	6	15	3	24	0.00
Raised	1	4	1	6	
Total	7	19	4	30	

*: Significant

DISCUSSION

In the present study, we observed significant correlation of the renal profile with severity of diseases in patients with cirrhosis of liver. Das N et al assessed the renal function in chronic liver diseases and find out the association of alteration of renal function with gradation of liver disease. (assessed by child-pugh criteria) and to find out the association of alteration of renal function among the cases of chronic liver disease of different aetiology. The patients were interviewed with a pre-designed and pre-tested schedule, examined clinically, followed by some laboratory investigations relevant to diagnose the aetiology of chronic liver disease, and to assess the severity of liver and renal dysfunction. Data was analysed by standard statistical method. Eighty six percent of the patients were male and the mean age of study population was 43.58 y, 68% patients suffered from alcoholic liver disease, followed by 14% patients had chronic Hepatitis-B, 10% patients developed acute kidney injury, 20% had hepato renal syndrome and 14% had IgA deposition. Their study found significant association between severity of liver dysfunction and certain parameters of renal dysfunction.[8]

Abbasi A et al determined the association of serum cholesterol levels with Child-Pugh class in patients with decompensated chronic liver disease due to viral hepatitis. Consecutive patients attending outpatient department or admitted in medical unit III were eligible if they had a diagnosis of cirrhosis secondary to viral hepatitis. Patients were excluded if alcoholic, diabetic, hypertensive, or with non-alcoholic fatty liver disease, autoimmune, metabolic, cardiovascular, cerebrovascular or kidney diseases and recent use of lipid-regulating drugs. Serum lipid profile was determined after an overnight fast of 12 hours. On the basis of serum total cholesterol, patients were divided into four groups; Group I with serum total cholesterol 100 mg/dl, Group II with level of 101-150 mg/dl, Group III with level of 151-200 mg/dl and Group IV with serum total cholesterol level of > 200 mg/dl. Serum cholesterol (total) and triglycerides had significant association with Child-Pugh class ($p = 0.0001$ and $p = 0.004$ respectively) suggesting that as severity of liver dysfunction increases; serum cholesterol and triglycerides levels decrease. Results also revealed that males were significantly more hypocholesterolemic than females. Hypocholesterolemia is a common finding in decompensated chronic liver disease and has got significant association with Child-Pugh class.[9]

Cholongitas E et al reviewed the accuracy of the surrogate markers for the assessment of renal function, i.e. glomerular filtration rate, particularly in patients with cirrhosis. They reviewed the available literature in

PubMed regarding the markers for GFR evaluation and the factors which affect their accuracy in cirrhosis. Although creatinine is widely available, it is an unreliable marker of glomerular filtration rate, particularly in patients with cirrhosis. Clearance of exogenous markers is considered the 'gold standard', but this methodology has many drawbacks, particularly poor applicability. Several mathematical formulae for estimated glomerular filtration rate are used to overcome some of these limitations: Cockcroft-Gault and Modification of Diet in Renal Disease formulae are the most frequently applied, but they are based on serum creatinine. Due to the inaccuracy of serum creatinine and its derived formulae in estimating glomerular filtration rate, alternative serum markers, such as cystatin C, and new formulae are desirable.[10]

Francoz C et al reassessed correlations between creatinine-based equations and measured glomerular filtration rate (GFR) and investigated the impact of inaccuracies on the Model for End-Stage Liver Disease (MELD) score. GFR was measured using iohexol clearance and calculated with creatinine-based equations in 157 patients with cirrhosis during pretransplant evaluation. We compared the accuracy of creatinine to that of true GFR in a prognostic score also including bilirubin and the international normalized ratio. In patients with creatinine below 1 mg/dL, true GFR ranged from 34-163 mL/minute/1.73 m(2). Cockcroft and Modification of Diet in Renal Disease (MDRD) significantly overestimated true GFR. On multivariate analysis, younger age and ascites were significantly correlated with the overestimation of true GFR by 20% or more. Body mass index was an independent risk factor of overestimation of GFR with Cockcroft but not with MDRD. The accuracy of a prognostic score combining bilirubin, international normalized ratio, and true GFR was superior to that of MELD, whether creatinine was rounded to 1 mg/dL when lower than 1 mg/dL or not (c-statistic of 0.8 versus 0.75 and 0.73, respectively). Creatinine-based formulas overestimate true GFR, especially in patients younger than 50 years or with ascites. In patients with serum creatinine below 1 mg/dL, the spectrum of true GFR is large. True GFR seems to have a better prognostic value than creatinine and creatinine-based equations. Specific equations are needed in patients with cirrhosis to improve prognostic scores.[11]

CONCLUSION

From the above results, we conclude that renal profile is significantly associated with severity of diseases in liver cirrhosis patients.

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