Original Research Article

A Hospital Based Prospective Study for Analysis of Renal and Cardiac Profile in Liver Cirrhosis Patients

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Abstract

Background: Liver cirrhosis is the final common pathological pathway of liver damage arising from a wide variety of chronic liver diseases. Hence; the present study was conducted with the aim of assessing the Renal and Cardiac Profile in Liver Cirrhosis Patients. **Materials & Methods:** A total of 40 patients with confirmed diagnosis of liver cirrhosis were enrolled. Complete demographic and clinical profile of all the patients was recorded. Severity of the liver cirrhosis was graded according to Child-Pugh score grading system. Blood samples were obtained and renal profile was analyzed. Physical examination was done to look for any evidence of cardiac or renal involvement. All the results were recoded and analyzed by SPSS software. **Results:** 50 percent of the patients were of child-Pugh grade B. Renal profile was raised in 32.5 percent of the patients. Diastolic dysfunction was present in 55 percent of the patients while left atrial enlargement was seen in 47.5 percent of the patients. Overall, Cardiac dysfunction was seen in 60 percent of the patients.**Conclusion:** Significant deterioration of renal and cardiac functions occurs in liver cirrhosis patients.

Keywords: Liver Cirrhosis, Cardiac profile, Renal profile.

Introduction

Liver cirrhosis is the final common pathological pathway of liver damage arising from a wide variety of chronic liver diseases. The etiology of cirrhosis varies geographically, with alcoholism, chronic hepatitis C virus infection, and nonalcoholic fatty lives disease (NAFLD) being the most common causes in western countries, whereas chronic hepatitis B is the primary cause of liver cirrhosis in the Asia-Pacific region. Liver cirrhosis has many other causes, include inherited diseases such as hemochromatosis and Wilson's disease, primary biliary cirrhosis, primary sclerosing cholangitis, and autoimmune hepatitis. Some cases are idiopathic or cryptogenic. In recent decades, NAFLD has become a leading cause of chronic liver disease in Western countries such as the United States, with a prevalence of as high as 30% in the general population. Thus, NAFLD has attracted extensive attention as an important cause of chronic liver diseases[1-3].

Chronic liver disease (CLD) is a progressive deterioration of liver functions for more than six months, which includes synthesis of clotting factors, other proteins, detoxification of harmful products of metabolism, and excretion of bile. CLD is a continuous process of inflammation, destruction, and regeneration of liver parenchyma, which leads to fibrosis and cirrhosis. The spectrum of etiologies is broad for chronic liver disease, which includes toxins, alcohol abuse for a prolonged time, infection, autoimmune diseases, genetic and metabolic disorders. Cirrhosis is a final stage of chronic liver disease that results in disruption of liver architecture, the formation of widespread nodules, vascular reorganization, neo-angiogenesis, and deposition of an extracellular matrix. The underlying mechanism of fibrosis and cirrhosis at a cellular level is the recruitment of stellate cells and fibroblasts, resulting in fibrosis, while parenchymal regeneration relies on hepatic stem cells[4-6]. Hence; the present study was conducted with the aim of assessing the Renal and Cardiac Profile in Liver Cirrhosis Patients.

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Materials & Methods

The present study was conducted in the Department of General Medicine, S. K. Government Medical College, Sikar, Rajasthan, India, with the aim of assessing the Renal and Cardiac Profile in Liver Cirrhosis Patients. A total of 40 patients with confirmed diagnosis of liver cirrhosis were enrolled. Complete demographic and clinical profile of all the patients was recorded. Severity of the liver cirrhosis was graded according to Child-Pugh score grading system. This grading system utilizes certain biochemical, clinical and diagnostic parameters and grades liver cirrhosis cacses as follow: minimal severity cases are graded as Grade A, moderate as Grade B and severe as grade C. Blood samples were obtained and renal profile was analyzed. 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. Second part of physical examination was done to look for any evidence of cardiac or renal involvement. All the results were recoded and analyzed by SPSS software. Univariate regression curve, chi-square test and student t test were used for evaluation of level of significance.

Results

A total of 40 subjects with liver cirrhosis were enrolled. Mean age of the patients was 48.3 years. Among these 40 patients, 33 patients were males while the remaining were females. Alcohol was the etiologic factor in 26 patients (65%). 50 percent of the patients were of child-Pugh grade B. Renal profile was raised in 32.5 percent of the patients. Diastolic dysfunction was present in 55 percent of the patients while left atrial enlargement was seen in 47.5 percent of the patients. Overall, Cardiac dysfunction was seen in 60 percent of the patients.

Table 1: Renal profile

Renal profile		Number	Percentage
Blood urea	Normal	27	67.5
	Raised	13	32.5
Serum creatinine	Normal	27	67.5
	Raised	13	32.5

Table 2: Cardiac profile

Cardiac profile		Number	Percentage
Diastolic dysfunction	Absent	22	55
	Present	18	45
Left atrial enlargement	Present	19	47.5
	Absent	21	52.5

Table 3: Distribution of subjects according to Child Pugh Score

Child Pugh Score	Number	Percentage
A	11	27.5
B	20	50
C	9	22.5
Total	40	100

Discussion

Liver cirrhosis (LC) is a worldwide health problem that is associated with various complications and high mortality. Although, in the past four decades, the incidence of hepatitis B continuously decreased and a promising cure for hepatitis C was developed, LC remains a formidable challenge in clinical practice due to the ever-increasing incidences of alcoholic and non-alcoholic fatty liver diseases, autoimmune-related liver disease and drug-induced liver disease[7-10]. Hence; the present study was conducted with the aim of assessing the Renal and Cardiac Profile in Liver Cirrhosis Patients.

In the present study, a total of 40 subjects with liver cirrhosis were enrolled. Mean age of the patients was 48.3 years. Among these 40 patients, 33 patients were males while the remaining were females. Alcohol was the etiologic factor in 26 patients (65%). 50 percent of the patients were of child-Pugh grade B. Renal profile was raised in 32.5 percent of the patients. Our results were in concordance with the results obtained by Das N et al who also reported similar findings. In their study, authors assessed the renal function in chronic liver diseases and find out the association of alteration of renal function with gradation of liver disease. 50 admitted patients of chronic liver disease after considering the exclusion criteria were analyzed. 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. The distribution of serum urea and creatinine across the categories of Child Pugh classification tested by Mann-Whitney test and the distribution was statistically significant. Their study has found significant association between severity of liver dysfunction and certain parameters of renal dysfunction[10].

In the present study, diastolic dysfunction was present in 55 percent of the patients while left atrial enlargement was seen in 47.5 percent of the patients. Overall, Cardiac dysfunction was seen in 60 percent of the patients. Bokarvadia R et al identified the prevalence and clinical presentation of cirrhotic cardiomyopathy (CCM) in patients with liver cirrhosis. Five hundred and eighty-six patients with liver cirrhosis were recruited based on inclusion criteria and evaluated for cardiac parameters using electrocardiography, 2-dimensional echocardiography, dobutamine stress test and coronary angiography as needed. Four thousand eight hundred and seventy-seven patients with liver disease were registered during the study period. Five hundred and eighty-six cirrhotic patients had cardiac evaluation as per the study protocol. One hundred fifty-nine had coronary artery disease and were excluded. One hundred and ninety-eight of 427 remaining patients (46.4%) had CCM. The median age of patients with CCM was higher compared with those without CCM (52 years vs. 46 years; p-value < 0.00001). Likewise, cirrhosis-related complications ([isolated or in combination], lower pulse rate [< 60/min] and prolonged corrected QT interval [QTc]; p<0.00001) were more frequent in patients with CCM. After excluding known risk factors for CCM such as alcohol, diabetes, hypothyroidism, hypertension, the true prevalence of CCM was 8.2% (48 out of 586). Hepatotropic viral infections (p 0.03) and prolonged QTc (p 0.0004) were commoner in CCM. Prevalence of CCM in our setting is 33.8%. CCM is commoner in males and is independent of the etiology of cirrhosis, comorbidity and severity of liver disease[11].

Conclusion

From the above results, the authors concluded that significant deterioration of renal and cardiac functions occurs in liver cirrhosis patients.

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