Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr UGC approved journal no. 63854

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805 Index Copernicus value = 76.77

Original Article

Evaluation of renal profile in liver cirrhosis patients

Akhilesh Singh

Assistant Professor, Department of General Medicine, K M Medical College, Mathura, Uttar Pradesh, India

ABSTRACT:

Background: The present study was undertaken for assessing renal profile in liver cirrhosis patients. **Materials & methods:** A total of 100 patients with cirrhosis of liver were enrolled. Complete demographic details were obtained. Patients were graded according to Child Pugh Grade with Grade A indicating minimal severity while grade C indicating maximum severity. Renal profile was assessed. **Results:** Mean blood urea levels and serum creatinine levels were found to be 40.1 mg/dL and 1.9 mg/dL respectively. While assessing statistically, a significant positive correlation was observed between deranged renal profile and severity of liver cirrhosis. **Conclusion:** From the above results, the authors concluded that there is significant alteration in the Renal profile with increasing severity of cirrhosis of liver.

Key words: Liver, Cirrhosis, Renal

Received: 15 June, 2018 Accepted: 19 July, 2018

Corresponding author: Akhilesh Singh, Assistant Professor, Department of General Medicine, K M Medical College, Mathura, Uttar Pradesh, India

This article may be cited as: Singh A. Evaluation of renal profile in liver cirrhosis patients. J Adv Med Dent Scie Res 2018;6(8):179-181.

INTRODUCTION

Hepatorenal Syndrome [HRS] 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. Renal dysfunction is a frequent complication in cirrhotic patients, occurring in one of every five inpatients with cirrhosis. Renal dysfunction in this population may present acutely, or may be a result of underlying chronic kidney disease (CKD). In any situation, it is associated with increased morbidity and mortality. There are different proposed classifications of renal dysfunction in cirrhotic patients. In general, renal dysfunction in the cirrhotic patients can be divided by acuity of presentation (acute kidney disease, acute on CKD, and CKD) and by the cause of renal dysfunction [prerenal azotemia (PRA), intrinsic renal disease, hepatorenal syndrome (HRS) type 1 and 2 and postrenal disease].[1-3]Hepatorenal syndrome (HRS) is a common complication of advanced cirrhosis, characterised by renal failure and major disturbances in circulatory function. Renal failure is caused by intense vasoconstriction of the renal circulation. The syndrome is probably the final consequence of extreme underfilling of the arterial circulation secondary to arterial vasodilatation in the splanchnic vascular bed. As well as the renal circulation, most extrasplanchnic vascular beds are vasoconstricted. The diagnosis of HRS is currently based on the exclusion of other causes of renal failure. The prognosis is very poor, particularly when there is rapidly progressive renal failure (type 1).[4- 6]Hence; the present study was undertaken for assessing renal profile in liver cirrhosis patients.

MATERIALS & METHODS

The present study was undertaken for assessing renal profile in liver cirrhosis patients. A total of 100 patients with cirrhosis of liver were enrolled. Patients were graded according to Child Pugh Grade with Grade A indicating minimal severity while grade C indicating maximum severity. Renal profile was assessed. 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. Pearson's correlation was used for assessment.

RESULTS

A total of 100 patients with cirrhosis of liver were analyzed. Mean age of the patients was 45.1 years. 60 percent of the patients were males while the remaining were females. The most common etiologic factor was Alcohol. According to Child Pugh Grading, 26 patients were of grade A, 61 patients were of Grade B and 13 patients were of Grade C. Mean blood urea levels and serum creatinine levels were found to be 40.1 mg/dL and 1.9 mg/dL respectively. While assessing statistically, a significant positive correlation was observed between deranged renal profile and severity of liver cirrhosis.

Table 1: Renal profile

Renal profile	Mean	SD
Blood Urea (mg/dL)	40.1	13.1
Serum Creatinine (mg/dL)	1.9	0.5

Table 2: Correlation of patients with Blood urea and severity of liver cirrhosis

Variable	Value	Df	P- value
Pearson Chi-Square	13.78	2	0.000 (Significant)
Likelihood Ratio	16.18	2	0.000 (Significant)

Table 3: Correlation of patients with serum creatinine and severity of liver cirrhosis

Variable	Value	df	P- value
Pearson Chi-Square	15.38	2	0.001 (Significant)
Likelihood Ratio	14.28	2	0.001 (Significant)

DISCUSSION

Cirrhosis is the final stage attained by various chronic liver diseases after years or decades of slow progression. There are, however, ways to prevent cirrhosis, because the diseases that most commonly lead to it progress slowly, and measures are available to prevent and treat them. Moreover, most cases of hepatocellular carcinoma (HCC) arise in a cirrhotic liver, so cirrhosis prevention is, in fact, also HCC prevention. The risk of developing HCC depends on the underlying disease: It is low, for example, when the underlying disease is autoimmune hepatitis (2.9% in 10 years), and high when the underlying disease is chronic hepatitis B with a viral burden greater than 107copies/mL (19.8% in 13 years). Aside from chronic viral hepatitis, fatty liver disease due to any of the very common underlying disorders (obesity, diabetes, alcohol abuse) commonly progresses to cirrhosis and thus merits both specialized medical treatment and close follow-up by the primary-care physician.[6- 9]Hence; the present study was undertaken for assessing renal profile in liver cirrhosis patients.

A total of 100 patients with cirrhosis of liver were analyzed. Mean age of the patients was 45.1 years. 60 percent of the patients were males while the remaining were females. The most common etiologic factor was Alcohol. According to Child Pugh Grading, 26 patients were of grade A, 61 patients were of Grade B and 13 patients were of Grade C. In a similar study conducted by JK Kim et al, authors investigated the prevalence and clinical significance of renal dysfunction due to bacterial infections other than SBP in patients with liver cirrhosis. Eighty patients were recruited for the analysis. The types of infections included that of urinary tract (37.5%), pneumonia (23.8%), biliary tract (20%), cellulitis (12.5%), and bacteremia of unknown origin (6.3%). Renal dysfunction developed in 29 patients (36.3%), of which 11 patients had irreversible renal dysfunction. The initial MELD score, neutrophil count, albumin, and blood pressure were significant risk factors in the univariate analysis, whereas only the MELD score was an independent risk factor for the development of renal dysfunction ($p<0.001$) after multivariate analysis. The prevalence of renal dysfunction during bacterial infection other than SBP in patients with liver cirrhosis was 36.3%, and its development was related to the severity of the liver disease.[10]

Mean blood urea levels and serum creatinine levels were found to be 40.1 mg/dL and 1.9 mg/dL respectively. While assessing statistically, a significant positive correlation was observed between deranged renal profile and severity of liver cirrhosis. In another study conducted by Ruız-del-Arbol L et al, authors investigated left ventricular diastolic dysfunction (LVDD) and its relationship with circulatory function and prognosis in cirrhosis with portal hypertension and normal creatinine. Conventional and tissue Doppler (TDI) echocardiography, systemic and hepatic hemodynamics, and the activity of endogenous vasoactive systems (AEVS) were measured prospectively in 80 patients. Plasma renin activity (PRA; >4 ng/mL/hour) was used as a surrogate of effective arterial blood volume. Patients were followed up for 12 months. Thirty-seven patients had LVDD (19 with grade 1 and 18 with grade 2). Left ventricular hypertrophy, left atrial volume, AEVS, and natriuretic peptide levels were significantly greater in patients with LVDD than without LVDD. Patients with grade 2 LVDD, compared to grade 1

LVDD and without LVDD, had significantly lower mean arterial pressure and higher Model for End-Stage Liver Disease (MELD) score, E-wave transmitral/early diastolic mitral annular velocity (E/e' ratio), cardiopulmonary pressures, PRA, and natriuretic peptide levels. Systolic and cardiac chronotropicfunction were significantly lower in patients with grade 2 LVDD than without LVDD. LVDD was more frequent in patients with ascites and increased PRA than patients without ascites or with ascites but normal PRA. Fourteen patients with LVDD developed hepatorenal syndrome (HRS) type 1 on follow-up. Survival was different according to degree of LVDD (without LVDD: 95%; grade 1 LVDD: 79%; grade 2 LVDD: 39%; $P < 0.001$). LVDD occurred simultaneously with other changes in cardiac structure and function and is associated with an impairment of effective arterial blood volume. LVDD is a sensitive marker of advanced cirrhosis, type 1 HRS development, and mortality.[11]

CONCLUSION

From the above results, the authors conclude that Renal profile is severely altered with increasing severity of cirrhosis of liver.

REFERENCES

1. Manns MP, Czaja AJ, Gorham JD, et al. Diagnosis and management of autoimmune hepatitis. Hepatology. 2010;51:2193–2213
2. Neuschwander-Tetri BA, Caldwell SH. Nonalcoholic steatohepatitis: summary of an AASLD Single Topic Conference. Hepatology. 2003;37:1202–1219.
3. Bernardi M, Fornalè L, Di Marco C, et al. Hyperdynamiccirculationof advanced cirrhosis: a re-appraisal based on posture-induced changes in hemodynamics. J Hepatol 1995;22:309 –18.
4. Levy M, Wexler MJ. Renal sodium retention and ascites formationin dogs with experimental cirrhosis but without portal hypertensionor increased splanchnic vascular capacity. J Lab Clin Med 1978;91:520 –36.
5. Chen CF, Lee WC, Yang HI, et al. Changes in serum levels of HBV DNA and alanine aminotransferase determine risk for hepatocellular carcinoma. Gastroenterology. 2011;141:1240–1248.
6. StatistischesBundesamt. Gesundheitsberichterstattung des Bundes. 2011. Todesursachenstatistik.
7. Sarkar R, Meinberg EG, Stanley JC, Gordon D, Webb RC. Nitricoxide reversibly inhibits the migration of cultured vascular smoothmuscle cells. Circ Res 1996;78:225–30.
8. Akriviadis E, Botla R, Briggs W, Han S, Reynolds T, Shakil O. Pentoxifylline improves short-term survival in severe acute alcoholic hepatitis: a double-blind, placebo-controlled trial. Gastroenterology. 2000;119:1637–1648.
9. Planas R, Montoliu S, Ballesté B, Rivera M, Miquel M, Masnou H, Galeras JA, Giménez MD, Santos J, Cirera I, et al. Natural history of patients hospitalized for management of cirrhotic ascites. ClinGastroenterolHepatol. 2006;4:1385–1394.
10. Wong LP, Blackley MP, Andreoni KA, Chin H, Falk RJ, Klemmer PJ. Survival of liver transplant candidates with acute renal failure receiving renal replacement therapy. Kidney Int. 2005;68:362–370.
11. Kim JH1, Lee JS, Lee SH, Bae WK, Kim NH, Kim KA, Moon YS. Renal Dysfunction Induced by Bacterial Infection other than Spontaneous Bacterial Peritonitis in Patients with Cirrhosis: Incidence and Risk Factor. Gut Liver. 2009 Dec;3(4):292-7.
12. Ruíz-del-Árbol L1, Achécar L, Serradilla R, Rodríguez-Gandía MÁ et al. Diastolic dysfunction is a predictor of poor outcomes in patients with cirrhosis, portal hypertension, and a normal creatinine. Hepatology. 2013 Nov;58(5):1732-41.