

Original Article

Assessment of renal profile in liver cirrhosis patients

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ABSTRACT:

Background: The present study was undertaken for assessing renal profile in liver cirrhosis patients. **Materials & methods:** A total of 50 patients with cirrhosis of liver were enrolled. Complete demographic details were obtained. 50 healthy controls were also evaluated. Renal profile was assessed. **Results:** Among the study group patients, mean blood urea levels and serum creatinine levels were found to be 45.1 mg/dL and 2.1 mg/dL respectively. Among the control group patients, mean blood urea levels and serum creatinine levels were found to be 18.3 mg/dL and 0.8 mg/dL respectively. While comparing statistically, significant results were obtained. **Conclusion:** Significant alteration in the Renal profile occurs among patients with cirrhosis of liver.

Key words: Liver, Cirrhosis, Renal

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Received: 11-12-2013

Accepted: 16-01-2014

This article may be cited as: Patel VK. Assessment of renal profile in liver cirrhosis patients. J Adv Med Dent Scie Res 2014;2(1):168-169.

INTRODUCTION

Mortality from liver disease is increasing. Key drivers of this increase are the rising prevalence of alcoholic liver disease, viral hepatitis and fatty liver disease. Liver disease is now the fifth highest cause of death in the UK, with a 25% increase in mortality between 2001 and 2009. Renal dysfunction is a common complication of cirrhosis and confers a poor prognosis. Renal dysfunction occurs in 20% of patients with cirrhosis admitted to hospital, often linked with other complications of cirrhosis such as variceal bleeding and spontaneous bacterial peritonitis.¹⁻³

Chronic liver disease and primary liver cancer account for 1 in 40 (2.5%) deaths worldwide, with hepatitis B the commonest cause in the developing world, followed by alcoholic liver disease and hepatitis C in the Western world. Non-alcoholic steato-hepatitis and non-alcoholic fatty liver disease are increasing causes of chronic liver disease in the general population of Western countries with prevalence rates of 1-5% and 10-24%, respectively. This observation is related to the increasing incidence of obesity in the Western population and the associated metabolic syndrome, consisting of atherosclerotic coronary vascular disease, hypertension, hyperlipidemia, diabetes, and chronic kidney disease.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 50 patients

with cirrhosis of liver were enrolled. 50 healthy controls were also evaluated. 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. Chi-square test and student t test was used.

RESULTS

A total of 50 patients with cirrhosis of liver were analyzed. Mean age of the patients of cirrhosis group and control group was 42.1 years and 45.8 years. The most common etiologic factor was Alcohol. Among the study group patients, mean blood urea levels and serum creatinine levels were found to be 45.1 mg/dL and 2.1 mg/dL respectively. Among the control group patients, mean blood urea levels and serum creatinine levels were found to be 18.3 mg/dL and 0.8 mg/dL respectively. While comparing statistically, significant results were obtained.

Table 1: Renal profile

Renal profile	Study group	Control group	p-value
Blood Urea (mg/dL)	45.1	18.3	0.00*
Serum Creatinine (mg/dL)	2.1	0.8	0.01*

*: Significant

DISCUSSION

Serum creatinine is universally used to assess renal function in clinical practice. Creatinine and changes in serum creatinine are used to define acute kidney injury and hepatorenal syndrome (HRS) in patients with progressive liver disease. In addition, creatinine is a key variable in the calculation used to determine priority for liver transplantation in many countries. As there is no universal standardized creatinine assay, there is variation in creatinine determinations between laboratory assays, compounded by assay interference due to chromogens, including bilirubin. This leads to patients with the same actual renal function potentially being offered different treatment options, in terms of access to therapy for HRS and priority waiting time for liver transplantation. Alternative methods for assessing renal function either also tend to overestimate renal function or are too time consuming and expensive to provide practical alternatives for standard clinical practice.⁷⁻¹⁰ Hence; the present study was undertaken for assessing renal profile in liver cirrhosis patients.

Scott RA et al prospectively identified patients with AKI and clinical, radiological or histological evidence of cirrhosis. 162 cirrhotic patients were studied with a mean age of 56.8±14 years. They were predominantly male (65.4%) with alcoholic liver disease (78.4%). 110 patients had AKI: 44 stage 1, 32 stage 2 and 34 stage 3. They were well matched in age, sex and liver disease severity with 52 cirrhotics without AKI. AKI was associated with increased mortality (31.8% vs 3.8%, $p < 0.001$). Mortality increased with each AKI stage; 3.8% in cirrhotics without AKI, 13.5% stage 1, 37.8% stage 2 and 43.2% stage 3 ($p < 0.001$ for trend). Worsening liver disease (Child–Pugh class) correlated with increased mortality: 3.1% class A, 23.6% class B and 32.8% class C ($p = 0.006$ for trend). AKI was associated with increased length of stay: median 6.0 days (IQR 4.0–8.75) versus 16.0 days (IQR 6.0–27.5), $p < 0.001$. Multivariate analysis identified AKI and Child–Pugh classes B and C as independent factors associated with mortality. The utility of AKIN criteria is maintained in cirrhotic patients. Decompensated liver disease and AKI appear to be independent variables predicting death in cirrhotics.⁹

Several reasons make that in cirrhotic patients, serum creatinine may overestimate renal function. Impaired liver function results in decreased creatinine production. Protein-calorie malnutrition and muscle wasting which are common during cirrhosis also contribute to decreased creatinine production. On average, baseline serum creatinine is lower in cirrhotic patients compared to the general population. Baseline serum creatinine within the normal range does not exclude a significant impairment in renal function. Patients may present a twofold increase in

baseline creatinine with levels remaining below 1 mg/dl (88 $\mu\text{mol/L}$), apparently within the normal range. Another bias comes from fluctuations of serum creatinine, especially in those with refractory ascites and/or those receiving diuretics. Wide variations may be observed, depending on large volume paracentesis and volume expansion. In such situations, the issue of which serum creatinine value is best correlated to the outcome is difficult to address.¹⁰⁻¹²

CONCLUSION

Significant alteration in the Renal profile occurs among patients with cirrhosis of liver.

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