(International Print/Online Journal)

SJIF IMPACT FACTOR: 5.565
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume3, Issue 6, Page No: 387-391
November-December 2020

Study of Prevalence of Renal Dysfunction in Cirrhosis of Liver

Dr. Nishi Shah[1], Dr Mitesh Thakkar[2], Dr Nevin Sabu Thomas[3]
Department Of General Medicine, MGM Medical College and Hospital, Navi Mumbai, Maharashtra

***Corresponding Author:**
Dr Nevin Sabu Thomas
Department Of General Medicine, MGM Medical College and Hospital, Navi Mumbai, Maharashtra

Type of Publication: Original Research Paper
Conflicts of Interest: Nil

ABSTRACT

Acute renal dysfunction occurs in 15% to 25% of hospitalized patients with cirrhosis. The annual frequency of Hepatorenal syndrome(HRS) in cirrhotic patients with ascites is roughly 8% and, in some reports, as high as 40%.The observation that morbidity and mortality remain high once the syndrome is established has led to a focus on the prevention and early therapy of renal dysfunction in patients with cirrhosis. The present study was conducted in order to find out the prevalence of renal dysfunction in cirrhosis of liver and the risk factors for development of hepatorenal syndrome. Study showed that therenal dysfunction was observed in significantly higher percentage of patients with severe disease Child-Pugh class (C) followed by Child-Pugh class (B) and Child-Pugh class (A). Sub-acute bacterial peritonitis (SBP) was the most common risk factor associated with Renal Dysfunction followed by Hyponatremia, GI bleed and Other - Infection (pneumonia). The association of Sub-acute bacterial peritonitis (SBP) with Renal Dysfunction was statistically significant.

Keywords: Renal Dysfunction & Cirrhosis of Liver

INTRODUCTION

Chronic liver disease and cirrhosis are frequently complicated with renal dysfunction and this combination leads to significant morbidity and mortality.

Pinpointing the specific type of renal failure in cirrhosis is important for both prognostic and therapeutic purposes. The hepatorenal syndrome: is diagnosed on the basis of a serum creatinine concentration of more than 1.5 mg/dl (133 µmol/liter) in the absence of any other apparent cause for kidney injury.

The accurate evaluation of renal functions by Glomerular Filtration Rate (GFR) is important to establish the onset, severity and progression of renal disease. Furthermore, the correct assessment of GFR in patients with liver disease is required for exact drug dosing, staging of chronic kidney disease.

Acute renal dysfunction occurs in 15% to 25% of hospitalized patients with cirrhosis. The annual frequency of Hepatorenal syndrome(HRS) in cirrhotic patients with ascites is roughly 8%and, in some reports, as high as 40%.The observation that morbidity and mortality remain high once the syndrome is established has led to a focus on the prevention and early therapy of renal dysfunction in patients with cirrhosis.

Objectives

1. To study the prevalence of renal dysfunction in cirrhosis of liver.
2. To study the risk factors for development of hepatorenal syndrome.

Methods

The study was conducted on 50 patients of liver cirrhosis at MGM Hospital, Kamothe including

outdoor and indoor patients diagnosed by liver function tests and by ultrasound of abdomen and pelvis.

Inclusion Criteria:

1) Patients above age 18 years.

2) Patients of liver cirrhosis MGM Hospital, Kamothe including outdoor and indoor patients diagnosed by liver function tests and by ultrasound of abdomen and pelvis.

3) Patients willing to give written informed consent.

Exclusion Criteria:

1) Multi-organ failure.

2) Known case of chronic kidney disease on hemodialysis.

Investigations

Ultrasounds of abdomen and pelvis and chest radiography were done.

Abdominal paracentesis was done and the ascitic fluid was subjected to biochemical and pathological examination in every patient.

For assessment of severity of liver dysfunction CP score and MELD scores were calculated in all patients:-

1) CP :(Child-Pugh) Score

2) MELD: (Model for End-Stage Liver Disease)

Statistical Analysis

Data collected was analyzed using specialized software.

Table no 1 Age group vs Gender amongst study population

			Gender		Total
			Female	Male	
Age group	24 to 35 years	Count	0	12	12
		%	0.0%	26.1%	24.0%
	36 to 45 years	Count	0	14	14
		%	0.0%	30.4%	28.0%
	46 to 55 years	Count	1	15	16
		%	25.0%	32.6%	32.0%
	more than 55 years	Count	3	5	8
		%	75.0%	10.9%	16.0%
Total		Count	4	46	50
		%	100.0%	100.0%	100.0%

As seen in the above table, most of the study population in males belongs to the age group of 46 to 55 years (32.6%) followed by 36 to 45 years (30.4%) and 24 to 35 years (26.1%) while in female most of the study population in females belongs to the age group of more than 55 years (75%) followed by 46 to 55 years (25%).

Table no 2 Risk factors amongst study population

Risk factors	Frequency	Percent
Sub-acute bacterial peritonitis (SBP)	14	28
GI bleed	7	14

Volume 3, Issue 6; November-December 2020; Page No 387-391

© 2020 IJMSCR. All Rights Reserved

Hyponatremia	18	36
Other - Infection (pneumonia)	2	4
None	9	18
TOTAL	50	100

As seen in the above table, Hyponatremia (36%) was the most common complications amongst study population followed by Sub-acute bacterial peritonitis (SBP) (28%), GI bleed (14%) and Other - Infection (pneumonia) (4%).

Table no 3 Type of Renal Dysfunction amongst study population

Type of Renal Dysfunction	Frequency	Percent
Acute Kidney Injury	15	65.2
Hepato-renal Syndrome	7	30.4
Chronic kidney disease	1	4.3
Total	23	100

As seen in the above table, Acute Kidney Injury (65.2%) was the most common Type of Renal Dysfunction amongst study population followed by Hepato-renal Syndrome (30.4%) and chronic kidney disease (4.3%).

Table no 4 Renal Dysfunction vs severity of disease amongst study population

Child-Pugh Class	Renal Dysfunction		Total
	Present	Absent	
A	3 (13%)	19 (70.4%)	22 (44%)
B	9 (39.1%)	8 (29.6%)	17 (34%)
C	11 (47.8%)	0 (0%)	11 (22%)
Total	23 (100%)	27 (100%)	50 (100%)

Chi square test, P value- 0.001

As seen in the above table, renal dysfunction (47.8%) was observed in significantly higher percentage of patients with severe disease Child-Pugh class (C) followed by Child-Pugh class (B) (39.1%) and Child-Pugh class (A) (13%).

Results and Discussion

In the present study, the most common age group amongst study population was 46 to 55 years (32%) followed 36 to 45 years (28%), 24 to 35 years (24%). Most of the study population in males belongs to the age group of 46 to 55 years (32.6%) followed by 36 to 45 years (30.4%) and 24 to 35 years (26.1%) while in female most of the study population in females belongs to the age group of more than 55 years (75%) followed by 46 to 55 years (25%). This was in agreement with the study conducted by Suthar et al (41 yrs), Sarin et al (43±8.7 yrs). This findings correlate well with the study conducted by Jong Hoon Kim et al., in which mean age of study population was 55.8 ± 11.6 years and males predominance (70.97%).

In the present study, there was male predominance (92%) amongst study population. Similarly in the study conducted by Sutharet al[4]it was observed that only 8 of the patients was female comparable to the study by where all the cases were male. This may be due to the cultural and cultural influences in our country.

In the present study, the prevalence of renal dysfunction was observed in 46% of study population. This findings is in agreement with the study conducted by Twinkle Chandrakar et al in

Volume 3, Issue 6; November-December 2020; Page No 387-391
© 2020 IJMSCR. All Rights Reserved

which the prevalence of 40% for renal dysfunction in our study was similar to another Indian study from North India which showed that renal dysfunction were present in 44% patients with liver cirrhosis. Whereas, another Indian study from South India, showed that 22% patients with cirrhosis presented with renal dysfunction. Another study by Howard et al, found that out of total 93 patients with a diagnosis of liver cirrhosis and normal renal function at admission, 23 patients developed renal dysfunction later within 15 days of hospitalization.

In the present study, Acute Kidney Injury (65.2%) was the most common Type of Renal Dysfunction amongst study population followed byHepato-renal Syndrome (30.4%) and chronic kidney disease (4.3%). This findings was in agreement with the study conducted by Prakash J et al., in which acute kidney injury (AKI; 24.5%) was the most common Type of Renal Dysfunction , chronic kidney disease (CKD; 15.6%), acute on chronic renal failure (1.5%), nephritic syndrome (1.5%), and nephrotic syndrome (1%).

In the present study, most of the study population had Child-Pugh Class A (44%) followed by Child-Pugh Class B (34%) and Child-Pugh Class C (22%). Renal dysfunction (47.8%) was observed in significantly higher percentage of patients with severe disease Child-Pugh class (C) followed by Child-Pugh class (B)(39.1%) and Child-Pugh class (A)(13%). This findings was in agreement with the study conducted by Prakash Jet al., in which the incidence of renal diseases was 15.7% in class A, 50% in class B, and 54.8% in class C cirrhosis.[7]

In the present study, Hyponatremia (36%) was the most common risk factors amongst study population followed by Sub-acute bacterial peritonitis (SBP) (28%), GI bleed (14%) and Other - Infection (pneumonia) (4%). Sub-acute bacterial peritonitis (SBP) (43.5%) was the most common risk factor associated with Renal Dysfunction followed by Hyponatremia (47.8%), GI bleed (21.7%) and Other - Infection (pneumonia) (8.7%) The association of Sub-acute bacterial peritonitis (SBP) with Renal Dysfunction was statistically significant. This findings is in agreement with the study conducted by Twinkle Chandrakar et al in which risk factors for development of Renal Dysfunction was studied which showed that presence of subacute bacterial peritonitis (88 % vs 18.3%, p<0.0001), GI bleed (50% vs 23.2%, p=0.022) were major factors that were significantly associated with development of HRS. Hyponatremia was also a common risk factor in both the groups but the difference was not statistically significant (72.2% vs 67.1%, p=0.672). Other risk factors encountered were infections.[6]The study findings go with those reported by others. Follo et al. concluded that renal dysfunction is frequent in cirrhotic with spontaneous bacterial peritonitis that occurs mainly in patients with kidney failure before infection and found that renal failure is an important predictor of survival especially in the presence of SBP.[i]Also, the same conclusion was mentioned in the study of Ruiz-del Arbol et al. as patients with SBP frequently develop a progressive severe renal and hepatic failure, and even death, despite of the resolution of infection and is usually associated with an extremely poor prognosis.

Conclusion

In our study, prevalence of renal dysfunction in cirrhosis of liver was 46% with Acute Kidney Injury was the most common Type of Renal Dysfunction followed by Hepato-renal Syndrome and Chronic kidney disease. Renal dysfunction was observed in significantly higher percentage of patients with severe disease Child-Pugh class (C) followed by Child-Pugh class (B) and Child-Pugh class (A). Sub-acute bacterial peritonitis (SBP) was the most common risk factor associated with Renal Dysfunction followed by Hyponatremia, GI bleed and Other - Infection (pneumonia). The association of Sub-acute bacterial peritonitis (SBP) with Renal Dysfunction was statistically significant.

References

1. Hecker R, Sherlock S. Electrolyte and circulatory changes in terminal liver failure. Lancet 2012;2:1221-5.
2. PereGinès, M.D., and Robert W. Schrier, M.D, Renal Failure in Cirrhosis, N Engl J Med 2009;361:1279-90.
3. Bosetti C, Levi F, Lucchini F, et al: Worldwide mortality from cirrhosis: An update to 2002. J Hepatol 2007; 46:827-39.
4. Suthar HN, Suthar KD, Mewada BN. Clinical profile of cases of alcoholic liver disease. Int J

Volume 3, Issue 6; November-December 2020; Page No 387-391
© 2020 IJMSCR. All Rights Reserved

Med Sci Public Health 2013; 2:394-398.

5. Sarin SK, Dhingra N, Bansal A, Malhotra S, Guptan RC. Dietary and nutritional abnormalities in alcoholic liver disease: a comparison with chronic alcoholics without liver disease. Am J Gastroenterol 1997;92(5):777-783
6. Jong Hoon Kim, June Sung Lee, Seuk Hyun Lee, Won Ki Bae, Nam-Hoon Kim, Kyung-Ah Kim et al. The Association Between the Serum Sodium Level and the Severity of Complications in Liver Cirrhosis. Korean J Intern Med 2009; 24:106-12.
7. Twinkle Chandrakar, TanujaManohar, NaliniHumaneyClinical Spectrum of Renal Dysfunction in Cirrhosis of Liver, JMSCR,2017; Volume 05 ;Issue 03: 18795-18804
8. Prakash J, Mahapatra AK, Ghosh B, Arora P, Jain AK. Clinical spectrum of renal disorders in patients with cirrhosis of liver. Ren Fail 2011; 33:40-6
9. Jaiganesh M, Krishnasamy N, Senthilkumar R and Sathish K. International Journal of Biomedical Research, Clinical profile of renal dysfunction in cirrhotic liver, 2016; 7(2): 073-076.
10. Howard H, Gaither B, Eleana Z, Hashem B. Risk factors for the development of renal dysfunction in hospitalized patients with cirrhosis. The American Journal of Gastroenterology (2001) 96, 2206–2210
11. Follo A, Llovet J, Navasa M, Planas R, Forns X, Francitorra A et al. Renal impairment after spontaneous bacterial peritonitis in cirrhosis: Incidence, clinical course, predictive factors and prognosis. Hepatology. 1994;20(6):1495-1501.
12. Lenz K, Kapral C, Gegenhuber A, Buder R, Wewalka F. Systemic, renal, and hepatic hemodynamic derangement in cirrhotic patients with spontaneous bacterial peritonitis. Hepatology. 2004; 39(3):865-866.

Volume 3, Issue 6; November-December 2020; Page No 387-391

© 2020 IJMSCR. All Rights Reserved