Outcome Of Hepatorenal Syndrome in Sohag University Hospital

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ABSTRACT

Background: Hepatorenal syndrome is a clinical condition that occurs in patients with chronic liver disease, advanced liver cell failure and portal hypertension characterized by impaired renal function Various variables were studied between survivor and non-survivor groups to detect possible predictors of non-survival .

Objective: This study aims to assess outcome of hepatorenal syndrome in Sohag University Hospitals and discover possible predictors of non-survival in these patients.

Materials & Methods : This study included 50 patient attented Sohag University hospital from 1 / 4 / 2017 till 1 / 10 / 2017 and Who agreed to share in the study and fulfilling the criteria of hepatorenal syndrome were be studied prospectively to observe clinical outcome Various variables were studied between survivor and non-survivor groups to detect possible predictors of non-survival in hepatorenal syndrome. The diagnosis for cirrhosis was based on history, examination, liver function test, and abdominal ultrasound. In all patients history of jaundice, fever, abdominal pain, abdominal distension, deceased urine output and GIT bleeding was taken. diagnosis of hepatorenal syndrome was according to the International Ascites club criteria (inclusion criteria).Study was divided into 2 groups, survivors and non-survivors.

Results: the study shows 14 patients (28%) were survivors, but the remaining 36 patients were non-survivors (72%). the possible predicting factors of mortality included were male sex,having tense ascites, having SBP,hepatic encephalopathy being child score C, type I HRS,with high level ofserum creatinine and urea,low level of serum albumin. These factors were be subjected to multivariate regression analysis.

Keywords : Hepatorenal syndrome, Terlipressin.

INTRODUCTION :

Hepatorenal syndrome is a clinical condition ***(1)*** describe the development of oliguria in patients with chronic liver disease in the absence of proteinuria and normal renal histology, they proposed, that abnormality in renal function was related to extensive vasoconstriction of renal circulation.Hepatorenal syndrome occurs in approximately 4% of patients with cirrhosis who are decompensated with a cumulative probability of 8% per year, which increases to 39% at 5 years ***(2).*** the international ascites club in their consensus publication described two different forms of hepatorenal syndrome, type 1 and 2. Although their pathophysiology is similar but their manifestation and outcomes are quite different ***(3)*** Type 1 hepatorenal syndrome is characterized by rapid doubling of serum creatinine to a level greater than 2.5 mg/dl or having the creatinine clearance to less than 20ml/min within two weeks and is precipitated most commonly by spontaneous bacterial peritonitis (SBP). Without treatment, the median survival rate with type 1 hepatorenal syndrome is less than 2 weeks and virtually all patients die within 10 weeks after the onset of renal failure ***(4)*** **.**Type 2 hepatorenal syndrome is characterized by moderate and stable reduction in the glomerular filteration rate (with serum

creatinine increasing to greater than 1.5 mg/dl or creatinine clearance less than 40ml/min ***(5)*** It most commonly occurs in patients with relatively preserved hepatic function, Median survival rate is 3-6 months.

PATIENTS AND METHODS: This study included 50 patient attented Sohag University hospital from 1 / 4 / 2017 till 1 / 10 / 2017 fulfilling the criteria of hepatorenal syndrome were be studied prospectively to observe clinical outcome Various variables were studied between survivor and non-survivor groups to detect possible predictors of non-survival in hepatorenal syndrome, diagnosis was according to the International Ascites club criteria (inclusion criteria),Study was divided into 2 groups, survivors and non-survivors, for each group we had maked a detailed record of:

Possible etiology, duration of liver disease,precipitating factor for ARF, urine volume status,Renal function test,Morbid events. Treatment modality and outcome.

A combination therapy of dopamine (1-5mcg/kg/min), albumin (20%) and Terlipressin (2mg iv 6 hrly) were used in patients of hepatorenal syndrome. Terlipressin was used for at least two days. Patients were followed up till their discharge or death.

Inclusion criteria:

- Chronic or acute liver disease with advanced hepatic failure and portal hypertension.
- Low GFR as indicated by serum creatinine greater than 2.5 gm/dl or creatinine clearance < 0.05 Absence of shock, ongoing bacterial infection, or recent treatment with nephrotoxic drugs.
- Absence of excessive fluid losses including GIT bleeding.
- No sustained improvement in renal function following expansion with 1.5 liter of isotonic saline.
- Proteinuria <0.5 g/day and no sonographic evidence of renal tract disease.

Exclusion criteria:

- Chronic renal failure will be excluded by history, examination and ultrasound showing medically diseased kidneys.
- Acute tubular necrosis will be excluded from the history, ultrasound and urine analysis.
- Glomerular causes and other tubular causes of ARF were excluded by history and urine routine examination.
- Patients treated with nephrotoxic drugs such as aminoglycosides

RESULTS

The study included 50 patient with hepatorenal syndrome who admitted in sohag University hospital in aperiod of 6 month from 1/4/2017 to 1/10/ 2017, Our results show that the possible predicting factors of mortality in our study included male sex, having tense ascites, having SBP, being child score C, type II HRS, level of serum creatinine and urea, level of serum albumin. These factors were be subjected to multivariate regression analysis. (table 12).

Table 12: Univariate logistic regression of factors predicting mortality:

Variable	Odds ratio (95% confidence interval)	P value
Age/year	1.04 (0.99-1.10)	0.14
Males vs. females	4.14 (1.09-15.72)	0.04
Grade 1 vs. no encephalopathy Grade 2 vs. no encephalopathy Grade 3-4 vs. no encephalopathy	0.83 (0.13-5.39) 0.67 (0.13-3.30) 7.50 (0.71-78.90)	0.85 0.62 0.09
Marked ascites vs. moderate Tense ascites vs. moderate	0.39 (0.08-1.85) 0.06 (0.008-0.45)	0.23 0.008
SBP	5.36 (1.04-27.50)	0.04
Varices	1.29 (0.36-4.61)	0.70
Child score C vs. B	64.23 (9.80-444.50)	<0.0001
HRS type 2 vs. type 1	0.09 (0.02-0.49)	0.005
24 hours UOP	1.003 (0.999-1.01)	0.10
Creatinine	1.88 1.10-3.20)	0.02
Urea	1.01 (1.00-1.02)	0.02
Na	1.001 (0.97-1.03)	0.95
K	1.002 (0.67-1.46)	0.99
Bilirubin	1.11 (0.85-1.44)	0.45
SGOT	1.006 (0.997-1.02)	0.19
SGPT	1.006 (0.996-1.02)	0.21
S. Albumin	0.37 (0.14-0.96)	0.04
HB	1.09 (0.84-1.40)	0.52
INR	2.15 (0.26-18.12)	0.49
Dialysis	Can't calculated	0.17
Treatment with albumin	0.72 (0.19-2.68)	0.62
Treatment with Terillipressin	0.38 (0.11-1.37)	0.14

We found that male sex, tense ascites, having SBP, child score C and HRS type II were independent predicting factors of mortality in our study (table 13).

Table 13: Multivariate logistic regression of factors predicting mortality

Variable	Odds ratio (95% confidence interval)	P value
Males vs. females	9.58 (1.07-86.09)	0.04
Marked ascites vs. moderate Tense ascites vs. moderate	0.67 (0.07-6.55) 0.01 (0.0008-1.67)	0.73 0.08
SBP	12.61 (1.33-119.36)	0.03
Child score C vs. B	107.03 (4.23-2702)	0.005
HRS type 2 vs. type 1	0.07 (0.009-0.49)	0.008
Creatinine	1.63(0.79-3.38)	0.18
Urea	1.006 (0.99-1.02)	0.43
S. Albumin	0.52 (0.11-2.56)	0.42

We found that male sex, tense ascites, having SBP, child score C and HRS type II were independent predicting factors of mortality in our study (table 14).

Table14 : Final model of logistic regression of factors predicting mortality

Variable	Odds ratio (95% confidence interval)	P value
Males vs. females	12.83 (1.22-134.36)	0.03
SBP	12.13 (1.03-142.86)	0.047
Child score C vs. B	66.40 (5.84-754.75)	0.001
HRS type 2 vs. type 1	0.04 (0.003-0.51)	0.009

Discussion:

Our study assess outcome of hepatorenal syndrome in Sohag University Hospitals during admission,the study included 50 patient and Various variables were studied between survivor and non-survivor groups to detect possible predictors of non-survival in hepatorenal syndrome, Clinically, the majority of the non survivor group had encephalopathy,in agreement with our results,(***5)*** found that hepatic encephalopathy was present in majority of the patients (61.9%) predominantly in the non-survival group.19 patients were diagnosed as SBP in our study group (38%), 2 patients only had SBP in the survivor group (14.29%), while 17 patients had SBP in the non-survivor group (47.22%). This difference between the survivor and non-survivor groups was significant statistically (P value: 0.04)(**6)** agree with our result as it show that Infection increases mortality in cirrhosis four times and has a poor prognosis.As regard the child score of our study group, majority of the patients in the survivor group were child B (12 patients, 85.71%) while in the non-survivor group the majority were child C (33 patients, 91.67%). This difference between the survivor and non-survivor groups was highly significant statistically (P value: ‹0.0001).The prognostic value of Child-Pugh Score in HRS was similar to studies conducted by(**7*)* .** In our study group, 50 % of patients were type I and 50% of patients were type II,the majority of the patients in the survivor group were type II hepatorenal syndrome Renal impairement in the non-survivor group was higher than in the survivor group as the mean of creatinine in the survivor group was 3.7 (SD: 1.26; range: 2-6) and was 5.94 in the non-survivor group (SD: 3.07; range: 2.7-15). This difference between the survivor and non-survivor groups was significant statistically (P value: 0.005).In agreement with our study(***2)*** found that serum creatinine was significantly higher in non-survival group.Also urea level in the non-survivor group was higher than in the survivor group(**5)** found that the mean values of peak blood urea and peak serum creatinine were 125±75.36mg/dl and 4.6±2.4mg/dl and they are higher in the non survivor group,Also, ***(8)*** study found that SGOT and SGPT were raised in more than 90% of the patients but mostly in the none survivors group.the same as our study,As regard bilirubin the mean of bilirubin was 4.61 (SD: 1.85; range: 1.9-8) for the survivor group and was 5.26 (SD: 3.04; range: 107-16) for the non-survivor group. This difference between the survivor and non-survivor groups was non-significant statistically (P value: 0.79).In agreement with our study, **(9*)*** found that serum bilirubin levels were found to be higher in the non-survival group as compared to survival group but with high significance statistically as higher levels of serum bilirubin (25.09 ±13.7 mg/dL) were found in non-survivors compared to amean value of 16.54 ± 12.19 mg/dL in survivors .As regard serum electrolytes

The difference between the survivor and non-survivor groups was non-significant statistically (P value: 0.86).Against to our results **(10)** found that hyponatraemia was pronounced in non-survival group, presence of hyponatremia has been associated with increased morbidity and mortality independently of other prognostic factors and has been recently added to the MELD score (11)(Sodium-MELD) for liver donor allocation in the United States For each drop in unit of sodium below 135 mEq/L.**,**coagulopathy was present in more than 90% of the patients and patients in the non-survival group had significant coagulopathy as compared to survivors**.(12),**hypoalbuminaemia was more pronounced in non-survival group **(13).**As regard management of the study group,dialysis was done to only 7 participants (14%). , none of the patients of the survivor group received dialysis, while dialysis was done to 7 patients from the non-survivor group (19.44%). This difference between the survivor and non-survivor groups was non-significant statistically (P value: 0.17).**(14)** was similar to our study as they found that there was high morbidity and mortality rates that are associated with RRT ,However, mortality is even higher in patient who have HRS and do not receive RRT ,In the contrast the retrospective study by **(15)** seven (44%) of 16 patients who had HRS and received RRT survived compared with only one (10%) of 10 who did not receive RRT,Many patients with hepatorenal syndrome were treated very early with combined albumin and terlipressin. Treatment response was approximately 55%, (64.7%) patients amongst survivors benefited from the therapy while 52% of the patients amongst non survivors received this therapy but did not improve and the Child-Pugh score in this group was found to be greater than 10 which similar to our study(16), The beneficial effect of terlipressin study conducted by**(17)** was in contrast to our study.

Conclusion: the study shows 14 patients (28%) were survivors, but the remaining 36 patients were non-survivors (72%) ,Our results show that the possible predicting factors of mortality included male sex,having tense ascites, having SBP,hepatic encephalopathy being child score C, type I HRS,with high level of serum creatinine and urea,low level of serum albumin. These factors were be subjected to multivariate regression analysis.

Recommendation

1-Decompensated cirrhotic patient must be routinely investigated for renal impairment to avoid rapid deterioration and to insure proper management at time and transfer to liver transplant unit if needed.

3-Rapid detection and treatment of SBP to inhibit deterioration of kidney function.

5-optimal management of refractory ascites or severe hyponatremia could reduce the risk of developing type 2 HRS

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