ORIGINAL ARTICLE

Coagulopathy in Patients of Chronic Liver Disease Admitted in Sir Ganga Ram Hospital (SGRH)

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ABSTRACT

Background: In patients of chronic liver disease, the blood profile may derange due to abnormal functioning of liver. But the evidence was missing from local population.

Objective: To determine the coagulation abnormality of patients presenting with chronic liver disease and its relation with outcome of patient.

Material & Methods: This cross sectional study was conducted on 50 patients, previously diagnosed cases of CLD. All patients underwent laboratory examination by taking venous blood sample. Patients blood samples were tested for coagulation abnormalities including prothrombin time (PT), activated partial thromboplastin time (aPTT) and platelet count.

Results: According to the study, mean age of the patients was 52.08±10.07years. There were 23 (46%) males while 27 (54%) were females. The mean weight of patients was 63.88±7.43kg. (Table#1) Thirty-four patients had mildly prolonged PT, 31 patients had mildly prolonged aPTT. Thus, 35 patients had prolonged clotting profile. In this study, 12 patients had platelet count between 50,000-100,000/mm^3 while 5 patients had <50,000/mm^3.

Conclusion: Coagulation abnormalities were intense in CLD patients. Most of the patients showed deranged coagulation profile and decreased platelet count.

Keywords: Chronic liver disease, coagulation profile and abnormalities, prothrombin time, activated partial thromboplastin time and platelet count.

INTRODUCTION

In patients of chronic liver disease (CLD) there is significant impairment in synthetic function of Liver. Liver synthesizes many proteins e.g Albumin, Globulins, Sex hormone binding globulins, thyroid binding globulins and vitamin K dependent clotting factors 2,7,9,11.As these factors are involved in the coagulation process and hemostasis routinely performed tests of the coagulation are abnormal in patients with CLD .Liver function tests are usually performed to measure the functional status of liver which includes serum bilirubin, liver enzymes level(AST,ALT,GGT.ALP),serum albumin. Total proteins and to assess the detoxifying capacity of liver serum ammonia level can also be performed. Coagulation abnormalities in patients of CLD are usually measured through various tests but in this study we focused on measurement of first-line screening tests such as the prothrombin time (PT), the activated partial thromboplastin time (aPTT) and platelet count.

These tests were considered as a simple, inexpensive and easy to perform. Both PT and aPTT are related to bleeding risk and mortality due to decrease formation of thrombin plug secondary to deficiency of clotting factors required for normal hemostasis Patients with moderately or severely prolonged PT have 5 to 10 fold higher mortality rates than patients with normal PT.[5]

The purpose to conduct this study was to find out the relationship between abnormal clotting profile and frequency of patients presenting with bleeding diathesis as a complication of CLD.

OBJECTIVE

The purpose to conduct this study is to determine the coagulation abnormality of patients presenting with chronic liver disease or its complications such as upper gastrointestinal bleed including hematemesis, melena, hematochezia, hepatic encephalopathy and its relation with outcome of patient.

MATERIAL AND METHODS

A Cross sectional study was conducted at Department of medicine, Sir Ganga Ram Hospital, Lahore. Sample size of 50 cases was included through simple random sampling and diagnosed patients of CLD age 25-75 years, of either gender admitted in medical wards, were included. All the

patients were recorded for their demographic features i.e. age, gender and signs and symptoms of liver disease. Patient with hemostatic abnormalities secondary to other diseases like aplastic anemia, leukemia, lymphoma, chronic kidney disease with serum creatinine >1.5,sepsis, taking drugs like Aspirin or Clopidogrel, sulphonamides, penicillin, cephalosporin, thiazide and cytotoxic drugs, and congenital clotting factor defects (hemophilia, afibrinogenemia, factor V and XI deficiencies) were excluded from the study. Informed written consents were taken from all recruited patients before including them in the study.

Then blood sample was obtained by using 3cc BD syringe. All samples were stored in vials and will be sent to the laboratory of the hospital for assessment of liver profile, renal profile, clotting profile and platelet count. Reports were assessed and levels were noted. All the data was analysed with SPSS version 21. For quantitative data mean and standard deviation was calculated. For categorical data, frequencies and percentages were calculated. Chi-square was applied to compare the liver profile, renal profile, clotting profile and platelet count in patients having different prognosis of disease.

RESULTS

IN this study the mean age of the patients was 52.08±10.07years. There were 23 (46%) males while 27 (54%) were females. The mean weight of patients was 63.88±7.43kg. (Table#1)

Melena was present in 30 patients. Hematemesis was present in 24 patients. Hematochezia was present in 1 patient and who improved and discharged. Encephalopathy was present in 20 patients. Fever was present in 21 patients. Jaundice was present in 20 patients. Hepatomegaly was present in 7 patients. Coarse liver was present in 45 patients. Splenomegaly was present in 14patients. Ascites was present in 23 patients. Pleural effusion was present in 9 patients. (Table#1)

There were total 15 patients who had deranged bilirubin level. There were total 35 patients who had deranged albumin level. There were total 42 patients who had deranged AST level. There were total 25 patients who had deranged bilirubin level. (Table#2)

There were total 18 patients who had deranged urea level. No patients showed deranged creatinine levels. (Table#3)

Only 5 patients had normal PT level, 34 patients had mildly prolonged PT and 11 patients had moderately prolonged PT. No patients showed severely prolonged PT. Only 14 patients had normal aPTT level, 31 patients had mildly prolonged aPTT and 5 patients had moderately prolonged aPTT. No patients showed severely prolonged aPPT. Thus, 35 patients had prolonged clottingprofile .In this study, 33 patients had platelet count >100,000/mm^3, 12 patients had platelet count between 50,000-100,000/mm^3 while 5 patients had <50,000/mm^3.(Table#4).

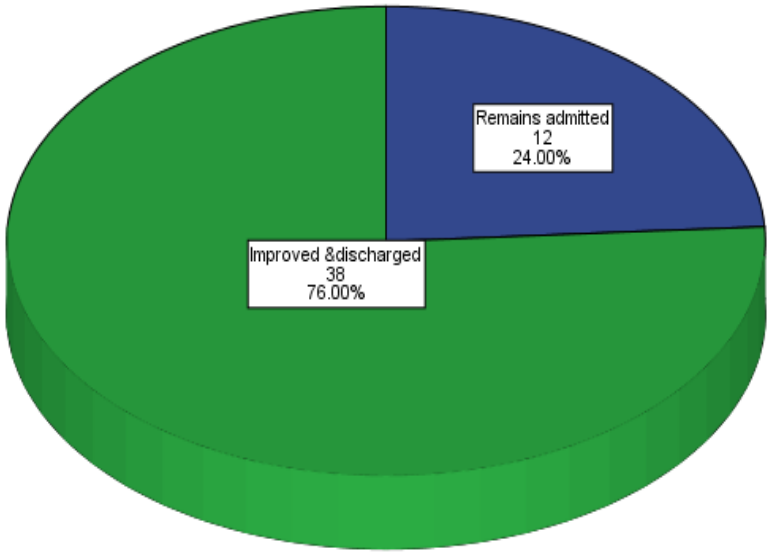

Fig # 1: Distribution of CLD patients according to outcome

Table # 1: Clinical presentation of CLD patients (n=50)

Characteristics	Remained admitted	Improved & discharged	Total	p-value
Age	55.25±10.23	51.08±9.98	52.08±10.07	
Gender (m/f)	4/8	19/19	23/27	
Weight	65.08±7.90	63.50±7.35	63.88±7.43	
Melena	7	23	30	0.892
Hematemesis	8	16	24	0.138
Hematochezia	0	1	1	0.570
Encephalopathy				
Absent	7	23	30	
Grade 1	2	3	5	0.612
Grade 2	2	4	6	
Grade 3	1	8	9	
Fever	6	15	21	0.520
Jaundice	6	14	20	0.417
Hepatomegaly	1	6	7	0.516
Coarse liver	11	34	45	0.825
Splenomegaly	4	10	14	0.637
Ascites				
No	6	21	27	
Mild	1	7	8	0.073
Moderate	3	10	13	
Gross	2	0	2	
Pleural effusion[!]	3	6	9	0.469
! = PE was present on right side in all cases				

Table # 2: Liver profile of CLD patients

Characteristics	Remained admitted	Improved & discharged	Total	p-value
Deranged bilirubin	3	12	15	0.665
Deranged albumin	8	27	35	0.773
Deranged AST	12	30	42	0.083
Deranged ALT	7	18	25	0.508

Table # 3: Renal profile of CLD patients

Characteristics	Remained admitted	Improved & discharged	Total	p-value
Deranged Urea	5	13	18	0.639
Deranged creatinine	0	0	0	NA

Table # 4: Clotting profile of CLD patients

Characteristics	Remained admitted	Improved & discharged	Total	p-value
PT				
Normal line	0	5	5	
Mild prolonged	10	24	34	0.312
Moderately prolonged	2	9	11	
Severely prolonged	0	0	0	
APPT				
Normal line	2	12	14	
Mild prolonged	9	22	31	0.549
Moderately prolonged	1	4	5	
Severely prolonged	0	0	0	
Prolonged clotting profile	9	26	35	0.665
Platelet count				
>100,000/mm^3	8	25	33	0.590
50,000-100,000/mm^3	2	10	12	
<50,000/mm^3	2	3	5	

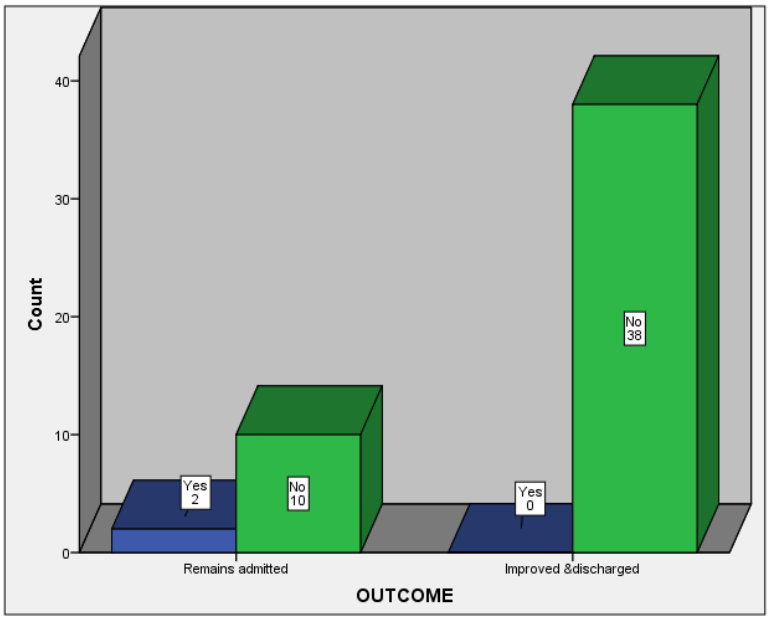

Fig # 2: Showing distribution of expired patients in both groups of patients

DISCUSSION

In our study, we included 50 CLD patients with the mean age of 52.08±10.07years admitted in medical wards. There were 23 (46%) males while 27 (54%) were females. The mean weight of patients was 63.88±7.43kg.

Melena was present in 30 (60%) patients, but maximum patients improved and discharged. Similarly, hematemesis was present in 24 (48%) patients, hematochezia was present in 1 (2%) patient,encephalopathy was present in 20 (40%) patients, fever was present in 21 (42%) patients, jaundice was present in 20 (40%) patients, and hepatomegaly was present in 7 (14%) patients. But most of patients admitted with these were recovered and discharged alive. Coarse liver was present in 45 (90%) patients, ascites was present in 23 (46%) patients, pleural effusion was present in 9 (18%) patients, splenomegaly was present in 14 (28%) patients.

There were total 15 (30%) patients who had deranged bilirubin level, 35 (70%) patients had deranged albumin level, 42(84%) patients had deranged AST level, while 25 (50%) patients had deranged bilirubin level. There were total 18 (36%) patients who had deranged urea level, while no patients showed deranged creatinine levels.

In CLD it may not reflect the bleeding risk because the PT does not also assess the concurrent reduction in anticoagulant factors. The PT only measures factors that lead to clotting. However, the risk of bleeding is determined by a balance between factors that lead to clotting and factors that inhibit clotting.[10]

When coagulation profile was assessed, it was noticed that only 5 (10%) patients had normal PT level, while 34 (68%) patients had mildly prolonged PT and 11 (22%) patients had moderately prolonged PT however no patients showed severely prolonged PT. Similarly, 14 (28%) patients had normalaPTT level, 31 (62%) patients had mildly prolongedaPTT and 5 (10%) patients had moderately prolonged aPTT while no patients showed severely prolonged aPPT. In our study, 12 (24%) patients had platelet count between50,000-100,000/mm^3 while 5 (10%) patients had <50,000/mm^3. According to our study,35 (70%) of the patientshad deranged clotting profile and 60% of the patients presented with upper gastrointestinal bleed in the form of melena, hematemesis and hematochezia but no significant correlation exist between deranged clotting profile and the risk of upper gastrointestinal bleed.

12 patients who remained admitin medical wards were followed throughout the course of their stay in hospital, out of them 10 patients improved and discharged home while 2 of them expired in the ward.

CONCLUSION

Coagulation abnormalities were intense in CLD patients. Most of the patients showed deranged coagulation profile and decreased platelet count. Proper and routine screening of CLD patients

should be done so that in case of deranged coagulation profile, it can be predicted early and can be rectified on early basis to prevent the patients from hazardous sequel.

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