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Original Article

A Prospective Study of Anemia Profile of Chronic Liver Diseases Patients

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Abstract
The present prospective study was conducted to evaluate the prevalence of anemia, its type and therapeutic measures in chronic liver disease (CLD) patients. In cross sectional study of anemia profile including, Complete Blood Count (CBC), reticulocyte count, S. Iron, S. Ferritin, S. TIBC, G6PD, S.B12 and Coomb test was done in all selected CLD patients included in study. The therapy of anemia was also analyzed. In CLD cases 88% patients suffering from anemia. Most common type of anemia is normocytic normochromic. Macrocytic anemia is associated with history of alcoholism. Anemia can be treated with replacement of PCV and replacement of vitamin B12 and Folic acid therapy.
Keywords: *Anemia, Chronic Liver Disease, Therapeutic.*

Introduction

Liver is a largest organ of the body weighing 1-1.5 kg and represents 1.5% to 2.5% of the lean body mass. Liver performs numerous functions and vital roles in maintaining homeostasis, carbohydrate, lipid, and protein metabolism. It is a major storage site for iron, Vitamin B12 and folic acid. It is a responsible for various hematological abnormalities due to its synthetic function i.e. clotting factors synthesis and immunological function. The abnormalities in hematological indices frequently noted in CLD. The pancytopenia is associated with poor prognosis in CLD. The study was conducted to assess prevalence of anemia, analyze its type and therapeutic management in CLD cases. CLD is diagnosed by liver dysfunction more than 6 months due to any pathology. The clinical manifestations of CLD like Liver function test abnormality as decrease in S. Albumin, decrease in albumin: Globulin ratio, increase Prothrombin Time (PT), liver biopsy suggestive of CLD, USG findings are suggestive of cirrhosis of liver, associated with portal hypertension and/or ascites. CLD is associated with different types of anemia also i.e normocytic normochromic is commonest in nearly 75% of CLD patients, other type of anemia includes macrocytic anemia in alcoholic liver diseases. CLD patient may develop folic acid and Vitamin B12 deficiency because of inadequate food intake and associated intestinal malabsorption. Acute and chronic upper GI hemorrhage occurs as a complication of portal hypertension and gastropathy respectively, ultimately results secondary iron deficiency anemia.

Material and Methods

To assess prevalence of anemia and its type and management aspects we have selected the patients who are admitted in GCS Medical College& research Centre a tertiary care centre Ahmedabad and diagnosed as CLD by fulfilling below mentioned criteria.

Inclusion Criteria:

The patients with liver disease persist more than six months.

Exclusion Criteria:

The patients were suffering from acute liver failure, acute hepatitis or primary hepatocellular carcinoma.

Blood investigations such as complete Blood Count, liver function test and ultrasound were done in all cases, while CT abdomen, upper GI endoscopy was done when indicated. Once the patient was confirmed having CLD then the patient were undergone for anemia profile test include Hemoglobin, RBC count and indices, Total count, Platelet count, Reticulocyte count and peripheral smear examination for deciding types of anemia. Coomb test, G6PD estimation, Serum iron profile done in indicated cases. Hemoglobin estimation and blood count with RBC indices was done on auto analyser and peripheral smear interpretation was done by haematologist. All haematological reports are analysed according to standard normal value. Its interpretation was done according to standard value prescribed by manufacturer. Type of anemia was decided by peripheral smear and autonalyser report of RBC indices. Ultra sound examination of liver and upper abdomen was done to confirm hepatom-egaly, cirrhosis of liver, portal hypertension, splenomegaly, oesophageal verises and ascites.

Management therapy is analysed by PCV transfusion, folic acid, Vitamin B12, and oral or IV iron therapy. All above data were analyzed by standard statistical methods.

Results

The study results show bio- data, symptoms, signs and the investigative data in following table.

Table 1: Biodata of CLD patients and their days of hospitalization

Biodata	Cases (%)
Gender	male 82 (100%)-female 0 (0%)
Average age	48.4 years
Average Hospitalization days	6.48 days

All 82 cases are male gender only and adult age and average hospitalisation is 6.48 days

Table 2: Symptoms and alcohol data of CLD patients.

Symptoms and alcohol data	Cases (%)
Jaundice	47 (57.3%)
Haemetemesis	15 (18.3%)
Melena	16 (19.5%)
Distension of abdomen	58.5 (48%)
Alcohol intake data	Alcoholics 68 (82.9%) Non alcoholic14 (17.3%)
Less than 10 years of alcoholism	16 (19.5%)
More than 10 years of alcoholism	52 (51.2%)
Average pegs/day	4.05
Average days of drinking/Week	3.45

Jaundice is main presenting symptoms followed by distension of abdomen and haemetemesis.

Chronic alcoholism is noted in 82.9% patients out of which 76.4% has h/o alcohol intake more than 10 years. duration.

Table 3 : Liver function test data of CLD patients.

Test	Normal cases(%)	Abnormal cases (%)	Average
S. Bilirubin	13(16%)	69(84.1%)	4.1 mg/DL
S. ALT	20(24.4%)	62(75.6%)	41.64 IU/ML
S.AST	15(18.2%)	67(81.7%)	74.59 IU/ML
S. ALP	15(18%)	67(81.7%)	86.62 IU/ML
S. Albumin	2(4%)	48(96%)	2.75 mg/DL
PT	4(4.8%)	78(95.2%)	20.76 /12.8 Sec

Table 4: Hemoglobin profile of CLD patients.

Test	Cases (%)	Average
Hemoglobin		9.07 mg/dL
Normal (13.5 to 15.5 mg/DL)	10 (12.1%)	
Mild Anemia (9 to 13.5 mg/DL)	12 (14.6%)	
Moderate anemia(7 to 9 mg/DL)	46 (56.1%)	
Severe Anemia(<7 mg/DL)	15 (18.2%)	
MCV		88.6
Normocytic	46 (56.1%)	
Microcytic	11 (13.1%)	
Macrocytic	30(3.58%)	
MCH		28.76
Normal	75 (91.4%)	
Abnormal	6(7.3%)	

Commonest anemia is normocytic normochromic followed by macrocytic anemia

Table 5: Imagine and endoscopy study data of CLD cases

Abnormality on USG examination	cases (%)
Cirrhosis of liver	32 (39.2%)
Portal Hypertension	44 (54.1%)
Ascites	35 (42.6%)
Hepatomegaly	14 (17.1%)
Splenomegaly	26 (31.7%)
Shrunken Liver	32 (39%)
Endoscopy of Upper GI done	20 (24.4%)
Oesophageal verises	11 (13.4%)

Portal Hyper tension is commonest finding followed by cirrhosis of liver, ascites, and shrunken liver on USG of Upper abdomen.

Oesophageal verises detected in 55% cases in no of patients undergo upper GI Scopy.

Table 6 : Management modality for anemia of CLD cases

Treatment	Cases (%)
PCV transfusion	26 (30%)
Vitamin B12 replacement	34 (41.4%)
Vitamin Folic acid replacement	20 (24.3%)
Oral Iron therapy	5 (6.1%)

PCV transfusion given in 30% cases while other patients are treated with vitamin B12, folic acid replacement therapy while only 6.1% patients treated with iron replacement therapy.

Discussion

Anemia in CLD is mostly due to haemodilution, decreased erythropoietin level, suppression of bone marrow by inflammatory cytokinines, folic acid and vitamin B12 deficiency and occasionally by iron deficiency anemia followed by oesophageal verises bleeding. In our study anemia detected in 88% case and most common is normocytic normochromic anemia in 56% as it indicates a chronic inflammation as cause of anemia. Second most common cause of anemia is macrocytic anemia is due to vitamin B12 and folic acid deficiency associated with chronic alcoholism in 78% cases. Chronic alcoholism may directly suppress the erythrocyte precursors in the bone marrow. Severe anemia in 18% is associated with Haemetemesis noted in 18 % case and followed by iron deficiency anemia in 8% patients. Hypoalbuminimia was noted in 48% cases followed by raised Prothrombin Time increased in 48% cases suggest synthesis dysfunction of liver in albumin production and coagulation factors. Serum AST is more elevated (mean 70.59 IU/ML) in compared to Serum ALT elevation (mean 31.64 IU/ML) suggest micros-omal dysfunction than necrosis of hepatocytes. Imagine study as shown in table 5 is most useful in diagnosis of liver decompensation as it detect portal hypertension, ascites, and oesophageal verises and also liver pathology as well as splenic enlargement. Management aspects mentioned in Table 6 suggest PCV replacement in acute blood los followed by vitamin B12, folic acid and rarely iron replacement.

Conclusion

In CLD cases 88% patients suffering from anemia. Most common type of anemia is normocytic normochromic. Anemia can be treated with replacement of PCV and replacement of vitamin B12 and Folic acid therapy. Macrocytic anemia is associated with History of alcoholism. In our study 88% patients suffering from anemia in CLD cases and earlier treatment of anemia might reduce mortality and morbidity.

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