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CLINICAL PROFILE OF ANAEMIA IN DECOMPENSATED CHRONIC LIVER DISEASE

General Medicine

Dr. K. Santhosh Kumar* — 3rd year Postgraduate, Department of General Medicine, Aarupadai Veedu Medical College, Vinayaka Mission Research Foundation, Deemed to be University, Pondicherry. *Corresponding Author

Dr. N. Seshasayyana — Professor, Department of General Medicine, Aarupadai Veedu Medical College, Vinayaka Mission Research Foundation, Deemed to be University, Pondicherry.

Dr. S. Shankar — Assistant Professor, Department of General Medicine, Aarupadai Veedu Medical College, Vinayaka Mission Research Foundation , Deemed to be University, Pondicherry.

Dr. M. Manju — Professor & HOD, Department of Biochemistry, Aarupadai Veedu Medical College, Vinayaka Mission Research Foundation, Deemed to be University, Pondicherry.

ABSTRACT

Background: Cirrhosis represents a late stage of progressive hepatic fibrosis characterized by distortion of the hepatic architecture and the formation of regenerative nodules. Present study aimed to assess the severity of anaemia and its types in decompensated chronic liver disease in correlation with Child-Turcotte-Pugh Score. **Material & Method:** The present cross sectional study was conducted among the patients with chronic liver disease more than 20yrs of age. After obtaining informed and written consent from the patients, detailed history, clinical assessment and laboratory diagnosis was taken. (Complete blood count, red cell indices, peripheral blood smear). Blood samples (5ml of blood) collected by clean venepuncture using a 19 gauge needle after taking all aseptic precautions in sample collection tubes. Other investigations including USG abdomen is also taken by shifting patient to respective departments. All data were collected by the investigator and was analysed statistically to find the prevalence of anaemia and its types. **Result:** In present study total of 130 patients with mean age of 51.72±10.77yrs, among them 97.7% were male and 2.3% were female patients. Among the CTP class, 46.2% were in class B, 44.6% were class C and 9.2% were in class A. On comparison of the grade of CTP class with anemia, there is significant higher incidence noted with severe anemia in CTP class C (58.6%) compared to the class B (25%) and class A (25%) ($p<0.05$) Study showed the severity of anemia correlated with CTP class. The coagulation profile, study documented significant higher mean level of PT and INR among the CTP class C patients compared to the patients in class B and class A.($p<0.05$) **Conclusion:** The present study showed that the most common anemia found in cirrhosis is normochromic normocytic anemia, followed by macrocytic anemia and microcytic anemia. Child Turcott pugh scores showed that hemoglobin levels were significantly lower in CTP class C patients compared to other classes.

KEYWORDS

INTRODUCTION

Anaemia occurs in 75% of patients with chronic liver disease. Anaemia in uncomplicated cirrhosis is due to i. Haemodilution - due to increased plasma volume. ii. Shortened red cell survival-hypersplenism iii. Anaemia is the most common complication of liver cirrhosis and is seen in 75% of the cases[1].The aetiology of anaemia in liver disease is diverse and often multifactorial. Common causes include acute and chronic blood loss due to upper gastrointestinal (GI) bleeding, malnutrition, hypersplenism secondary to portal hypertension, and impaired coagulation[2] The other main cause is Spleenomegaly Alcohol causes anemia by its direct bone marrow toxicity, vitamin B12 and folate deficiency due to poor oral intake, and intestinal malabsorption[3] .The most common type of anemia encountered in liver cirrhosis is normocytic normochromic, Microcytic hypochromic, attributable to the chronic inflammatory state[4] .Acute and chronic blood loss from varices, portal hypertensive gastropathy and gastric antral vascular ectasia can give rise to iron-deficiency anemia, in which the picture is one of microcytic hypochromic[5].

Reduced bone marrow response to anaemia due to reduced erythropoietin level, chronic inflammation and increased level of inflammatory cytokines suppress the bone marrow. Patient with cirrhosis have low oxygen -hemoglobin affinity which increased tissue oxygen availability, leads to better tolerance of anaemia.

Present study aimed to assess the severity of anaemia and its types in decompensated chronic liver disease in correlation with Child-Turcotte-Pugh Score.

MATERIAL & METHOD:

This cross sectional study was conducted among decompensated chronic liver disease (DCLD) patients done over a period of two years October 2020-october 2022 presenting to outpatient and inpatient ward in department of General Medicine Aarupadai Veedu Medical college and hospital.

All patients in the age group of 20-80years and (whose symptoms persist >6months) diagnosed as DCLD with decompensation in form of jaundice, ascites, hepatic encephalopathy, bleeding varices. Patients with pre existing anemia due to other causes.Recent blood transfusion and Hepatocellular carcinoma were excluded from the study.

After obtaining informed and written consent from the patients, detailed history, clinical assessment and laboratory diagnosis was taken. Blood samples (5ml of blood) collected by clean venepuncture using a 19 gauge needle after taking all aseptic precautions in sample collection tubes. (Complete blood count, red cell indices, peripheral blood smear). Other investigations including USG abdomen were taken by shifting patient to respective departments.All data were collected by the investigator and was analysed statistically to find the prevalence of anaemia and its types.

STATISTICAL ANALYSIS

All the data were entered in excel sheet and analysed using SPSS v21 operating on windows 10. The data are summarized as mean, standard deviation, frequency and percentage. The data are presented with the help of tables, figures, bar diagram and pie charts. The mean difference between the continuous variables is analysed using student t-test and the categorical variables using the chi-square test. a p-value of <0.05 was considered statistically significant.

RESULTS

In present study total of 130 patients fulfilling inclusion criteria are included after obtaining the informed consent. The mean age of the patients was found to be 51.72±10.77yrs of age. Among the participants, 97.7% were male and 2.3% were female patients. Among the participants, 65.4% were Normocytic normochromic, followed with 20% showing macrocytic anemia and 14.6% with microcytic hypochromicanemia. On assessment the grade of anemia with the CTP score among the patients, there is significant higher CTP score among the severe grade of anemia compared to the moderate, mild and non-anemic patients. Among the CTP class, 46.2% were in class B, 44.6% were class C and 9.2% were in class A. On comparison of the grade of

CTP class with anemia, there is significant higher incidence noted with severe anemia in CTP class C (58.6%) compared to the class B (25%) and class A (25%) ($p<0.05$) Study showed the severe grade of anemia with severity of the liver cirrhosis correlated with CTP class.

On comparison of type of anemia with grade of CTP class, study found no significant difference in the distribution with no significant relation between them.($p>0.05$).On comparison of the mean level of hemoglobin between the CTP class, study found significant lower mean hemoglobin in CTP class C compared to class B and class A patients.($p<0.05$) Other parameters didn't show any significant difference. With the severity of the CTP class, there is significant increase in the total and direct bilirubin among the patients. Similarly with severity of the disease, there is significant decline in the mean level of serum albumin among the patients.($p<0.05$) .On assessment of the coagulation profile, study documented significant higher mean level of PT and INR among the CTP class C patients compared to the patients in class B and class A.($p<0.05$)

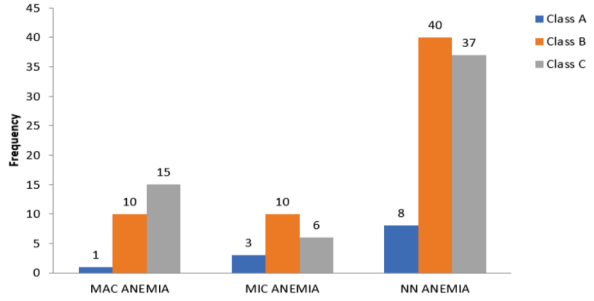

Figure1: Comparison of type of anaemia with severity of liver disease using CTP score

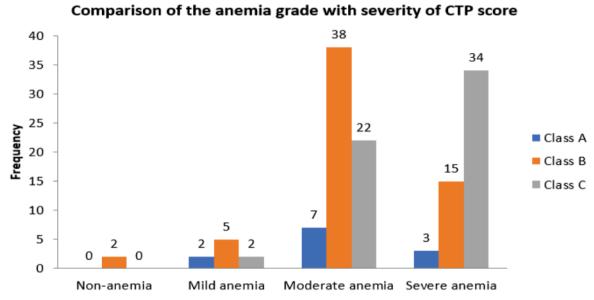

Figure 2: Comparison of the anaemia grade with severity of CTP score

Table1:Comparison of the mean blood parameters between the groups

	CTP Class						p-value
	Class A		Class B		Class C		
	Mean	SD	Mean	SD	Mean	SD	
Hb	8.97	1.53	8.94	1.94	7.98	1.67	0.01*
MCV	88.0	7.0	88.6	7.4	91.0	7.1	0.146
MCH	30.0	3.1	30.4	2.8	31.2	2.7	0.157
MCHC	33.2	1.4	33.7	1.5	34.0	1.8	0.327

Table2:Comparison of the coagulation profile between the groups

	CTP Class						p-value
	Class A		Class B		Class C		
	Mean	SD	Mean	SD	Mean	SD	
PT	17.2	.9	18.9	2.7	20.7	3.9	0.01*
INR	1.2	.2	1.4	.2	1.5	.3	0.01*

DISCUSSION

Cirrhosis represents a late stage of progressive hepatic fibrosis characterized by distortion of the hepatic architecture and the formation of regenerative nodules. It is generally considered to be irreversible in its advanced stages, at which point the only treatment option may be liver transplantation. Anaemia is the most common complication of liver cirrhosis and is seen in 75% of cases.[2] The etiology of anaemia in liver disease is diverse and often multifactorial. Common causes include acute and chronic blood loss due to upper gastrointestinal (GI) bleeding, malnutrition, hypersplenism secondary to portal hypertension, and impaired coagulation.[3]

Present study aimed to assess the severity of anaemia and its types in decompensated chronic liver disease in correlation with Child-Turcotte-Pugh Score.

In present study total of 130 patients fulfilling inclusion criteria are included after obtaining the informed consent. The mean age of the patients was found to be 51.72±10.77yrs of age. Among the participants, 97.7% were male and 2.3% were female patients. Among the participants, 65.4% were Normocytic normochromic anaemia, followed with 20% showing microcytic anaemia and 14.6% with microcytic anaemia. Among the CTP class, 46.2% were in class B, 44.6% were class C and 9.2% were in class A. The alcoholic group had fifty patients. Child A, B, and C: 15%, 45 percent, and 40%, respectively. Anaemia is quite frequent in CLD patients, with iron deficiency being the most common cause. [6]

Normocytic Normo-chromic Microcytic hypochromic, Macrocytic primarily in alcoholics, leukocytosis was more common than leucopenia and thrombocytopenia, increased prothrombin time and APTT were among the hematological abnormalities reported. Every chronic liver disease patient should be screened for hematological abnormalities and treated as soon as feasible. Macrocytosis is also one of the common abnormalities seen in Cirrhosis[7] According to the findings, higher MCV levels in non-anemic cancer-free persons were linked to increased all-cause mortality in both men and women, as well as cancer mortality, namely liver cancer mortality in males. Prospective investigations are needed in the future to confirm our findings.[8] .72% of patients, the PT-INR was high. However, only 25% of patients with a prolonged PT-INR suffered upper GI bleeding, indicating that other mechanisms, such as a rebalanced hemostatic system, were at action, although this has to be validated with more thorough investigations. This finding emphasizes the importance of treating the patient's clinical condition rather than lab values when treating coagulopathy in cirrhotic patients.[9]

On comparison of the grade of CTP class with anaemia, there is significant higher incidence noted with severe anaemia in CTP class C (58.6%) compared to the class B (25%) and class A (25%) ($p<0.05$) Study showed the severe grade of anaemia with severity of the liver cirrhosis correlated with CTP class. On comparison of the mean level of haemoglobin between the CTP class, study found significant lower mean haemoglobin in CTP class C compared to class B and class A patients.($p<0.05$). Similarly with severity of the disease, there is significant decline in the mean level of serum albumin among the patients.($p<0.05$) The coagulation profile, study documented significant higher mean level of PT and INR among the CTP class C patients compared to the patients in class B and class A.($p<0.05$)

CONCLUSION

The present study showed that the most common anemia found in cirrhosis is normochromic normocytic anemia, followed by macrocytic anemia and microcytic anemia.Child Turcott pugh scores showed that hemoglobin levels were significantly lower in CTP class C patients compared to other classes.

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