



HAEMATOLOGICAL ABNORMALITIES IN DECOMPENSATED CHRONIC LIVER DISEASE IN A TERTIARY CARE HOSPITAL- AN OBSERVATIONAL STUDY

General Medicine

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ABSTRACT

Background: The liver is the largest organ of the body, weighing about 1-1.5 kg and representing 1.5-2.5% of the lean body mass. Liver plays an important role in homeostasis. Liver helps in Formation and secretion of bile, Storage function (Glycogen, Lipid, B12 and Folic acid, Fat and water soluble vitamins), Inactivation of various substances (Toxins Steroids Hormones), Secretion of plasma proteins (Albumin Fibrinogen α 1-antitrypsin Ceruloplasmin Haptoglobins Transferrin C3 component of complement), Synthesis of Immuno globulins (IgG, IgM, IgA), Synthesis of Urea. Cirrhosis is defined anatomically as a diffuse process with fibrosis and nodule formation. It is the end result of the fibrogenesis that occurs with chronic liver injury. According to functional status of liver, cirrhosis may be compensated cirrhosis or decompensated cirrhosis. Decompensated cirrhosis is said to be decompensated, when it presents with any of complications like Variceal haemorrhage, Ascites, Hepatic encephalopathy, Jaundice. **Aim:** To assess the hematological profile of patients with decompensated chronic liver disease. **Materials And Methods:** A Hospital-based observational study was conducted in the Department of General Medicine, Santhiram medical college and general hospital for six months. A total of 50 cases with decompensated chronic liver disease patients in medical outpatient and admitted in medical wards to the hospital during this period were taken into the study. **Results:** Out of 50 patients in this study, there are 43 male patients and 7 female patients. The age of patients in this study were in the range from 20 to 60. Among the variable etiologies, alcoholic CLDs include around 67%, followed by Cirrhosis of viral etiology comprising of 13%, NASH-induced cirrhosis - 8%, cryptogenic cirrhosis - 7%. Other minor causes are biliary cirrhosis, Wilson's disease and autoimmune hepatitis induced cirrhosis. 45 patients had anaemia only 10% patients had normal hemoglobin above 12 gm%. About 30% patients had severe anaemia less than 8 gm% Among the 50 patients in this study, Thrombocytopenia was found to be in 80% patients. Severe thrombocytopenia of $< 50,000$ cells/mm³ was found to be in 22% patients. Among the patients with at least one episode of UGI bleed, the mean platelet count was about 66.46 ± 103 . And the mean platelet count was around 152.42 ± 103 , in those who never had a bleeding episode. This shows a statistical linear co-relation between platelet count and episodes of UGI bleed. Among the 50 patients, 18% patients had leucocytosis, of which 6% patients had lymphocytosis. Leucocytosis is observed in patients with fever due to secondary infection of ascites due to repeated paracentesis and due to spontaneous bacterial peritonitis. Leucopenia is present in 20% of patients. 35% patients had pancytopenia. **Conclusion:** Most common haematological abnormalities observed were anaemia (88%) and thrombocytopenia (in 80% cases). 29% cases of anaemias were severe and 58% of patients with thrombocytopenia had platelet count < 1 lakh/cumm. Alcoholic CLDs had low, mean Hb than non-alcoholic CLDs. Most common anaemia observed was normocytic normochromic anaemia. Pancytopenia is common in alcoholic CLDs. Decreasing Platelet count is a clear indicator for UGI BLEED and presence of varices in OGD scopy.

KEYWORDS

INTRODUCTION:

Liver plays an important role in homeostasis. Any disease affecting the functions of liver will cause a breach in whole body homeostasis. Liver plays a major role in carbohydrate metabolism, lipid metabolism and protein metabolism. Its role in endocrine and hematological manifestations are important. Loss of Liver function can manifest as subtle metabolic abnormalities and derangements in hematological parameters. Liver plays a major role in maintaining the hematological parameters in normal and maintain the hemostasis. Liver is the storage site for iron, B12 and folic acid which are necessary for the normal hematopoiesis. Liver also secretes the clotting factors and the inhibitors and keep the hemostasis in equilibrium. Hepatocellular failure, portal hypertension and jaundice may affect the blood picture. Chronic Liver disease is usually accompanied by hypersplenism. Diminished erythrocyte survival is frequent. In addition both parenchymal hepatic disease and cholestatic jaundice may produce blood coagulation defects. Dietary deficiencies, alcoholism, bleeding and difficulties in hepatic synthesis of proteins used in blood formation or coagulation add to complexity of the problem. Spontaneous bleeding, bruising and purpura together with a history of bleeding after minimal trauma such as venepuncture, are most important indications of a bleeding tendency in patients with liver disease than lab tests.

AIMS AND OBJECTIVES:

To assess the hematological profile of patients with decompensated chronic liver disease

MATERIALS AND METHODS:

A Hospital-based cross-sectional study was conducted in the Department of General Medicine Santhiram Medical College, and General Hospital for six months after approval from the Hospital Ethics and Research Committee.

Duration Of Study: From July 2023 to January 2024

Sample Size: 50

METHODS OF DATA COLLECTION:

- All the selected cases of decompensated chronic liver disease admitted to Santhiram medical college and general hospital, Nandyal, fulfilling the inclusion criteria, were taken for study after taking prior informed consent.
- Information is collected through a pre-structured proforma for each study subject
- Qualifying study subjects will be undergoing detailed history, clinical examination, and laboratory investigations.

Sampling Technique: Simple Random Sampling

Inclusion Criteria:

- All patients with liver disease whose symptoms persists for more than 6 months
- Alcoholic cirrhosis, Post-infective & metabolic causes of chronic liver diseases are taken in consideration
- Patients who are willing to participate and give informed consent.

Exclusion Criteria:

- Patients with known primary hepatocellular carcinoma or GI malignancies were excluded.
- Patients with primary coagulation disorders or primary abnormalities in hemostatic function were excluded.
- Patients with pre-existing anaemia of other causes were excluded.
- Patients with Acute hepatic failure were excluded.
- Patients suffering from end stage medical diseases like CKD, Coronary artery disease, COPD were excluded
- Patient who are not willing to participate and not willing to give informed consent.

Data Analysis:

- Data was collected using a pretested proforma meeting the study's

objectives. Detailed history, physical examination, and necessary investigations were undertaken.

2. The chi-square and Fisher's Exact test were used in statistical analysis to compare proportions. At a P-value of 0.05, statistical results were considered significant <0.01.

RESULTS:

Table 1: - Age Distribution Of Study Population

Age	No. of cases	Percentage
<30	2	4.0 %
31-40	11	22.0 %
41 – 50	17	34.0 %
51 – 60	15	30.0 %
>60	5	10.0 %
Total	50	100.0 %

Table 2: - Gender Distribution

Gender	No. of cases	Percentage
male	43	86.0 %
female	7	14.0 %
Total	50	100.0 %

A male preponderance of 86% was found in this study.

Table 3: - Causes Of DCLD Among Study Population

CAUSE	%
ALCOHOL	67%
VIRAL INFECTION	13%
AUTOIMMUNE	3%
WILSON	3%
NASH	8%
CRYPTOGENIC	7%
BILIARY CIRRHOSIS	2%

Table 4: Severity Of Anemia Among Study Population

SEVERITY OF ANEMIA	NO OF PATIENTS	PERCENTAGE
> 12 (NORMAL)	5	10%
10-12 (MILD)	9	18%
8-10 (MODERATE)	26	52%
< 8 (SEVERE)	15	30%

45 patients had anaemia and only 5 patients had normal hemoglobin above 12 gm%. About 15 patients had severe anaemia less than 8 gm%.

Table 5: Platelet Count Among Study Population

PLATELET COUNT	NO OF PATIENTS	PERCENTAGE
< 50000	11	22%
50,000 – 1 LAKH	18	36%
1-1.5 LAKH	11	22%
1.5-2 LAKH	4	8%
> 2 LAKH	6	12%

Most of the patients had platelet count in the range of 50000 to 1 lakh

Table 6 : WBC Count Among Study Population

WBC COUNT	NO OF PATIENTS	PERCENTAGE
< 3000	10	20%
3000-6000	23	46%
6000-9000	9	18%
9000-12000	3	6%
> 12000	5	10%

DISCUSSION:

The study involving 50 patients done at santhiram medical college hospital has thrown light over the haematological abnormalities of chronic liver disease. The results of this study confirms with previous published reports. In this study involving 50 patients, 43 patients were males and 7 were females. This gender distribution was comparable to a study done by Anbazhagan et al in which 88% were males and 12% were females. Most common etiology found in our study was alcoholism seen in 67% of patients followed by Viral hepatitis observed in 13% cases (hepatitis B in 8%, hepatitis C in 5%) and NASH-related CLD in 8% of cases. These observations were comparable to the study by Gautam Ray et al. They showed alcohol as the most common aetiology for the CLD (in 42% cases) followed by viral hepatitis (in 31% cases- 21% cases were hepatitis B and 10% cases were hepatitis C) and cryptogenic causes (in 25% cases). 88% of

patients in this study had anaemia. Severe anaemia (Hb <8gm%) was observed in 29% patients. Mean Hb of the study group was 9.142 gm%. Mean Hb in females were lower than males (7.52 gm% vs. 9.40 gm%). Mean Hb was less in alcohol-related CLD when compared to CLDs (8.63 gm% vs 10.16 gm%) due to other aetiologies. Anbazhagan et al found out 80% of the study population were anaemic and in 30% cases Hb was less than 6 gm%. A study by Rosario Gonzalez-Casas et al showed that anaemia due to various aetiologies occur in 75% cases of CLD patients. In our study group, all the 50 patients, WBC total count are in the range of 1,300 to 18,200 cells per mm³. About 18% patients had leucocytosis, which were mostly due to community-required infection, nosocomial infection, spontaneous bacterial peritonitis and secondary peritonitis due to repeated peritoneal paracentesis. About 50% of patients with leucocytosis had high-grade fever and all patients with leucocytosis had increased cell count mostly of polymorphs in ascitic fluid analysis, which suggests the presence of peritonitis in this group of patients. Leucopenia was observed in 20% patients and the rest had normal WBC count

CONCLUSION:

1. Most common haematological abnormalities observed were anaemia(88%) and thrombocytopenia (in 80% cases).
2. 29% cases of anaemias were severe and 58% of patients with thrombocytopenia had platelet count <1 lakh/cmm.
3. Alcoholic CLDs had low, mean Hb than non-alcoholic CLDs.
4. Most common anaemia observed was normocytic normochromic anaemia.
5. Pancytopenia is common in alcoholic CLDs.
6. Decreasing Platelet count is a clear indicator for UGI BLEED and presence of varices in OGD scopy

List Of Abbreviations

AST - Aspartate Transaminase
 ALT - Alanine Transaminase
 RBC - Red blood cell
 WBC - White blood cell
 HBV - Hepatitis B virus
 HCV - Hepatitis C virus
 HCC - Hepatocellular Carcinoma
 IFN - Interferon
 TIBC - Total Iron binding Capacity
 CLD - Chronic liver disease
 DCLD - Decompensated chronic liver disease
 TPO - Thrombopoietin
 NAFLD - Non Alcoholic Fatty Liver Disease
 NASH - Non Alcoholic Steatohepatitis