

Anemia in Chronic Liver Disease and Liver Failure in Adults - A Clinical Study

A. Frijo Jose, P.M. Jayaraj¹, G. Chethan¹

ABSTRACT

Introduction: Chronic liver disease with or without liver failure is associated with considerable morbidity and mortality and affects the quality of life as usually they are progressive and often non-reversible. In the present study we have attempted to look at the clinical presentation, etiologies and anemia profile for chronic liver disease patients in our population. Current study aimed to assess the clinical profile and type of anemia in chronic liver disease and liver failure in adult patients.

Material and Methods: This was a prospective observational hospital-based study carried out in the department of General Medicine at, over a period of eighteen months. A total of 38 patients with chronic liver disease with/without liver failure were studied for patient demographics, clinical presentation, symptomatology, for etiology of the disease, for degree of anemia and morphologic type of anemia.

Results: The patient age ranged from 19 to 76 years and the male to female ratio was 2.8:1. CLD was most common in the fifth and sixth decades of life. Malaise, nausea, emesis, jaundice, anemia and hepatomegaly were the most common clinical features. Most (44.7%) cases were of chronic hepatitis with cirrhosis. Alcoholic liver disease and HBV infection were the most common causes for CLD and liver failure. A total of 33 (86.8%) patients had anemia and the normocytic normochromic type of anemia was the most common (39.4%) type seen.

Conclusion: Chronic liver disease and liver failure are more common in the fifth and sixth decades of life and are most often caused by alcoholic liver disease and HBV infection in India. CLD has varied clinical presentation with symptoms often related to the gastrointestinal tract and organomegaly. It is frequently associated with moderate degree of anemia which is often of normocytic type.

Keywords: Chronic Liver Disease, Cirrhosis, Liver Failure, Alcoholic Cirrhosis

INTRODUCTION

Chronic liver disease (CLD) with or without liver failure is associated with considerable morbidity and mortality and affects the quality of life as usually they are progressive and often non-reversible.¹ The etiological causes for cirrhosis are diverse and vary with the geographical populations worldwide. Countries with high alcohol consumption have higher rates of alcoholic cirrhosis, whereas others have shown viral hepatitis as the most common cause for cirrhosis.² Liver cirrhosis is largely preventable. The etiologies of CLD vary from chronic heavy alcohol consumption, hepatitis B and C infections, autoimmune diseases, nonalcoholic

steatohepatitis (NASH), biliary cirrhosis, cardiac cirrhosis, genetic disorders like hemochromatosis, Wilson's disease, α 1 antitrypsin deficiency to unknown causes known as cryptogenic cirrhosis.²

Mortality associated with CLD and liver failure has been on the rise in India since 1980, as has alcohol consumption. Also the prevalence of hepatitis B and C and diabetes (a major risk factor for nonalcoholic fatty liver disease/NAFLD) have been increasing.¹

Liver plays an important role in normal erythropoiesis and CLDs are frequently associated with hematological abnormalities. Almost 75% of patients with decompensated CLD have some degree of anemia. The CLD with concomitant anemia can worsen the prognosis for the patient.³

In the present study we have attempted to look at the clinical presentation, etiologies and anemia profile for chronic liver disease patients in our population.

Current study aimed to assess the clinical profile and type of anemia in chronic liver disease and liver failure in adult patients.

MATERIAL AND METHODS

This was a prospective observational hospital-based study carried out in the department of General Medicine over a period of eighteen months from January 2017 to July 2018

Inclusion criteria

1. Both genders and patients above 18 years
2. New cases of hepatomegaly or hepatosplenomegaly for more than 6 months duration and having abnormal liver function tests.
3. Already known cases of chronic hepatitis coming to our hospital for first time.
4. Repeated episodes of jaundice in last six months and under evaluation for the cause.

¹Assistant Professor, Department of General Medicine, P. K. Das Institute of Medical Sciences, Vaniyankulam, Ottapalam, Palakkad, Kerala-679522, India

Corresponding author: Dr .P.M. Jayaraj, Assistant Professor, Department of General Medicine, P. K. Das Institute of Medical Sciences, Vaniyankulam, Ottapalam, Palakkad, Kerala-679522, India

How to cite this article: A. Frijo Jose, P.M. Jayaraj, G. Chethan. Anemia in chronic liver disease and liver failure in adults - a clinical study. International Journal of Contemporary Medical Research 2020;7(2):B33-B36.

DOI: <http://dx.doi.org/10.21276/ijcmr.2020.7.2.39>



5. Unexplained hepatomegaly

Exclusion criteria

1. Acute hepatitis or any hepatitis less than 6 months duration

2. Follow up patients on their repeat visit were excluded

A detailed clinical history was taken for all the patients followed by complete general and systemic examination. Special emphasis was given on drug history, blood transfusions, travel history, dietary habits, social habits, addictions, occupation and family history. Routine investigations of complete blood picture, ESR, blood glucose, serum electrolytes, urine analysis, C-reactive protein were done. Renal function test, liver function tests, viral marker tests (HBsAg, HBeAg, Anti HBc, Anti HCV), HIV 1 and 2, autoimmunity related tests like antinuclear antibody profile, Lupus erythematosus (LE) cell test, coagulation tests of prothrombin time and activated partial thromboplastin time were done. Ophthalmic consultation was taken for all the patients.

Liver FNAC and/or biopsy was done in a few patients. A total of 38 patients who were diagnosed as chronic liver disease with or without liver failure were studied. The patient demographics, clinical presentation, etiologies, degree of anemia based on hemoglobin level and morphologic type of anemia based on the peripheral smear examination were studied.

STATISTICAL ANALYSIS

Descriptive statistics like mean and percentages were used for the analysis.

RESULTS

A total of 38 patients who were diagnosed as chronic liver disease with or without liver failure were studied. The patient age ranged from 19 years to 76 years. There were 28 (73.6%) males and 10 (26.3%) females and the male to female ratio was 2.8:1. Most number of cases (23 cases, 51.5%) were seen in the fifth and sixth decades of life (table-1). Malaise, nausea, emesis, jaundice and anemia and hepatomegaly were the most common clinical features (table-2). Most (44.7%) cases were of chronic hepatitis with cirrhosis (table-3). Alcoholic liver disease and HBV infection were the most common causes for chronic liver disease accounting together for 47.3% cases (table-4). Moderate degree of anemia was more common in chronic liver disease. A total of 33 (86.8%) patients had anemia (table-5). Normocytic normochromic anemia was the most common (39.4%) type to be seen

Age (in years)	No. of cases	Percent (%)
18-30	1	2.6%
31-40	8	21.0%
41-50	10	26.3%
51-60	13	34.2%
61-70	4	10.5%
71-80	2	5.2%
Total	38	100%

Table-1: Age-wise distribution of the patients

Presenting features*	No. of cases	Percent (%)
Malaise	35	92.1%
Fever	15	39.4%
Loss of appetite and loss of weight	33	86.8%
Nausea, emesis	31	81.5%
Pain in abdomen, dyspepsia	20	52.6%
Jaundice	19	50%
Hematemesis	2	5.2%
Malena	3	7.8%
Anemia	29	76.3%
Pedal edema	2	5.2%
Clubbing	3	7.8%
Hepatomegaly	18	47.3%
Splenomegaly	11	28.9%
Ascites	15	39.4%
Caput medusae	1	2.6%
Altered sensorium	2	5.2%

* The presenting signs and symptoms were overlapping and many patients had a combination of the above.

Table-2: Clinical features of the patients

Clinicopathologic category	No. of cases	Percent (%)
Chronic hepatitis with cirrhosis	17	44.7%
ACLF	10	26.3%
Non viral infections	3	7.8%
Malignant liver disease	6	
MODS as part of sepsis	2	5.2%
Total	38	100%

ACLF: Acute on chronic liver failure

Table-3: Clinicopathological categories of chronic liver disease and liver failure

Etiology	No. of cases	Percent (%)
HBV	7	18.4%
HCV	2	5.2%
Alcoholic	11	28.9%
Drug induced	2	5.2%
Amoebiasis	1	2.6%
Hydatid cysts	1	2.6%
Chronic DIC	1	2.6%
Metastatic malignancy	3	7.8%
Primary hepatocellular carcinoma	2	5.2%
Widespread cholangiocarcinoma	1	2.6%
MODS as part of sepsis	2	2.6%
Unknown/Cryptogenic etiology	5	13.1%
Total	38	100%

MODS: Multiorgan dysfunction syndrome

Table-4: Etiological categories for chronic liver disease and liver failure

(table-6).

DISCUSSION

In the present study a total of 38 patients with chronic liver disease and liver failure were studied for patient demographics, clinical symptomatology, clinicopathologic

Hb (gm/dl)	No. of cases	Percent (%)
<6 Severe anemia	10	26.3%
6-8.9 Moderate anemia	12	31.5%
9-12.9 Mild anemia	11	28.9%
13 or above/ Normal	5	13.1%
Total	38	100%

Table-5: Anemia/Hemoglobin values in the patients

Predominant Morphologic type	No. of cases	Percent (%)
Normochromic	15	39.4%
Microcytic	9	23.6%
Macrocytic	10	26.3%
Dimorphic	4	10.5%
Total	38	100%

Table-6: Morphologic type of anemia

categories and possible etiologies.

Sample size: Our study had 38 patients. Sharma et al¹ studied the etiology of cirrhosis in 178 patients in their study from North India. Anbazhagan et al³ studied 50 patients with anemia in decompensated chronic liver disease cases. Mallik et al⁴ studied 35 cases of CLD for clinicopathologic spectrum and etiologies of chronic liver disease.

Age-wise distribution of the cases: In our study most number of cases (23 cases, 51.5%) were seen in the fifth and sixth decades of life. Sharma et al¹ in their study observed that 64.6% patients were in the age group of 40-59 years and the mean age was 51.2 years. Anbazhagan et al in their study of 50 patients observed that the patient age ranged from 20 to 70 years and most of their patients were in the middle age group. In the study by Mallik et al⁴ common age group was from 11 to 20 years. And majority (80%) of their patients were below 50 years.

Gender-wise distribution of cases: Our study had a definite male preponderance with a male to female ratio of 3.2:1. Various studies have given the gender ratio as 2.3:1, 7.3:1, and 2.2:1.^{1,2,4} Most of the Indian studies have given male predominance and our findings compare well with the above authors.

Clinicopathological categories of chronic liver disease and liver failure: In our study, most of the cases were of chronic hepatitis with cirrhosis accounting for 44.7% cases followed by acute on chronic liver failure (ACLF) which were 26.3%. Mallik et al⁴ also observed 74.25% of their cases to be of chronic hepatitis with cirrhosis. They observed few cases (2.6%) of metabolic diseases like Wilson's disease and alpha 1 antitrypsin deficiency. We did not encounter this category in our study. Etiology wise in our study most common etiology for CLD was alcoholic liver disease with cirrhosis (28.9%) and chronic HBV infection (18.4%) cases. Sharma et al¹ observed 62.9% and 10.1% of their cases due to alcoholic disease and HBV infection respectively. Mallik et al⁴ observed 8.5% and 34.2% of their cases due to alcoholic cirrhosis and HBV infection.

The cryptogenic etiology in our study was 13.1%. Others have reported it as 9.6% and 31.43%.^{1,4}

There are various definitions of ACLF. In general, patients with either diagnosed or undiagnosed chronic liver disease occasionally present with an acute deterioration of liver function caused by various insults to the liver. This is known as ACLF.

The Asian Pacific Association for the Study of the Liver (APASL) consensus defines ACLF as "an acute hepatic insult manifesting as jaundice (serum bilirubin \geq 5 mg/dL) and coagulopathy (INR \geq 1.5), complicated within 4 wk by ascites and/or encephalopathy in patients with previously diagnosed or undiagnosed chronic liver disease/cirrhosis, and is associated with a high 28-d mortality".⁶

The European Association for the Study of the Liver-chronic liver failure (EASL-CLIF) Consortium defined ACLF as acute decompensation of cirrhosis in the form of one or more major complications of liver disease, including ascites, hepatic encephalopathy, gastrointestinal bleeding, and bacterial infection, associated with at least two organ failures with one being renal failure (serum creatinine \geq 1.5 mg/dL) and high 28-d mortality of greater than 15%.⁷

In our study we had 6 (15.7%) cases of malignant disease of the liver including primary and secondary neoplasms.

It is estimated that ACLF is present in between 24% and 40% of patients with cirrhosis admitted to the hospital.⁸ Viral hepatitis, alcohol or a combination of both are the predominant causes of underlying chronic liver disease in ACLF globally.⁹

Clinical features: Most common symptomatology in our study for CLD was that of malaise, fatigue, fever, loss of weight and appetite, jaundice, pain in abdomen, organomegaly and especially hepatomegaly. The liver failure patients in addition had altered sensorium and hepatic encephalopathy. Mallik et al⁴ also observed fatigue, fever, loss of weight and loss of appetite, jaundice in most of their study patients.

Anemia: In our study, moderate degree of anemia was more common in chronic liver disease ie hemoglobin in the 6 to 8.9 gm/dl range. The peripheral smear showed predominantly normocytic type of anemia.

Liver has an active role in normal erythropoiesis. Any chronic liver diseases eventually give rise to hematological abnormalities. Anemia of diverge etiology occurs in about 75% patients with DCLD.³ Anemia occurring in addition to already compromised hepatic functions complicates the situation for the patients.

In our study 31.5% patients revealed moderate degree of anemia. Anbazhagan et al³ in their study reported 32% of the study population to have moderate anemia. In our study a total of 86.8% patients had varying anemia. Our findings compare well with that of Anbazhagan et al³ who observed 80% of their CLD patients to have anemia and that too predominantly normocytic type which is the hallmark of chronic diseases.

One fifth of deaths related to liver cirrhosis in the year

2010 considering world-wide numbers, occurred in India alone. This emphasizes the need for us to take adequate and appropriate steps to control the risk factors of chronic liver disease, cirrhosis and liver failure.¹⁰

CONCLUSION

Chronic liver disease and liver failure are more common in the fifth and sixth decades of life and are most often caused by alcoholic liver disease and HBV infection in India. CLD has varied clinical presentation with symptoms often related to the gastrointestinal tract and organomegaly. It is frequently associated with moderate degree of anemia which is often of normocytic type.

REFERENCES

3. Sharma B, Marwah R, Raina S, Sharma N, Kaushik M, Kaushal SS. A study on the etiology of cirrhosis of liver in adults living in the Hills of Himachal Pradesh, India.
4. Schuppan D, Afdhal NH. Liver Cirrhosis. *Lancet*. 2008;8;371(9615):838–51.
5. Anbazhagan G, Mohan Raj P, Kalaivalli S, Vishnuprasanth. Red Blood Cell Abnormalities in Decompensated Chronic Liver Disease (DCLD). *Journal of Evidence based Medicine and Healthcare* 2015;2(7):826-833.
6. Mallik S, Sarkar K, Rahman M, Haldar S. Clinical and etiological study on chronic liver diseases. *International Journal of Contemporary Medicine Surgery and Radiology* 2018;3(2):B77-B80.
7. Jalan R, Gines P, Olson JC, Mookerjee RP, Moreau R, GarciaTsao G, et al. Acute-on chronic liver failure. *J Hepatol* 2012; 57: 1336-1348.
8. Sarin SK, Kedarisetty CK, Abbas Z, Amarapurkar D, Bihari C, Chan AC, et al. Acute- n-chronic liver failure: consensus recommendations of the Asian Pacific Association for the Study of the Liver (APASL) 2014. *Hepatology Int* 2014; 8: 453-471.
9. Moreau R, Jalan R, Gines P, Pavesi M, Angeli P, Cordoba J, et al. CANONIC Study Investigators of the EASL-CLIF Consortium. Acute-on-chronic liver failure is a distinct syndrome that develops in patients with acute decompensation of cirrhosis. *Gastroenterology* 2013;144:1426-1437.
10. Bajaj JS, O’Leary JG, Reddy KR. Survival in infection-related acute-on-chronic liver failure is defined by extrahepatic organ failures. *Hepatology* 2014;60:250–6.
11. Wong RJ, Aguilar M, Cheung R. Nonalcoholic steatohepatitis is the second leading etiology of liver disease among adults awaiting liver transplantation in the United States. *Gastroenterology* 2015;148:547–55.
12. Mokdad AA, Lopez AD, Shahrz S, Lozano R, Mokdad AH, Stanaway J, et al. Liver cirrhosis mortality in 187 countries between 1980 and 2010: a systematic analysis. *BMC Medicine* 2014;12:145.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 10-01-2020; **Accepted:** 14-02-2020; **Published:** 29-02-2020