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Original Research Article

An observational study to assess the clinical profiles of patients with chronic liver disease

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ABSTRACT

Background: Chronic liver disease (CLD) is an escalating degradation of the functions of the liver exceeding for more than 6 months with a continued cycle of inflammation, destruction, and regeneration of the liver parenchyma. As per the data obtained from the 2017 Global Burden of Disease, there was a 11.4% increase in CLD related mortality since 2012. Thus, the main objective of this study was to study the clinical profile of patients with CLD.
Methods: This was a cross-sectional observational study conducted on 200 patients satisfying the inclusion criteria. The patients with presenting complaints suggesting of CLD were followed for confirmation of diagnosis. History and clinical examination were recorded as per a predefined proforma designed for the study.
Results: Almost four-fifth of the participants were male (79.5%). Most of the patients (87.5%) presented with abdominal distension and jaundice (80.5%). Half of the CLD patients (51.5%) belonged to Class B, followed by 46.5% of patients in class C of Child Turcotte Pugh. Liver function test, Renal function test and coagulation profile were deranged in majority of patient and USG abdomen showed features of CLD along with portal hypertension in approximately 82.5% of patients.
Conclusions: Male gender in the age-group of 41 to 60 years was mostly affected and mainly belonged to CTP class B and class C. Most common complications observed in CLD patients were hepatic encephalopathy followed by upper gastrointestinal bleed and coagulopathy.

Keywords: Chronic liver disease, Clinical profile, Laboratory findings of CLD

INTRODUCTION

Chronic liver disease (CLD) is an escalating degradation of the functions of the liver exceeding for more than 6 months with a continued cycle of inflammation, destruction, and regeneration of the liver parenchyma, which eventually leads to fibrosis and finally cirrohosis.[1] As per the data obtained from the 2017 Global Burden of Disease, there was a 11.4% increase in CLD related mortality since 2012.[2] There is evidence suggesting that liver illnesses are having a growing negative impact on the nation's economy and health care resources in addition to being a leading cause of early mortality and disability.[2]

In a study done by Maskey et al the main complications of CLD were gastrointestinal haemorrhage, hepatic failure, hepatocellular carcinoma, and bacterial infection.[3] Common presenting symptoms include jaundice, fatigue, itching, poor appetite, abdominal distension, and intestinal bleeding.[4] In most cases, CLD remains asymptomatic until it reaches cirrhosis when the clinical decompensation, i.e., ascites, sepsis, variceal bleeding, encephalopathy, and non-obstructive jaundice occurs.[5]

The main objective of this study was to study the clinical profile of patients with CLD.

METHODS

Study design

This was a cross sectional observation study.

Duration of study

The study duration was from March 2021 to March 2022.

Place of study

The study was conducted in Government medical college, Kozhikode, Kerela, India.

Study population

All patients who were admitted with chronic liver disease in medicine department of Government medical college, Kozhikode, Kerela, India were considered the study population for this study.

Inclusion criteria

Patients with CLD of any cause of more than 18 years, diagnosed as per clinical, biochemical and radiological parameters were included.

Exclusion criteria

Patients less than 18 years and patients who did not give consent were excluded.

Ethical consideration

Approval from the Institutional Ethical Committee was obtained before starting data collection.

Sample size

A non-probability consecutive sampling technique was used to sample the study subjects for the study. All the patients conforming to the inclusion criteria were enrolled in the study after obtaining consent from them to be part of the study.

A study conducted by Mukherjee et al suggested that the prevalence of CLD was 13014 (19·77%, median age 43 years, 73% males).[6]

The following assumptions were taken,

Assuming the prevalence of CLD as 19.7% and at 90% confidence,

P=19.7%

1-q=(1-0.197)=0.803,

Sample size,

$N=\frac{(Z_{alpha})^2\ pq}{(precision)^2}$,

$=(1.96)^2\ (0.197)\ (0.803)/(0.2)^2$

=172.

Assuming a non-response rate of 20%,

=172+172×0.2,

=206(±10).

Sample size=200.

Methodology

A total of 200 patients satisfying the inclusion criteria and who have given written informed consent to be a part of this study, was included in the study.

The patients with presenting complaints suggesting of CLD were followed for confirmation of diagnosis. History and clinical examination were recorded as per a predefined proforma designed for the study with special focus on age, co morbidities, socio-economic factors, addictions, symptoms, complications.

The blood samples, urine samples were collected and were then subjected to following investigations: complete hemogram; urine routine & microscopy; fasting blood glucose; RFT; LFT; PT INR, aPTT; markers of viral hepatitis-HBsAg, anti HCV antibody, HIV; stool for occult blood.

The patients were then subjected to ultrasonography (abdomen) and the ascitic fluid tapping was done in indicated cases. The collected ascitic fluid was then sent for investigation. The investigations done were: SAAG, cytology, biochemistry culture).

In indicated cases, OGD scopy, ANA and other markers of autoimmune hepatitis was conducted.

Child- Turcotte-Pugh (CTP) score[7]

Modified Child-Pugh classification of the severity of liver disease according to the degree of ascites, the serum concentrations of bilirubin and albumin, the prothrombin time, and the degree of encephalopathy. A total CTP score of 5 to 6 is considered Child-Pugh class A (well-compensated disease), 7 to 9 is class B (significant functional compromise), and 10 to 15 is class C (decompensated disease). These classes correlate with one- and two-year patient survival: class A: 100 and 85%; class B: 80 and 60%; and class C: 45 and 35%.

Statistical analysis

The data was entered in Microsoft excel. The normality of the quantitative variables (for e.g., age, laboratory parameters etc.) was visually inspected using a Q-Q plot and was summarized as means (std deviation) or median (range) accordingly. The categorical variables were summarized as frequency and percentages. The

association between categorical variables was analysed using chi-square or Fisher's exact test. Similarly, the association between continuous variables was assessed using an independent student's test or ANOVA. The test of significance; p value less than 0.005 was taken as statistically significant.

RESULTS

The study participants comprised of 200 CLD patients. Most of the participants belonged to the age group of 41-50 years (42%) and 51-60 years (34%). Almost four-fifth of the participants were male (79.5%). Out of 200, 169 patients belonged to BPL category and 30.5% of them were labours, followed by 20% house-wife and 15.5% were drivers (Table 1).

Table 1: Socio-demographic characteristics (n=200).

Socio-demographic characteristics	N	Proportion (%)
Age (in years)		
21-30	2	1.0
31-40	28	14.0
41-50	84	42.0
51-60	68	34.0
>60	18	9.0
Gender		
Female	41	20.5
Male	159	79.5
Occupation		
Accountant	2	1.0
Business man	6	3.0
Clerk	8	4.0
Constable	1	0.5
Driver	31	15.5
Electrician	6	3.0
Farmer	18	9.0
House wife	41	20.5
Labourer	61	30.5
Lecturer	2	1.0
Mechanic	3	1.5
Shop keeper	16	8.00
Technician	2	1.0
Watch man	3	1.5
Socio-economic status		
APL	31	15.5
BPL	169	84.5

Figure 1 depicts the presenting complaints of the CLD patients. Most of the patients (87.5%) presented with abdominal distension and jaundice (80.5%). Almost three-fifth (63%) of the patients had edema while 40.5% had altered sensorium. It was observed that two-fifth of the patients (42.5%) had abdominal pain and 27% had fever. It was observed that, almost one-fifth of the participants had type 2 diabetes mellitus (21.5%) followed by hypertension (8.5%) and 65.5% were alcoholic and 32% were smokers.

The mean BMI of the patients was 19.1 (±1.61) with 54% of the patients in underweight category according to BMI.

Clinical examination of the patients showed that icterus was present in 87.5%, pedal oedema in 63%, pallor in 44% of CLD patients. Moreover, 11.5% of patients had clubbing while lymphadenopathy and cyanosis were present in 3% of the patients.

Hepatic encephalopathy was present in 74 patients with majority having grade2 hepatic encephalopathy (54.0%).

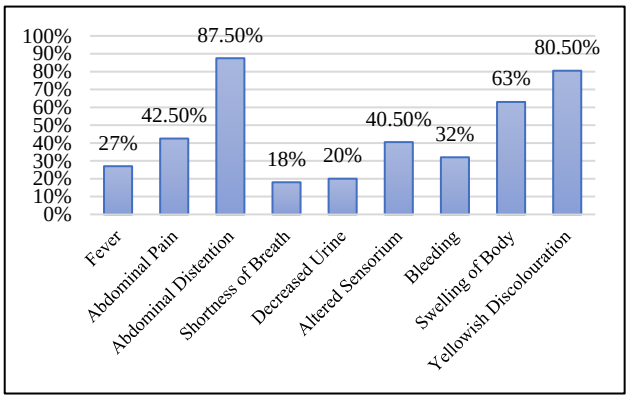

Figure 1: Clinical presentation of CLD patients (n=200).

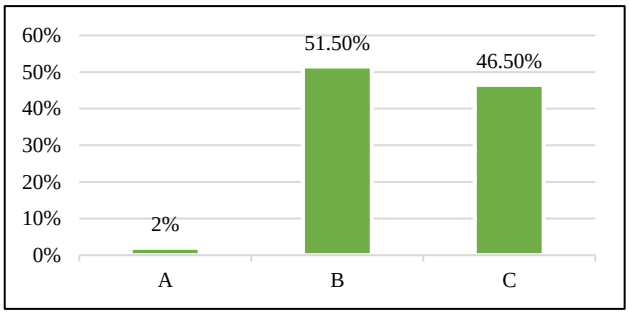

Figure 2: Distribution of CLD patients on the basis of CTP scoring.

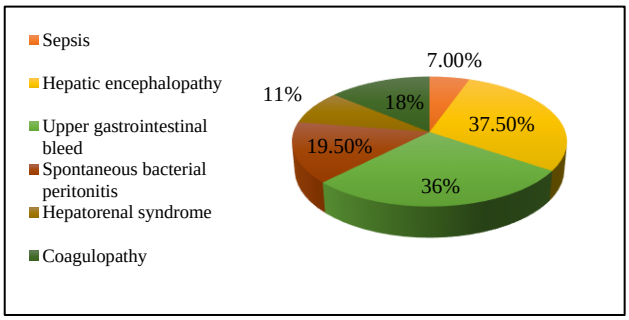

Figure 3: Distribution of CLD patients on the basis of complications.

The laboratory findings of the CLD patients are presented in Table 2. Most of the patients reportedly had raised total bilirubin (96%) with a mean total bilirubin of 6.1. The direct bilirubin was raised in 98.5% of the patients. Most of the patients had deranged liver function test which was evident by raised alanine transaminase (92%) and aspartate transaminase (85%). The albumin was below 3.5 in 97%. The INR was more than 1.2 in 71.7% of the patients. The blood urea (BUN) was raised by more than 21 mg/dL in 92.5% of the CLD patients while serum creatinine was raised in only 22.1% of patients.

The electrolyte; sodium was within the range for half of the patients (53%) while hyperkalaemia and hypokalaemia were seen in 7.5% and 17%, respectively. The total leucocyte count was raised in 42.5% of the patients while it was below 4000 in 2% of the patients. Platelets was below 1,50,000 in almost half of the patients. The random blood sugar levels were above 126 mg/dl in 13.5% of the patients (Table 2). The mean electrolytes were in the normal range (mean sodium: 135, mean potassium: 4.02).

Table 2: Clinical profile of CLD patients (n=200).

Laboratory parameters	N	Proportion (%)	Mean	Std. deviation
Liver function test				
Total bilirubin				
Raised	192	96.0	6.1	3.84
Normal	8	4.0		
Direct bilirubin				
Raised	197	98.5	3.18	2.19
Normal	3	1.5		
AST				
Raised	184	92.0	87.8	62.1
Normal	16	8.0		
ALT				
Raised	170	85.0	88.1	54.2
Normal	30	15.0		
Alkaline phosphatase				
Low	7	3.5	162	79.4
Raised	178	89.0		
Normal	15	7.5		
Albumin				
Low	194	97.0	2.27	0.479
Normal	6	3.0		
PT (prothrombin time)				
Normal	84	42	16.7	5.87
Prolonged	116	58		
APTT categories prolonged and normal				
Prolonged	133	66.5	40.2	7.59
Normal	67	33.5		
International normalized ratio				
Prolonged	137	71.7	1.67	0.658
Normal	54	28.3		
Kidney function test				
Blood urea				
Raised	185	92.5	48	25.3
Normal	15	7.5		
Creatinine				
Raised	44	22.1	1.15	0.873
Low	76	38.2		
Normal	79	39.7		
Sodium				
Hypernatremia	08	4	135	6.08
Hyponatremia	86	43		
Normal	106	53		

Continued.

Laboratory parameters	N	Proportion (%)	Mean	Std. deviation
Potassium				
Hyperkalemia	15	7.5	4.02	0.686
Hypokalemia	34	17.0		
Normal	151	75.5		
Total leucocyte count				
Leucocytosis	85	42.5	10199	4228
Leucopenia	4	2.0		
Normal count	111	55.5		
Platelet count				
Thrombocytopenia	101	50.5		
Normal count	99	49.5		
Haemoglobin				
Normal	77	38.5		
Anemia	118	59		
Polycythemia	5	2.5		
Random blood sugar level				
Hyperglycemia	27	13.5		
Normal	173	86.5		

The mean blood urea and Serum Creatinine were 48 and 1.15 respectively, above normal values of 8-21 mg/dL and 0.8 to 1.3 mg/dL respectively.

The CTP scoring was done on the basis of five parameters; ascites, bilirubin, albumin, INR and encephalopathy. The scores of 5-6 were grouped as CTP class A, 7 to 9 were categorized as B and more than 10 as C. Half of the CLD patients (51.5%) belonged to stage B, followed by 46.5% of patients in stage C.

The most common complication observed was hepatic encephalopathy; 37.5%. This was followed by upper gastrointestinal bleeds observed in 36%. Spontaneous bacterial peritonitis was present in 19.5% and coagulopathy in 18% of the CLD patients. The hepatorenal syndrome was present in 11% and sepsis in 7.5% of CLD patients (Figure 3).

The ultrasound findings of majority of patients were suggestive of chronic liver disease with portal hypertension (82.5%) and 3 patients had HCC.

Among 200 patients, 71 underwent endoscopy and most of the patients had grade 3 esophageal varices (74.6%).

DISCUSSION

CLD is one of the most common chronic diseases in India and it indirectly affect our economy. The purpose of the present study was to identify the clinical aspects of CLD.

In the current study, males predominantly had chronic liver disease and belonged to the age group of 41-60 years. Similar was the study by Mukherjee et al among admitted patients 159 (79.5%) were male and 41(20.5%) were female, 78% of cirrhotic patients were males.[7] The productive age group was affected by alcoholic liver disease, which had a high morbidity and mortality rate.

The most common complication observed was hepatic encephalopathy; 37.5%. This was followed by upper gastrointestinal bleeds observed in 36%. Spontaneous bacterial peritonitis was present in 19.5% and coagulopathy in 18% of the CLD patients. The hepatorenal syndrome was present in 11% and sepsis in 7.5% of CLD patients. Upper GI bleed was the most common complication followed by hepatic encephalopathy in studies done by Kim et al.[8]

Krishna et al concluded from their study that ascites, hepatic encephalopathy both early (grades 1 and 2) and higher grades (grades 3 and 4), GI bleeding, hyponatraemia, renal failure, INR and total bilirubin were significant predictors of mortality among CLD.[9] The severity of CLD was assessed by CTP score. In our study half of the CLD patients (51.5%) belonged to stage B, followed by 46.5% of patients in class C. A score of more than equal to 7 showed decompensation of liver which requires liver transplantation. In a study of 91 patients Pal et al found 51% of patients belonged to Child-Pugh class B followed by class C in 35 % and only 14% in class A.[10]

The total leucocyte count observed in our study was 10199 mm^3. Pathak et al reported a mean total leukocyte count of 9303.89 mm^3, which was comparable to the 9521 mm^3 measured by Suthar et al.[11,12] Suthar et al reported the mean MCV value was 97.6, which was comparable to the values reported by Mendenhall et al (99.8-102.8) and Pathak et al (96.42).[12,13]

The present study's liver function tests (TB, DB, ALT, AST, ALP, albumin) and coagulation profile were deranged. Most of the patients reportedly had raised total

bilirubin (96%) with a mean total bilirubin of 6.1. Most of the patients had raised liver enzymes alanine transaminase (92%) and aspartate transaminase (85%). The INR was more than 1.2 in 71.7% of the patients. Similar finding was seen Wadekar et al study which showed that biochemical indicators including blood bilirubin, AST, ALT, ALP, total protein, and serum albumin were abnormal in study participants.[14]

In CLD, there is inflammation and destruction of hepatocytes that leads to the release of aspartate aminotransferase (AST) and alanine aminotransferase (ALT), hence the high levels of these markers in the blood. Other parameters (ALP and GGT) of LFTs also appear elevated in cholestatic conditions like PBC. AST and ALT are usually elevated two to three times of normal limit, but normal levels of these markers do not rule out cirrhosis.[15]

Suthar et al studied 50 patients of alcoholic liver disease, all were male, 58% belonged to age group 40-49 years. Raised SGPT, SGOT, and S. bilirubin levels in all cases indicate liver impairment. Longer PT and lower S. albumin levels revealed that liver disease was reducing protein synthesis.[12]

Hypoalbuminemia was seen in 97% of study participants. Acharya et al had found hypoalbuminemia in more than half of the patients they studied.[16]

Limitations

Due- to time and resource constraints, a prospective study could not be planned. Since study was done in a tertiary care center, most patients presented were in advanced stage which cannot be generalised to whole population.

CONCLUSION

Male gender in the age-group of 41 to 60 years was mostly affected. The liver function test and kidney function test and coagulation tests were deranged in most of the patients. The patients mainly belonged to CTP class B. Most common complications observed in CLD patients were hepatic encephalopathy followed by UGI bleed and coagulopathy. On USG abdomen, CLD along with portal hypertension was observed in approximately 82.5% of patients. So, most of the patients presenting was at advanced stage of CLD with complications which has poor prognosis

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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