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Demographic And Clinical Profile of Chronic Liver Disease Patients in A Tertiary Care Hospital in New Delhi, India

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1. Abstract

1.1. Background

Chronic liver disease in the clinical context is a disease process that causes progressive destruction and regeneration of the liver parenchyma leading to fibrosis and cirrhosis. Over the years, liver disease rates are steadily increasing. So, we conducted the study with the objective of identifying the factors leading to hospitalization in patients of chronic liver disease in a tertiary care hospital in New Delhi, India.

1.2. Materials and Methods

An observational cross-sectional study was conducted at the Department of Medicine, Post Graduate Institute of Medical Sciences and Research (PGIMER), Dr RML Hospital, New Delhi, India from November 2018 to March 2020. All patients with chronic liver disease admitted in the hospital during the study period were included in the study. Inclusion criteria were patients with Chronic Liver Disease (CLD) of any cause in both sexes in the age group 18-75 years. The data was collected from 100 participants.

1.3. Results

The mean (SD) age of the study population was 48.29 (9) years. Most of them (80%) were males. Weakness and yellowish discoloration were the most common symptoms reported in 92 and 91 study participants respectively. Alcohol usage was the most common cause (64%) followed by hepatitis B infection (16%). Hepatic encephalopathy was the most common complication observed in 36 study participants followed by upper gastrointestinal bleeding in 30 participants.

1.4. Conclusion

The most common factor for hospitalization of chronic liver disease patients was found to be alcohol related and hepatic encephalopathy was the most common complication. So, public awareness regarding alcohol de-addiction, hepatitis B immunization, and adequate treatment of chronic liver disease can cause less hospitalization and mortality.

2. Introduction

The liver, the largest internal organ of the body is exposed to a wide range of substances and insults every day. Chronic liver disease in the clinical context is a disease process that causes progressive destruction and regeneration of the liver parenchyma leading to fibrosis and cirrhosis. According to World Health Organization (WHO), approximately 46% of global diseases and 59% of the mortality is due to chronic diseases and about 35 million people in the world die of chronic diseases [1]. Over the years, liver disease rates are steadily increasing. As per National statistics in the UK, liver diseases were ranked as 5th most common cause of death [2]. Liver diseases are 2nd leading cause of mortality among all digestive diseases in the United Staes [3]. Cirrhosis is typically a progressive condition characterized by marked fibrosis and nodule formation in the liver due to a number of causes. Liver disease causes 2 million deaths per year worldwide, 1 million due to complications of cirrhosis and 1 million due to viral hepatitis and hepatocellular carcinoma. Cirrhosis is currently the 11th most common cause of mortality worldwide [4]. Cirrhosis results in progressive liver failure. Alcohol abuse, Non-Alcoholic Fatty Liver Disease (NAFLD), and infections with hepatotropic viruses, especially hepatitis C virus (HCV) infection, have been the predominant risk factors for cirrhosis in the last few decades [5]. Patients with chronic liver disease are susceptible to a variety of complications and their life expectancy can be markedly reduced. Major complications include ascites, spontaneous bacterial peritonitis, hepatic encephalopathy, portal hypertension, variceal bleeding, hepatorenal syndrome, metabolic disturbances, and

infections [6]. Once thesis complications develop, patients are considered to have decompensated cirrhosis. Multiple factors can predispose to decompensation which includes bleeding, infection, dehydration, alcohol intake, constipation, and medications [7]. Although all of us are aware of the above-mentioned complications, there seems to be a paucity of systematic studies of the factors responsible for hospital admissions in Indian patients of chronic liver disease in recent times. A study of these factors may help us understand the reasons for frequent hospitalization, identify the lacunae in management, and devise strategies to minimize them through various interventions. So, we conducted the study with the objective of identifying the factors leading to hospitalization in patients of chronic liver disease in a tertiary care hospital in New Delhi, India.

3. Materials and Methods

3.1. Study Design

An observational cross sectional study was conducted at the Department of Medicine, Post Graduate Institute of Medical Sciences and Research (PGIMER), Dr RML Hospital, New Delhi, India from November 2018 to March 2020.

3.2. Study Population

All patients with chronic liver disease admitted in the hospital during the study period were included in the study. Inclusion criteria were patients with Chronic Liver Disease (CLD) of any cause in both sexes in the age group 18-75 years, diagnosed as per clinical, biochemical and radiological parameters. The data was collected from 100 patients.

3.3. Study Methodology

All the patients included in the study were subjected to following investigations. Complete hemogram, urine routine and microscopy, Fasting Blood Glucose, Kidney Function Tests, Liver Function Tests, Serum total protein, serum albumin, Markers of viral hepatitis (HBsAg, anti HCV antibody, HIV), PT/INR, aPTT, Ascitic Fluid (cytology, biochemistry, culture), Blood culture and sensitivity) urine culture and sensitivity, markers of autoimmune hepatitis if indicated, Serum ceruloplasmin and urinary copper if indicated and iron profile and serum ferritin. The criteria used for assessing the severity of liver disease was CTP (Child Turcotte Pugh) score [8].

3.4. Data Analysis

SPSS version 23 (IBM Corp.) was used for data analysis. Descriptive statistics were elaborated in the form of means/ standard deviations and medians/IQRs for continuous variables, and frequencies and percentages for categorical variables. Group comparisons for continuously distributed data were made using independent sample‘t’ test when comparing two groups. If data were found to be non-normally distributed, appropriate non-parametric tests in the form of the Wilcoxon Test were used. A chi-squared test was used for group comparisons for categorical data. Linear correlation between two continuous variables was explored using Pearson’s correlation (if the data were normally distributed) and Spearman’s correlation (for non-normally distributed data). P value of less than 0.05 was considered to be statistically significant.

3.4. Ethical Issues

The Study protocol was approved by the Institutional Ethical Review Board of Post Graduate Institute of Medical Sciences and Research (PGIMER), Dr RML Hospital, New Delhi. Informed, written consent was obtained from the patients before data collection and confidentiality was maintained at all the stages of the study.

4. Results

The data was collected from 100 patients. The demographic profile of the study participants was given in the Table 2. The mean Extent of Smoking (Pack-Years) was 2.02 ± 0.45. The mean Daily Alcohol Use (mL) was 318.57 ± 128.65 and the mean Duration of Alcohol Use (Years) was 14.70 ± 4.05. About 39 (39.0%) of the participants had co-morbidities. Weakness and yellowish discoloration were the most common symptoms reported in 92 and 91 study participants respectively. The most common symptoms observed were given in Table 3. Apart from these, pleuritic chest pain and vomiting were seen in 2 patients each, constipation, per rectal bleeding, loose stools, maculopapular rash, burning micturition and altered sleep pattern were observed in 1 patient each. Hepatic encephalopathy was the most common complication observed in 36 study participants followed by upper gastrointestinal bleeding in 30 participants. Among patients having hepatic encephalopathy, 2.7% of the participants had grade 1, 51.4% of the participants had grade 2, 43.2% of the participants had grade 3 and 2.7% of the participants had grade 4. About 2.0% of the participants had CHILD Stage A, 53.0% of the participants had CHILD Stage B and 45.0% of the participants had CHILD Stage C. Portal hypertension was observed in 98% participants. The various complications found in the study participants are given in the Figure 1.

Table 1: Child Turcotte Pugh (CTP) Score.

Criteria↓ / Score→	1	2	3
Serum bilirubin(mg/dl)	<2.0	2.0-3.0	>3.0
Serum albumin(g/dl)	>3.5	3.0-3.5	<3.0
Prothrombin time (seconds prolonged)	0-4	04-Jun	>6
Ascites	None	Easily controlled	Poorly controlled
Hepatic encephalopathy	None	Minimal	Advanced

The CTP score will be calculated by adding the scores of the five factors and can range from 5 to 15. Child Pugh class can be A (scores 5 and 6), B (scores 7 to 9) or C (scores 10 and above). Decompensation indicates cirrhosis with a Child Pugh score ≥7 (class B).

Table 2: Summary of Demographic parameter.

History	Mean ± SD || Median (IQR) || Min-Max || Frequency (%)
Age (Years)	48.29 ± 9.00 || 48.50 (42.00-55.00) || 27.00 - 74.00
Age	
21-30 Years	3 (3.0%)
31-40 Years	17 (17.0%)
41-50 Years	40 (40.0%)
51-60 Years	34 (34.0%)
61-70 Years	5 (5.0%)
71-80 Years	1 (1.0%)
Gender	
Male	80 (80.0%)
Female	20 (20.0%)
Type Of Locality	
Urban	78 (78.0%)
Rural	21 (21.0%)
Slum	1 (1.0%)
Duration Of Hospital Stay (Days)	8.53 ± 1.74 || 7.00 (7.00-10.00) || 7.00 - 14.00
Smoking History (Present)	24 (24.0%)
Alcohol Use History (Present)	64 (64.0%)
Daily Alcohol Use (mL)	318.57 ± 128.65 || 250.00 (250.00-500.00) || 70.00 - 500.00
Duration of Alcohol Use (Years)	14.70 ± 4.05 || 15.00 (10.00-17.50) || 8.00 - 25.00
Comorbidities (Present)	39 (39.0%)
Type-2 DM (Present)	11 (11.0%)
Hypertension (Present)	4 (4.0%)
HbSAg Positive (Present)	16 (16.0%)
Anti-HCV Positive (Present)	9 (9.0%)
Other Comorbidities	
None	97(97.0%)
ANA Positive	2 (2.0%)
Hypothyroidism	1 (1.0%)
Education	
Educated	36 (36.0%)
Uneducated	64 (64.0%)
Socio Economic Status	
Middle Class	24 (24.0%)
Lower Middle	11 (11.0%)
Poor	65 (65.0%)
Duration of Disease (Months)	24.35 ± 16.81 || 24.00 (12.00-36.00) || 1.50 - 72.00

The mean (SD) of Weight (Kg) was 51.12 (7.45). The median (IQR) of Weight (Kg) was 48.00 (45-56) and ranged from 42 - 78. The mean (SD) of BMI (Kg/m2) was 18.98 (1.51). The median (IQR) of BMI (Kg/m2) was 18.30 (17.9-19.2) and ranged from 17.2 - 23.4.

Table 3: Summary of symptoms present in the study participants.

Symptoms	Present
Fever	26 (26.0%)
Pain Abdomen	38 (38.0%)
Shortness Of Breath	15 (15.0%)
Decreased Urine Output	23 (23.0%)
Altered Sensorium	43 (43.0%)
Bleeding	35 (35.0%)
Abdominal Distension	88 (88.0%)
Swelling Of Body	61 (61.0%)
Weakness	92 (92.0%)
Yellowish Discoloration	91 (91.0%)

Table 4: Summary of blood investigations in the study population.

Blood Investigations	**Mean ± SD || Median (IQR) || Min-Max || Frequency (%)**
RBS (mg/dL)	116.54 ± 40.67 || 108.00 (98.00-118.00) || 78.00 - 397.00
Total Bilirubin (mg/dL)	6.16 ± 3.85 || 5.70 (3.53-7.25) || 0.60 - 18.70
Indirect Bilirubin (mg/dL)	2.91 ± 1.97 || 2.40 (1.87-3.52) || 0.20 - 10.40
Direct Bilirubin (mg/dL)	3.23 ± 2.19 || 3.00 (1.50-4.23) || 0.10 - 10.40
ALT (U/L)	89.52 ± 57.62 || 78.00 (55.75-112.50) || 18.00 - 330.00
AST (U/L)	91.88 ± 62.35 || 76.00 (51.50-120.50) || 11.00 - 360.00
ALP (U/L)	166.13 ± 81.13 || 145.00 (109.75-210.00) | 38.00 - 482.00
S. Albumin (g/dL)	2.27 ± 0.48 || 2.20 (1.90-2.42) || 1.60 - 4.00
S. Globulin (g/dL)	3.62 ± 0.82 || 3.60 (3.20-3.90) || 2.00 - 8.30
Serum A/G Ratio	0.65 ± 0.19 || 0.61 (0.53-0.71) || 0.19 - 1.43
PT (s)	18.42 ± 9.67 || 14.45 (12.00-23.00) || 9.00 - 60.00
INR	1.77 ± 0.70 || 1.40 (1.27-2.20) || 0.90 - 3.88
Blood Urea (mg/dL)	51.95 ± 29.52 || 45.00 (33.50-56.25) || 8.00 - 137.00
S. Creatinine (mg/dL)	1.24 ± 0.99 || 0.80 (0.60-1.75) || 0.20 - 4.40
S. Sodium (mEq/L)	134.25 ± 6.48 || 135.00 (131.00-138.00) || 117.00 - 148.00
S. Potassium (mEq/L)	3.95 ± 0.70 || 3.90 (3.50-4.40) || 2.10 - 6.10
Hemoglobin (g/dL)	9.45 ± 1.78 || 9.60 (8.80-10.40) || 3.00 - 13.40
Hemoglobin Category	
<12 g/Dl	95 (95.0%)
≥12 g/Dl	5 (5.0%)
TLC (/cu.mm)	10323.10 ± 4285.81 || 9000.00 (7000.00-12400.00) || 3690.00 - 22000.00
Neutrophils (%)	73.31 ± 8.72 || 72.00 (68.00-80.00) || 45.00 - 94.00
Lymphocytes (%)	19.65 ± 7.59 || 20.00 (15.00-23.00) || 3.00 - 54.00
Platelet Count (Lac/cu.mm)	1.46 ± 0.57 || 1.45 (1.10-1.80) || 0.40 - 3.80
Serum Ammonia	82.16 ± 44.34 || 80.00 (42.50-108.00) || 20.00 - 201.00

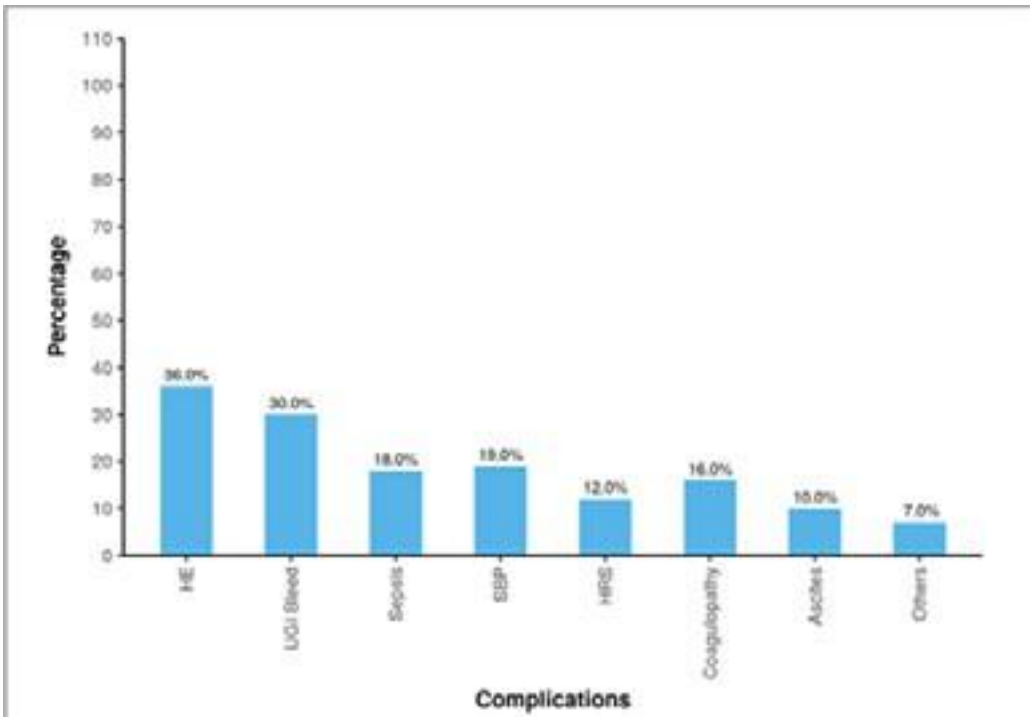

Figure 1: Complications present in the study participants.

5. Discussion

The study was conducted to identify the factors leading to the hospitalization of chronic liver disease patients In our study, the mean age of study patients was 48.29 years, which was almost similar to the studies by Mukherjee et al. [9] in which the mean age was 47.7+14.4 years and lower than the studies by Kim HY et al. [10], in which mean age was 59+11.7 years. It seems chronic liver disease affects the productive young age in the Indian population. Among the admitted patients, 80 were male, and 20 were female. This was similar to the results obtained by Mukherjee et al. [9] in which 78% of cirrhotic patients were males. Education is an important factor as uneducated people are unaware about the adverse effect of chronic alcohol use and hepatitis B prevention. In our study 64% of patients were uneducated. In our study, chronic liver disease was majorly caused by chronic alcohol abuse (64%) followed by Chronic HBV infection (16%). In the study conducted by Mukherjee et al. [9] also, alcohol (34.3%) was the most common cause and followed by Chronic HBV infection (18.1%). Nowadays, alcohol related chronic liver diseases are increasing as compared to chronic HBV infections which could be due to western lifestyle and extensive immunization of hepatitis B in our country. Presence of co-morbid conditions increases the risk of hospitalization of chronic liver disease patients. In our study, 39% of patients had co-morbid conditions and among them, 11% had diabetes mellitus, and 4 % of patients had hypertension. Liver cirrhosis is related to high morbidity and mortality. But, the prevalence of liver cirrhosis is underestimated as the patients at the early phase of the liver cirrhosis are often asymptomatic. So, it is necessary to use prognostic models in identifying high-risk patients. The severity of chronic liver disease is assessed by the CTP score can be used as a screening tool [[1]. Hepatic encephalopathy was the major complication causing hospital admissions. It occurs due to the poor nutritional status of patients and poor compliance to treatment. Malnutrition is a risk factor for hepatic encephalopathy [12]. In our study 55% of patients have BMI <18.5kg/m2. Various biochemical parameters can be used to assess nutritional status, including albumin, creatinine, lipid profile, hemoglobin, and electrolytes in cirrhosis. Identifying these as indicators of nutritional status may lead to earlier detection of malnutrition.

6. Conclusion

There are many factors which causes hospitalization of chronic liver disease patients. Alcohol related chronic liver disease is most common etiology followed by Chronic HBV infection. Hepatic encephalopathy is the most common complication. Increase in hepatic encephalopathy in our study is due to inadequate dietary intake and poor compliance to treatment. So, public awareness regarding alcohol deaddiction, hepatitis B immunization, and adequate treatment of chronic liver disease can cause less hospitalization and mortality.

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