

Original Research Article

Prescribing patterns in patients with chronic liver and kidney disease in a tertiary care hospital

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ABSTRACT

Background: Liver diseases are major cause of mortality and morbidity worldwide. It is the 12th leading cause of death liver diseases can be classified as acute if the onset of symptom does not exceed six months or chronic if symptoms persist beyond this period. According to the recently available World Health Organization. The aim of study is to facilitate rational use of medicines.

Methods: This study is a prospective, observational, single center study which include patients aged ≥ 18 years, diagnosis of liver diseases with or without co-morbidities and is conducted at out-patient of Medicine department, Rajindra Medical College and Hospital, Patiala.

Results: In this study, total of 97 prescriptions of patients with liver disease were analyzed. Out of 97 patients, the majority of patients were male. In ALD, males were 32 (78%) whereas female were 9 (22%) while in CLD males were 47 (84%) and females were 9 (16%). While observing the LFT profile of patients with ALD common tests were observed which includes total bilirubin (1.82 ± 2.42), SGOT (96.81 ± 117.49) and SGPT (94.78 ± 142.94) and in patients with CLD common tests were observed which includes total bilirubin (2.50 ± 3.63), SGOT (67.50 ± 43.04), SGPT (47.10 ± 33.12), blood urea (46.92 ± 24.14) and alkaline phosphatase (147.02 ± 63.14).

Conclusions: The study interprets the prescribing pattern of drugs used in patients with ALD and CLD and observed that vitamins and minerals and antibiotics were the most prescribed in order to avoid further complications followed by hepatoprotective agents, antiulcer drugs, antihypertensives and laxatives.

Keywords: Liver disease, ALD, CLD

INTRODUCTION

Liver diseases is explained as a persistent inflammatory condition of the liver in which the biochemical and histopathological abnormalities are present over a long period of time. It encompasses a large number of conditions having different etiologies.¹ Its increasing occurrence is largely driven by preventable lifestyle factors, such as drinking excessive amounts of alcohol, obesity and behaviors leading to bacterial infection which later on leads to the cirrhosis, hepatocellular carcinoma, hepatitis, jaundice, fatty liver, fibrosis, non-alcoholic fatty

liver diseases and many more which are the example of liver diseases.² Liver diseases can be classified as acute if the onset of symptoms does not exceed six months or chronic if symptoms persist beyond this period. In the initial stages of liver diseases, inflammatory (hepatitis) or fatty (steatosis) changes, or both (steatohepatitis) can occur.³ Acute liver diseases was originally defined by Trey and Davidson in 1970 as fulminant liver failure, which was “a potentially reversible condition, the consequence of severe liver injury, with an onset of encephalopathy within 8 weeks of the appearance of the first symptoms and in the absence of pre-existing liver diseases”.⁴ The mortality of

acute liver failure is as high as 40–50% and causes of death which include brain herniation due to raised intracranial pressure (35%) and sepsis with multi organ failure. Liver transplantation remains the only therapeutic intervention with proven survival benefit in patients with irreversible ALF.⁵ Chronic liver diseases in the process of progressive, destruction and regeneration of the liver parenchyma, which will finally lead to cirrhosis and hepatocellular carcinoma if left untreated. Among the various forms of chronic liver diseases, the most widely spread types include hepatitis like- A, B, C, D and E, alcoholic or nonalcoholic fatty liver diseases, autoimmune hepatitis, cirrhosis and hepatocellular carcinoma.⁶ The sign such as jaundice, pale stool, dark urine, bruising and bleeding whereas the symptoms like:- encephalopathy, swelling in leg, itching, fatigue, loss of appetite, stomach upset, confusion, severe fatigue, internal bleeding from large blood vessels in the esophagus which indicate the Liver diseases and the public health measures (e.g.-vaccination and improved sanitation), chronic alcoholism, drug induced, metabolic disturbances, immunological disorder, genetic disorder, toxins, vascular insults are major etiological factors of liver diseases.⁷ The patient with established Liver diseases should be monitored for complications which include varices, ascites, hepatic encephalopathy, hepatopulmonary hypertension, hepatocellular carcinoma, hepatorenal syndrome, primary biliary cirrhosis, biliary obstruction, NASH hemochromatosis, spontaneous bacterial peritonitis, and coagulation disorders.⁸ The treatment of the complications can improve the quality of life and, in some cases and decrease short-term mortality.⁹

The objective of the above study is to assess the prescribing pattern of drugs in chronic kidney and liver disease and to find the relevant problems such as polypharmacy, drug burden and adherence, drug duplication and rational treatment.

METHODS

Study design

It was a prospective observational study.

Study site

The study was carried out in Department of Medicine, Rajendra Medical College and Hospital, Patiala, Punjab.

Study duration

The study was carried out for 6 months from January to June 2019.

Study population

The study group consists of 97 patients with liver disorders.

Sampling

Sample size was estimated using convenience sampling who met inclusion criterias.

Sampling frame

Sample were collected using the medical record of patients.

Selection of subjects

The patients were screened according to the inclusion and exclusion criteria of the study.

Inclusion criteria

Patients aged ≥ 18 years, and patients with confirmed diagnosis of liver diseases with or without co-morbidities and geriatric patients were included.

Exclusion criteria

Children and infants, pregnant women and lactating women were excluded.

Source of data

All the relevant and necessary data for the study was collected from the patient prescription forms at the hospital and noted down in a specially designed patient information form.

Methodology

This was a prospective, observational, single center study conducted at out-patient ward of medicine department, Rajindra Medical College and Hospital, Patiala. The study was carried out for a total duration of 6 months from January 2019 to June 2019. Patients above 18 years of age, willing to participate in the study and who gave informed consent were included in the study. Prior permission was obtained from institutional ethics committee (IEC) to conduct the study. The patient fulfilling the inclusion criterion and willing to give informed consent and a fully diagnosed liver disorder patients were enrolled in the study.

A detailed history of total 97 prescription of patients with liver disease were analyzed along with physical examination, laboratory tests including complete blood cell count, liver profile, renal function test, electrolytes, urine examination, blood pressure, and ascitic fluid examination (if present) were observed in all patients.

Statistical method

Descriptive analysis was performed using Microsoft excel and Microsoft word.

RESULTS

Out of 97 patients, the majority of patients were male. In ALD, males were 32 (78%) whereas female were 9 (22%) while in CLD males were 47 (84%) and females were 9 (16%) shown in Figure 1. In patients with ALD, gross 112 drugs were prescribed, vitamins and minerals were the most frequently prescribed drug with total of 27 prescriptions (31.04%) followed by antibiotics in 18 prescriptions (20.68), antiulcer drugs in 16 prescriptions (18.39%) and antihypertensive drugs in 15 prescriptions. The least prescribed drugs were laxatives i.e. 11 prescriptions (12.64%) shown in Figure 2. Among vitamins and minerals preparations, multivitamins were commonly prescribed (36%) followed by vitamin B12 (19.4%) and vitamin B1 (19.4%) and least prescribed are vitamin D3 (2.8%), vitamin B5 (2.8%) and vitamin B6 (2.8%) shown in Figure 3. Among the antiulcer drugs, omeprazole is mostly prescribed (43.75%) and least prescribed are ranitidine and pantoprazole (6.25%). While in laxatives, lactulose is most prescribed (91%) and least prescribed is psylline (9%) (Figure 4). In antihypertensive drugs, beta blockers are the most prescribed (42.87%) followed by diuretics (38.09%) and ARB (9.52%) while least prescribed are potassium sparing (4.57%) and ACE inhibitors (4.57%) (Figure 5). In antibiotics, beta lactam are commonly prescribed (28.57%) followed by semi synthetic antibiotics (25%) while least prescribed are aminosaliclates (3.57%) and macrolide antibiotics (3.57%) (Figure 6).

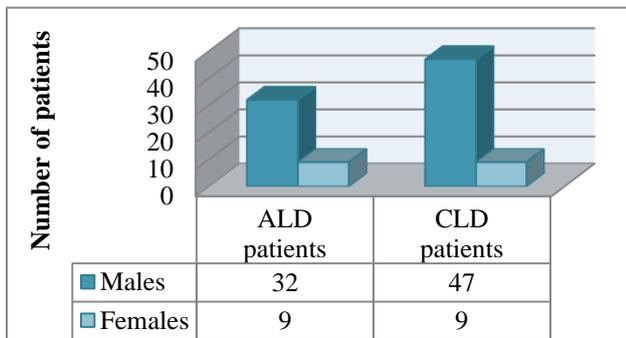


Figure 1: Number of patients in ALD and CLD.

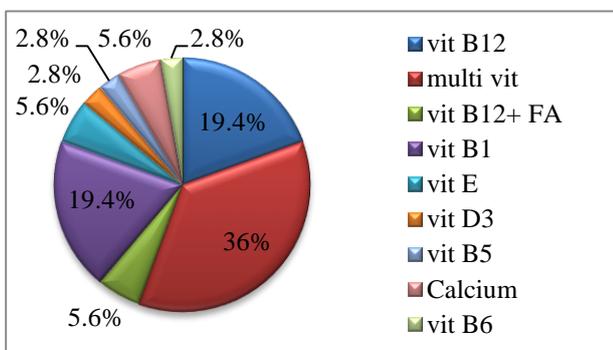


Figure 2: Prescription pattern of vitamins and minerals in ALD patient.

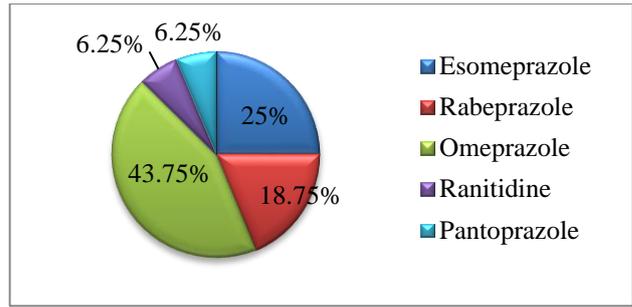


Figure 3: Prescription pattern of antiulcer drugs in ALD patients.

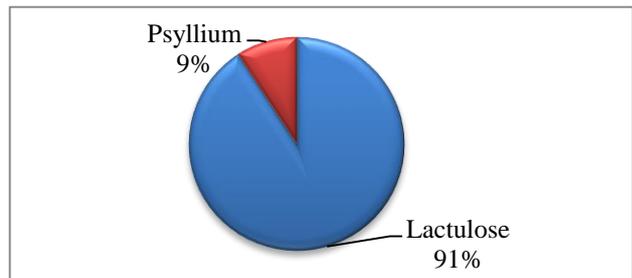


Figure 4: Prescription pattern of laxatives in ALD patients.

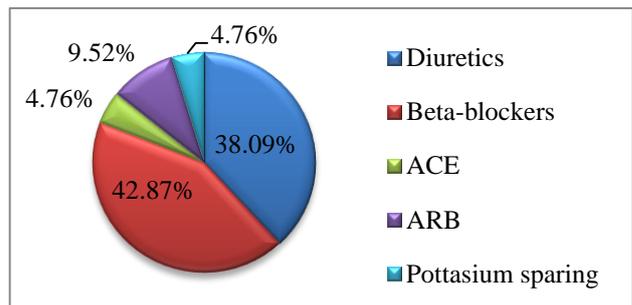


Figure 5: Prescription pattern of antihypertensives in ALD patients.

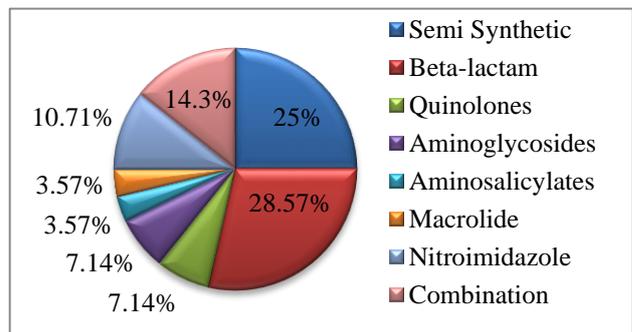


Figure 6: Prescription pattern of antibiotics in ALD patients.

In patients with CLD gross 168 drugs prescribed, vitamins and minerals (23.80%) were most frequently prescribed drug with total of 40 prescriptions followed by antibiotics (20.83%) in 35 prescriptions, antihypertensive drugs

(16.67%) in 28 prescriptions, laxatives (14.89%) in 25 prescriptions and antiulcer drugs (13.69%) in 23 prescriptions and with least prescribed anticholelithic agents (10.12%) in 17 prescriptions shown in Table 1.

Table 1: Number of drugs prescribed in patients with CLD.

Drug category	Number of prescriptions (%)
Antibiotics	35 (20.83)
Vitamins and minerals	40 (23.80)
Antiulcer drugs	23 (13.69)
Antihypertensive drugs	28 (16.67)
Laxatives	25 (14.89)
Anticholelithic agent	17 (10.12)
Total	168 (100)

Among the antibiotics, cephalosporins (47%) are the most prescribed followed by semi synthetic antibiotics (25%), fluoroquinolones (7%), beta lactam antibiotics (5%), macrolide (3%) and nitrofurantoin (3%) while the least prescribed are sulphonamides, synthetic antibiotics, chloramphenicol and combination with 2%.

In vitamins and minerals, vitamin B12 (19%) are the most prescribed followed by vitamin B1 (14%), vitamin K (12%), vitamin B12+folic acid (12%), multivitamin (12%), iron (8%), vitamin B+vitamin C (7%), erythropoietin (3%), nutritional supplement (3%) while least prescribed are vitaminD3, calcium, lithium and folic acid with 2%.

Among antihypertensive agents, beta blocker (41%) are commonly prescribed followed by diuretics (22.7%), potassium sparing (14%), combination (14%), ARB (3.76%) and least prescribed are H2 agonist (2.27%) and calcium channel blocker (2.27%).

Within the antiulcer drugs, esomeprazole (37.5%) are commonly prescribed drug followed by pantoprazole (33.4%), omeprazole (21%) and least prescribed are ranitidine (8.1%).

DISCUSSION

In this study we assessed 78% male patients and 22% female patients with ALD and the mean age was found to be 52.92 ± 15.65 years while another study showed mean age 57.9 ± 17 .¹⁰ Similarly our study showed 84% were males patients and 16% were females patients with CLD and their mean age calculated was 49.16 ± 12.10 while the study done by Hong et al showed 61.2% males and 38.8% females patients suffering from liver cirrhosis with mean age of 56.7 years.¹¹ LFT profile was observed including total bilirubin (1.82 ± 2.42), SGOT (96.81 ± 117.49), SGPT (94.78 ± 142.94) in ALD patients and total bilirubin (2.40 ± 3.63), SGOT (67.50 ± 43.04), SGPT (47.10 ± 33.12), ALP (147.02 ± 63.49) and blood urea (46.92 ± 24.14) in

CLD patients. Other study done by Kolasani et al showed total bilirubin (2.78 ± 3.04), SGOT (90.16 ± 70.24), SGPT (78.91 ± 67.92), ALP (199.63 ± 136.24) in patients with alcoholic liver disease.¹²

Limitations

Only few sample size was taken. The study could be performed in larger population in the future to explore more.

CONCLUSION

Our observation study interpret the prescribing pattern of drugs used in patients with ALD and CLD and observed that vitamins and minerals and antibiotics were the most prescribed in order to avoid further complications followed by hepatoprotective agents, antiulcer drugs, antihypertensives and laxatives. Multivitamins were the commonly prescribed vitamin and Cephalosporin was the most prescribed antibiotic. Ursodeoxycholic acid was the only prescribed hepatoprotective agent to prevent the further damage of liver. Lactulose and esomeprazole were also prescribed to many patients to avoid the complications from multiple drug therapy.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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