



**A COMPARATIVE STUDY ON BIOCHEMICAL
EVALUATION AND EFFICACY OF TREATMENT OF ALCOHOLIC
AND NON-ALCOHOLIC LIVER DISEASES IN TERTIARY CARE
HOSPITAL**

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ABSTRACT

Objectives: This present study was undertaken to study the comparison of the biochemical parameters of alcoholic liver disease and non-alcoholic liver disease and to determine the efficacy of treatment of alcoholic and non-alcoholic liver disease. **Methodology:** A hospital-based prospective observational study was conducted at Adesh Hospital, Bathinda for duration of 6 months on approximately 125 patients visiting the Department of Gastroenterology, Adesh Institute of Medical Sciences and Research, Adesh Hospital, Bathinda. **Results:** SGOT was high in 81(64.8%) patients and SGPT was high in 78 (62.4%) patients out of 125 patients. The association of level of SGOT, SGPT with diagnosis is highly significant with p-value (0.000). **Conclusion:** In the patients with alcoholic liver diseases the levels of SGOT and SGPT including other biochemical parameters were high as compared to the patients with non-alcoholic liver diseases and the drugs that were given to the patients were effective in the treatment of the diseases.

Key words: Non-alcoholic steatohepatitis, liver cirrhosis, ultrasonography, hepatoprotective agents.

INTRODUCTION

Alcoholic liver disease is caused by the consumption of alcohol in excessive amount which is more than the daily amount of alcohol consumption per day, this disease follows a particular pattern of progression, initially occurrence of alcoholic fatty liver is seen which then leads to the triglycerides accumulation in the hepatic cells called as hepatic steatosis, some of the patients develop inflammation and injury in hepatocytes including ballooning leads to alcoholic steatohepatitis (ASH) this will ultimately results in chronic injury and inflammation in liver causing liver fibrosis and cirrhosis which is the end-stage of liver disease.(Abel et al. 2009)If the daily intake of alcohol for around 12 years is more than 40-80 gram/day for males and more then 20-40 gram/day for females then it leads to alcoholic liver disease. (Gramenzi et al. 2006),(Arteel et al. 2003)

Although there are many factors responsible for the liver diseases but alcohol is the major risk factor among all other factors, various other factors includes- obesity, smoking, stress, diabetes and long -term administration of various hepatotoxic drugs, these factors are responsible for causing non-alcoholic liver disease it includes steatosis to cirrhosis(Kumar et al. 2021),Non-alcoholic liver diseases occurs in the absence of consumption of alcohol resulting in the accumulation of fat and the progression of the disease. Non-alcoholic liver diseases are characterized by inflammation of lobule may be with fibrosis or may be without fibrosis, ballooning leading to cirrhosis and liver failure.(Som et al. 2019) Among all the non-alcoholic liver diseases, the most common and the initial disease is non-alcoholic fatty liver disease(Athyros et al. 2017) it is one of the main reason of chronic liver diseases among people, although these diseases comes along with various other diseases for example- obesity, type-2 diabetes mellitus etc. (Kneeman et al. 2012)

MATERIALS &METHODS

Study design and setting

The hospital-based observational study was conducted at Department of Gastroenterology, Adesh Institute of Medical Sciences and Research, Adesh Hospital Bathinda after getting approval from AIPBS Departmental Research Committee and Ethics Committee of Biomedical and Health Research, Adesh University.

Study criteria

Data was collected from patients suffering from alcoholic and non-alcoholic liver diseases via data collection form containing information regarding the determinants related to the alcoholic and non-alcoholic liver disease. The Inclusion criteria involves patients above the age group of 18 years all the patients who were suffering from alcoholic liver diseases and non-alcoholic liver diseases in the out-patient department and in-patient department. Patients with comorbidities were included in the study. Pregnant and lactating women were excluded from the study.

Method of data collection

A prospective study was conducted with consent of the participants who were willing to participate in the study. The data was collected using the pre-designed structured data collection form. This data collection tool used for study was an interview schedule that was held at the institute with assistance from faculty members and other experts. Before distributing the data collection form, the purpose of the study and the contents of the data collection form were clearly explained to the selected subjects and they were ensured confidentiality regarding their data. The selected subjects were the participants who visited the Department of Gastroenterology at Adesh Hospital.

Statistical Analysis of data

All the data was recorded and analysis was done using IBM SPSS version 22.0[®] where Chi-square test was applied with p-value < 0.05.

RESULTS

Total of 125 subjects attending the Department of Gastroenterology, Adesh Hospital, Bathinda were studied. The descriptive and analytical analysis was used to describe the results. The results were calculated using Pearson's Chi-Square Test for p-value < 0.05 being considered significant for association. The results and observations of these studied participants are as follows:

Age in years

The most affected age group by the liver diseases is 36-50 years. The prevalence of the alcoholic and non-alcoholic liver diseases is more in males [97(77.6%)] than in females [28(22.4%)], depending on the exposure to the risk factors associated with the diseases

Table 1 :

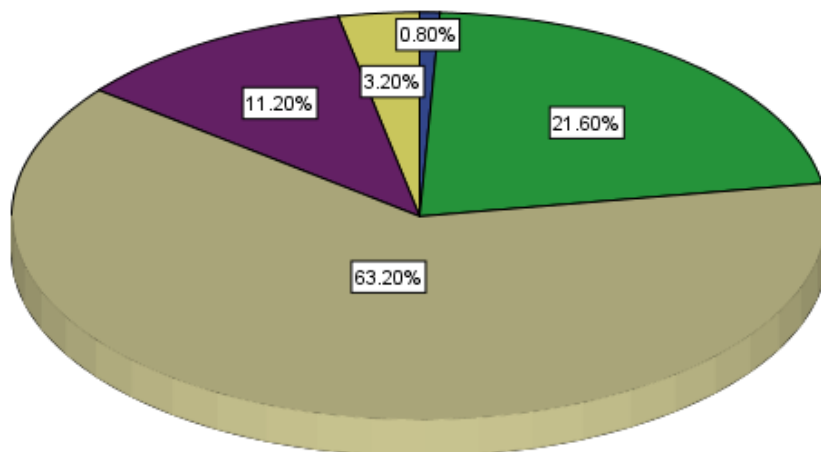
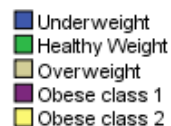
Age in years	Frequency	Percent
18-35 years	15	12.0
36-50 years	65	52.0
51-65 years	32	25.6
66-70 years	7	5.6
Above 71 years	6	4.8
Total	125	100.0
Gender	Frequency	Percent
Male	97	77.6
Female	28	22.4
Total	125	100.0

Distribution of the patients according to their age in years

Body mass index

The maximum number of patients were overweight [79(63.2%)], followed by patients having healthy weight [27(21.6%)], then the obese class 1 patients [14(11.2%)] and obese class 2 patients [4(3.2%)] and 1(0.8%) patient was underweight. Hence, it shows that the overweight patients were more prone to the liver diseases.

Figure1 : Percentage distribution of the patients according to their body mass index



Frequency of consumption of alcohol

The frequency of consumption of alcohol shows that the patients consuming alcohol daily leads to alcoholic fatty liver in 3(2.4%) patients out of 24(19.2%) patients, alcohol induced hepatomegaly in 1(0.8%) patient out of 4(3.2%) patients, alcohol induced chronic liver disease in 12(9.6%) patients out of 20 (16.0%) patients, alcoholic hepatitis in 6 (4.8%) patients out of 10 (8.0%), alcoholic liver fibrosis in 2 (1.6%) patients and alcoholic cirrhosis in 1 (0.8%) patient. In patients with consumption of alcohol 1-2 times per week leads to alcoholic fatty liver in 10 (8.0%) patients, alcohol induced hepatomegaly in 3(2.4%) patients, alcohol induced chronic liver disease in 6 (4.8%) patients, alcoholic hepatitis 3 (2.4%) patients, alcohol induced hepatic encephalopathy and alcoholic liver fibrosis in 1 (0.8%) patient. And in patients consuming alcohol 1-2 times per month caused alcoholic fatty liver disease in 7 (5.6%) patients, alcohol induced chronic liver disease in 2 (1.6%) patients and alcoholic hepatitis in 1 (0.8%) patient. Thus, frequent consumption of alcohol increases the probability of occurrence of liver diseases.

The association of frequency of consumption of alcohol with the diagnosis was found to be highly significant with p-value (0.000)

Table2: Distribution according to the frequency of alcohol consumption by the patients

Diagnosis	Frequency of Alcohol consumption
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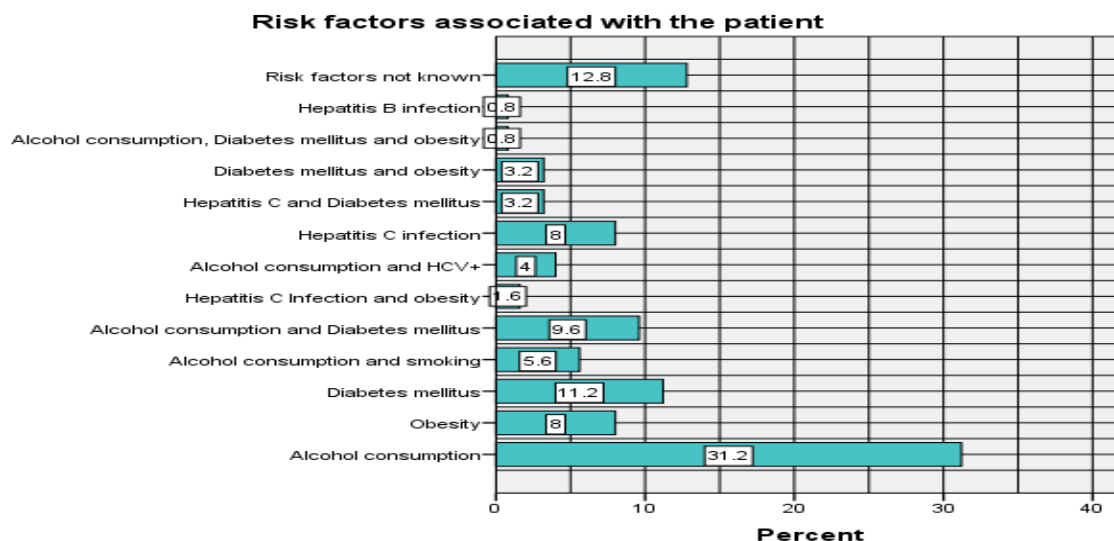
	Daily	1-2 times per week	1-2 times per month	1-2 times per year	Never	Total
Alcoholic Fatty liver	3 (2.4%)	10 (8.0%)	7 (5.6%)	4 (3.2%)	0 (0.0%)	24 (19.2%)
Alcohol induced Hepatomegaly	1 (0.8%)	3 (2.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (3.2%)
Alcohol induced Chronic liver disease	12 (9.6%)	6 (4.8%)	2 (1.6%)	0 (0.0%)	0 (0.0%)	20 (16.0%)
Alcoholic hepatitis	6 (4.8%)	3 (2.4%)	1 (0.8%)	0 (0.0%)	0 (0.0%)	10 (8.0%)
Non-alcoholic hepatitis and fatty liver	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	5 (4.0%)	5 (4.0%)
Alcohol induced Hepatic encephalopathy	0 (0.0%)	1 (0.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.8%)
Alcoholic Liver fibrosis	2 (1.6%)	1 (0.8%)	1 (0.8%)	0 (0.0%)	0 (0.0%)	4 (3.2%)
Non -alcoholic hepatitis	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (2.4%)	11 (8.8%)	14 (11.2%)
Alcoholic cirrhosis	1 (0.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.8%)
Non-alcoholic fatty liver	0 (0.0%)	0 (0.0%)	1 (0.8%)	5 (4.0%)	23(18.4%)	29 (23.2%)
Non-alcoholic chronic liver disease	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	10 (8.0%)	10 (8.0%)
Non-alcoholic hepatomegaly	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (1.6%)	2 (1.6%)
Non-alcoholic liver fibrosis	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.8%)	1 (0.8%)
Total	25(20.0%)	24(19.2%)	12 (9.6%)	12(9.6%)	52(41.6%)	125(100.0%)

Associated risk factors

In alcoholic liver diseases the primary risk factor was alcohol consumption [39(31.2%)] secondly, alcohol consumption with diabetes mellitus [12(9.6%)] and in non-alcoholic liver

diseases the primary risk factor is diabetes mellitus [14(11.2%)] and secondly, obesity [10(8.0%)] and hepatitis c [10(8.0%)].

Figure 2: Association of risk factors with the diagnosis of the patients



The association of risk factors with the diagnosis was found to be highly significant with p-value (0.000).

Association of laboratory values with diagnosis

Among total 125 patients SGOT, SGPT levels, total bilirubin, conjugated bilirubin levels and Alkaline phosphatase were high in 81 (64.8%), 78 (62.4%), 55(44.0%), 53(42.4%), 57(45.6%) patients respectively with alcoholic liver diseases the levels of SGOT, SGPT is high as compared to the patients with non-alcoholic liver diseases.

The association of level of SGOT, SGPT and Conjugated bilirubin level of the patients with diagnosis is highly significant with p-value (0.000). The association of level of Total bilirubin level of the patients with diagnosis is highly significant with p-value (0.008) and association of level of Alkaline phosphatase level of the patients with diagnosis is highly significant with p-value (0.003).

In the patients with alcoholic liver diseases the levels of protein, albumin is low as compared to the patients with non-alcoholic liver diseases. patients with alcoholic liver disease were having more high and low levels of globulin as compared to the non-alcoholic liver disease patients.

The association of level of protein of the patients with diagnosis is significant with p-value (0.017), albumin level with diagnosis is significant with p-value (0.019) and globulin with diagnosis is significant with p-value (0.005).

The levels of the biochemical parameters during the first visit and second visit

The high level of SGOT in patient visiting for the first time was in 114 cases and during second visit its was high in 64 cases whereas SGPT was high in 102 cases and then 42 cases in next visit followed by total bilirubin was high in 57 cases during first visit and 16 cases was high during next visit, conjugated bilirubin in 46 cases and alkaline phosphatase in 62 cases and in next visit levels were high in 12 cases and 17 cases simultaneously, protein was high in 1 case and globulin in 4 cases and protein was high in 3 case and globulin and albumin in 2 cases.

Treatment given to the patients

Various drugs were prescribed to the 125 patients among H₂ receptor blocker, ranitidine was mostly prescribed in 7(5.6%) patients and lactulose is the maximum prescribed laxative in alcoholic and non-alcoholic liver disease. Various types of antibiotics were prescribed, among which cefixime with rifaximin as a combination is prescribed to the 23(18.4%) patients, ondansetron was prescribed to 60(48.0%) patients out of total 125(100%) patients, ursodeoxycholic acid was the maximum prescribed hepatoprotective drug to the patients, within nutritional supplements, syrup A to Z was prescribed maximum to the patients. Among the analgesic, acetaminophen was given to 27(21.6%) patients, tramavarin was given to 6(4.8%) patients, hence mostly acetaminophen was given to the patient. And alprazolam was given to the maximum number of patients. Pronance powder was prescribed to the patients more than the other two supplements, drotaverine is the most prescribed anti-spasmodic drug. Within the other classes of drugs, the drug furosemide was prescribed to 12(9.6%) patients, metformin was given to 8(6.4%) patients.

Table 3: Percentage of drugs prescribed to the patients

Drugs	Frequency	Percent
Ranitidine	7	5.6
Lactulose	37	29.6
Cefixime and Rifaximin	23	18.4
Pantoprazole	72	57.6
Ondansetron	60	48.0
Ursodeoxycholic acid	29	23.2
A to Z	27	21.6
Acetaminophen	27	21.6
Alprazolam	22	17.6
Pronance powder	4	3.2

Drotavarine	21	16.8
Furosemide	12	9.6

DISCUSSION

The study was aimed to determine the comparison of the biochemical parameters and determine the efficacy of treatment of alcoholic and non-alcoholic liver disease. The levels of SGOT, SGPT, total bilirubin, conjugated bilirubin, alkaline phosphatase, the level of protein, albumin, levels of globulin were determined in patients consuming alcohol and patients not consuming alcohol. The data was collected from the patients suffering from alcoholic and non-alcoholic liver diseases with age above 18 years. In this study Pearson's Chi-Square Test for p-value <0.05 is applied to assess the association between the laboratory values with the diagnosis. In H₂ receptor blocker, ranitidine, lactulose, cefixime with rifaximin as a combination, ondansetron, pantoprazole was the mostly prescribed PPI, ursodeoxycholic acid, hepamerz sachet, syrup A to Z, acetaminophen, within anti-anxiety drugs alprazolam, pronance powder, among all the anti-spasmodic drugs prescribed to the patients were drotaverine and within the other classes of drug, the drug furosemide was mostly prescribed to the patients of alcoholic and non-alcoholic liver disease.

CONCLUSION

This study concluded that the biochemical parameters- SGOT, SGPT, total bilirubin, conjugated bilirubin, alkaline phosphatase levels, globulin were high and levels of protein, albumin including the globulin were low in patients with alcoholic liver diseases as compared to the patients who have not consumed alcohol. The biochemical parameters were associated with the diagnosis of the patients. According to the results, as observed it can be concluded that the biochemical parameters were more high/low in patients consuming alcohol than the patients not consuming alcohol, this helps to distinguish between the diseases. The efficacy of the treatment given to the patients were determined by the laboratory values, the levels the biochemical parameters at first visit was much higher than the laboratory values during second visit/ at the time of discharge as the increase or decrease in the levels of the biochemical parameters indicates the improper functioning of the liver. Therefore, this indicated that the liver functioning improved after the administration of the drugs prescribed to patients. The drugs that were most commonly prescribed to the patients were ranitidine, lactulose, within antibiotics-cefixime with rifaximin as a combination therapy, pantoprazole,

ursodeoxycholic acid, acetaminophen, ondansetron, alprazolam, syrup A to Z, pronance powder, drotaverine and among other drugs furosemide was given to the maximum patients.

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