

# Alcoholic Liver Diseases: General Diagnostic Approach

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## ABSTRACT

**Introduction:** Alcohol is consumed all over the world. It is toxic to liver. It causes different liver problems, like fatty liver, alcoholic hepatitis and cirrhosis. The disorders caused by alcohol use are main causes of mortality and morbidity. Excessive consumption of alcohol is one of the top 5 risk factors for death and disability globally. The present study was conducted to diagnose alcoholic liver diseases so that by proper approach patient can be brought to normal life.

**Material and methods:** This prospective observational study comprising of 50 patients was conducted at SHKM Govt. Medical College, Nalhar, Haryana from April 2018 to March 2019. The detail history, Audit scoring, physical examinations, lab investigations and ultrasound studies were done. Proper ethical norms were maintained and statistical analysis was carried out.

**Results:** Out of total of 50 patients, 12% patients were asymptomatic, 68% patients had fatty liver on the basis of ultrasonography and AST and ALT levels. 12% patients had alcoholic hepatitis and 8% patients had cirrhosis. AST and ALT were raised in most patients. AUDIT score was more than 8 in all patients of alcoholic hepatitis and cirrhosis.

**Discussion:** Alcoholic liver disease affects only small percentage of regular drinkers. Since alcoholic liver disease in most of the patients is potentially reversible, hence after proper diagnosis and with a sober approach, regular efforts, psychological counselling and use of pharmacological agents we can treat the patients of alcoholic liver disease and bring them to the normal life, which is the aim of this study.

**Keywords:** Alcoholic, Liver, AUDIT, Aspartate Transaminase, Alanine Transaminase, Diagnosis

to 8 gm of 100% alcohol. 440 ml of 3.5% beer constitutes 2 units. 80 ml of 10% wine forms 1 unit. 20 ml of 40.0% vodka or rum or whisky forms 1 unit. Usually alcoholic liver disease will not occur, if a man takes >28 units, or a women takes >21 units of alcohol in a week.<sup>4</sup> The prevalence of alcoholic liver disease is more common in countries where annual per capita alcohol consumption is more, e.g. Eastern European countries and less common in North African and Middle East countries, where annual per capita alcohol consumption is lowest.<sup>5</sup> Other risk factors are like this. Chances of liver damage is more if a person consumes alcohol regularly rather than binge drinking. Because of lower body mass of females, the chances of alcoholic liver damage in them is more. A person taking choline-deficient diet has more chances of alcoholic liver damage. Alcohol is metabolised totally by liver, 80% to acetaldehyde and 20% is metabolised by oxidase enzymes of smooth endoplasmic reticulum. Microsomal peroxidation liberates oxygen free radicles which are liable to induce mitochondrial damage. In alcoholic hepatitis there is increased gut permeability which leads to release of endotoxins. There is increased production of TNF- $\alpha$ , release of IL-1, 2 and 8. They cause fibrogenesis. Other factors which can play part are ethnicity, obesity, co-existing viral hepatitis, smoking, iron overload, and host genetic factors. Fatty liver is the most common injury because of alcohol. The fat accumulates in the perivenular hepatocytes. Subsequently in whole of the hepatic lobule fat is desposited. If at this state a person stop drinking, the liver becomes normal again. From fatty liver to occurrence of hepatitis is blurred. In alcoholic hepatitis there is ballooning degeneration, neutrophil infiltration, spotty necrosis and fibrosis. Alcoholic hepatitis is also very much reversible, if drinking is stopped. Alcoholic hepatitis leads to cirrhosis. Most of the patient are asymptomatic. Patient at times complains of pain in right upper quadrant, feeling of nausea and occasionally patient has jaundice. Fever, jaundice, spider

## INTRODUCTION

Alcohol is consumed all over the world. It is toxic to liver. It causes different liver problems, like fatty liver, alcoholic hepatitis and cirrhosis. Alcoholic liver diseases cover all these.<sup>1</sup> The disorders caused by alcohol use are main causes of mortality and morbidity. Alcohol is a risk factor for many diseases including cancers. Alcohol increases solubility of carcinogens. It decreases DNA repairs.<sup>2</sup> Excessive consumption of alcohol for long time is one of very important causes of liver disease. In case of severe liver disease, the prognosis is very poor. Mortality of alcoholic hepatitis and cirrhosis is about 60% at 4 years.<sup>3</sup> Although alcohol is directly toxic to liver, but only about 15% of alcoholics suffer from hepatitis. This is probably because of many factors. Most important risk factors are, the amount of alcohol which we take and for how long we are taking. The role of the type of the alcohol which we are taking is less clear. For telling the amount of alcohol causing liver disease, let us frame a unit pattern of amount of alcohol. 1 unit of alcohol is equal

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nevi and features of acute abdomen may occasionally occur. Patient may present with features of portal hypertension. In patients consuming alcohol, who suffer from HCV infection, the treatment of HCV infection becomes more critical.<sup>6</sup> This paper titled as “Alcoholic liver diseases: general diagnostic approach” is very important because if we correctly and timely diagnose alcoholic hepatitis, we can start an appropriate therapy and in most of the patients, the damage is reversible. Excessive alcohol consumption is a great risk factor for adverse health consequences. It is one of the leading causes of preventable morbidity and mortality.<sup>7</sup> Excessive consumption of alcohol is one of the top 5 risk factors for death and disability globally.<sup>8</sup> There are about 2.5 million deaths per year and 69.4 million annual disability adjusted life years.<sup>9</sup> Psychosocial, behavioural and/or pharmacological treatments may help patients with alcohol used disorder to achieve abstinence. There is a critical need to expand the use of these treatment tools in general medicine and hepatology clinical settings.<sup>6</sup> The present study was conducted to diagnose alcoholic liver diseases so that by proper approach patient can be brought to normal life.

### MATERIAL AND METHODS

This prospective observational study was conducted at SHKM Govt. Medical College, Nalhar (Nuh), Haryana, India. The study was conducted from April 2018 to March 2019.

This medical college is situated in a highly Muslim dominated area, where most of the population is from low socioeconomic status. We got only male patients. Our sample consisted of 50 male patients. The detail history of alcohol consumption, jaundice, anorexia, fever, weight loss, weakness, fatigue, muscle cramps, GI bleeding, oedema of lower limbs, sleep disturbances, confusion, obesity, diabetes, socioeconomic status, history of liver disease because of causes other than alcoholic liver disease e.g. viral hepatitis, drug related hepatotoxicity, autoimmune hepatitis etc. was taken. Patients were investigated for CBC, ESR, hepatic panel, especially for the levels of aspartate aminotransferase (AST) and alanine aminotransferase (ALT), PTI and INR, hepatitis B surface antigen and hepatitis C antibody. Ultrasound abdomen especially for liver was done in all patients.

Many patients who consume alcohol will deny, doing so. Under reporting is very common in alcoholics.<sup>10</sup> There are several tools to find out patients who consume alcohol and are at high risk for alcohol abuse. Of these tools, the AUDIT is very widely used tool.<sup>11</sup> It contains ten questions with a specific scoring system. The patients were asked to encircle the answer which was correct for them.

Scores for each question range from 0 to 4, with the first response for each question for example for question number one (e.g. never) scoring 0, the second (e.g. less than monthly) scoring 1, the third (e.g. monthly) scoring 2, the fourth (e.g. weekly) scoring 3, and the last response (e.g. daily or almost daily) scoring 4. For questions 9 and 10, which only have three responses, the scoring is 0, 2 and 4 (from left to right).

A score of 8 or more is associated with harmful or hazardous drinking, a score of 13 or more in women, and 15 or more in men, is likely to indicate alcohol dependence.<sup>12</sup>

AUDIT questionnaire is as below.

1. How often do you have a drink containing alcohol?
  - Never
  - Monthly or less
  - 2-4 times a month
  - 2-3 times a week
  - 4 or more times a week
2. How many standard drinks containing alcohol do you have on a typical day when drinking?
  - 1 or 2
  - 3 or 4
  - 5 or 6
  - 7 to 9
  - 10 or more
3. How often do you have six or more drinks on one occasion?
  - Never
  - Less than monthly
  - Monthly
  - Weekly
  - Daily or almost daily
4. During the past year, how often have you found that you were not able to stop drinking once you had started?
  - Never
  - Less than monthly
  - Monthly
  - Weekly
  - Daily or almost daily
5. During the past year, how often have you failed to do what was normally expected of you because of drinking?
  - Never
  - Less than monthly
  - Monthly
  - Weekly
  - Daily or almost daily
6. During the past year, how often have you needed a drink in the morning to get yourself going after a heavy drinking session?
  - Never
  - Less than monthly
  - Monthly
  - Weekly
  - Daily or almost daily
7. During the past year, how often have you had a feeling of guilt or remorse after drinking?
  - Never
  - Less than monthly
  - Monthly
  - Weekly
  - Daily or almost daily
8. During the past year, have you been unable to remember what happened the night before because you had been drinking?

- Never
- Less than monthly
- Monthly
- Weekly

Manifestations	Number of Patients	Percentage (%)
Asymptomatic	06	12%
Fatty Liver	34	68%
Alcoholic Hepatitis	06	12%
Cirrhosis	04	8%
Total	50	100%

**Table-1:** Manifestations of alcoholic liver diseases in patients who drink alcohol regularly, 60 gm or more. Total no. of patients 50.

Clinical Features	Number of Patients	Percentage (%)
Asymptomatic	32	94.11%
Pain or heaviness in right hypochondrium	02	5.89%
Total	34	100%

**Table-2:** Clinical presentation of fatty liver. Total no. of patients 34.

Clinical Features	Number of Patients	Percentage (%)
Jaundice	04	66.67%
Anorexia	05	83.33%
Fever	03	50.00%
Pain in right hypochondrium	04	66.67%
Abdominal distention	01	16.67%

**Table-3:** Clinical presentation of alcoholic hepatitis. Total no. of patients: 6.

Clinical Features	Number of Patients	Percentage (%)
Anorexia	04	100%
Weight Loss	02	50%
Weakness	04	100%
Fatigue	04	100%
Jaundice	02	50%
Pruritus	01	25%
GI bleeding	Nil	Nil
Abdominal distention due to ascites	03	75%
Oedema of lower limbs	02	50%
Sleep disturbances	02	50%
Confusion	01	25%

**Table-4:** Clinical presentation of Cirrhosis. Total no. of patients: 4

Results of Liver Function Tests	Number of Patients	Percentage (%)	Sensitivity	Specificity
Normal	13	26%	Nil	Nil
Raised serum aspartate transaminase level	23	46%	52.27%	83.72%
Raised serum alanine transaminase level	20	40%	45.45	89.12%

**Table-5:** Liver Function Tests. Total no. of Patients: 50.

- Daily or almost daily
- Have you or someone else been injured as a result of your drinking?
    - No
    - Yes, but not in the past year
    - Yes, during the past year
  - Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested you cut down?
    - No
    - Yes, but not in the past year
    - Yes, during the past year

**Ethical Considerations:** The Institutional Ethics Committee's approval for Research on Human Subjects was taken. Throughout the study, strict ethical norms were maintained. Written informed consent was taken from patient in their local language (mother tongue).

**Statistical Methods in Methodology:** The data were collected properly, and entries were made, and statistical analysis was carried out using simple mathematical expressions like, percentage. The data was subjected to appropriate statistical test wherever applicable. Statistical analysis was carried out using statistical SPSS version 23 software

## RESULTS

Out of total of 50 patients who consumed alcohol regularly and sometimes binge drinking, 6 (12%) patients were asymptomatic, 34 (68%) patients had fatty liver on the basis of ultrasonography and serum AST and serum ALT levels. 06 (12%) patients had alcoholic hepatitis and 04 (8%) patients had ascites (Table 1). In case of fatty liver of 34 patients, 32 (94.11%) patients were asymptomatic. There was pain or heaviness in right hypochondrium in 02 (5.89%) patients (Table 2). In alcoholic hepatitis, there were total 06 patients, most of the patients had features of jaundice, anorexia, pain in right hypochondrium, and fever. 01 patient had abdominal distention (Table 3). We had 04 patients of ascites. These patients had clinical features of anorexia, weight loss, weakness, fatigue, jaundice, pruritus, abdominal distention due to ascites, oedema of lower limbs, sleep disturbances and confusion. There was no history of GI bleeding (Table 4). Liver function tests were normal in 13(26%) patients, raised serum AST level was found in 23 (46%) patients, with a sensitivity of 52.27% and specificity of 83.72%. Raised serum ALT level was found in 20(40%) patients with sensitivity of 45.45% and specificity of 89.12%. It is clear from the figures that serum AST and serum ALT levels were raised in some fatty liver patients also (Table 5). In our 10 (20%) patients, AST: ALT ratio was 2 or more than 2.



Total no. of patients	50
AST: ALT ratio 2 or more than 2	10
Percentage of patients showing AST: ALT ratio 2 or more than 2	20%
<b>Table-6: Showing AST: ALT ratio 2 or more than 2</b>	

Results of USG	Number of Patients	Percentage (%)
Total no. of fatty liver patients	34	100%
No. of patients showing fatty liver on USG	31	91.17%
<b>Table-7: Showing results of Ultrasonography</b>		

<b>Total no. of patients showing hepatitis or cirrhosis</b>	<b>10</b>
AUDIT score of 8 or more	07
AUDIT score of 15 or more	01
Sensitivity	80%
Specificity	90%
<b>Table-8: Showing the results of AUDIT score</b>	

These were the patients, who were suffering from alcoholic hepatitis or cirrhosis (Table 6). On ultrasonography out of 34 (100%) patients of fatty liver, 31(91.17%) patients revealed fatty liver on USG. Rest 3 patients were those, who consumed alcohol regularly, had normal liver on ultrasonography but the liver enzymes i.e. serum AST and serum ALT were raised (Table 7). On analysis of AUDIT score, it was found that out of 10 patients of alcoholic hepatitis or cirrhosis, 7 patients had an AUDIT score of 8 or more and 1 patient had AUDIT score of 16, showing sensitivity of 80% and specificity of 90%.

## DISCUSSION

Alcohol is a central nerves system depressant. After consumption of alcohol peak level is reached in 1 hour. The level persists for 2 hours and then the level falls slowly. Tolerance to alcohol varies from individual to individual. When good quantity of alcohol is consumed, first there is release of inhibition leading to euphoria. Subsequent intake leads to nausea, vomiting, dizziness, slurred speech, tremors, ataxia, confusion, impaired mental faculties and lastly stupor and coma occurs.<sup>13</sup> All over the world about approximately 25% patients presenting in primary care settings have harmful or hazardous drinking.<sup>14</sup> A drinking which increases the risk of physical or psychological problems is considered as hazardous drinking.<sup>15</sup> Patients who drink despite physical or psychological problem, are included under alcohol abuse or alcohol dependence.<sup>16</sup> There are certain problems regarding diagnostic approach to alcoholic liver disease. Some patients may be completely asymptomatic. Lab investigations may be normal in them even in early cirrhosis. There is no single lab investigation which can diagnose alcoholic liver disease or even on ultrasound study there may not be any findings. Patients though taking alcohol regularly may deny of doing so, or they may be telling consumption of very less amount though taking heavily. We performed this prospective observational study of "Alcoholic liver diseases: general

diagnostic approach" at SHKM Govt. medical college, Nalhar (NUH), Haryana, India which is situated in a highly muslim dominated area of lower socio economic status. 50 patients were considered for study. These subjects were taking alcohol regularly, minimum about 60gm alcohol. We had all the male patients. On our analysis, we found that 6 (12%) patients had no problem at all. 34 (68%) patients had fatty liver (Table1), alcoholic hepatitis was present in 06(12%) patients. Cirrhosis occurred in 04(8%) patients. Our results are comparable to the studies conducted by Crabb DW et al<sup>17</sup> and Becker U et al.<sup>18</sup> Even though we found, 34(68%) patients of fatty liver on the basis of serum AST and serum ALT, history of alcohol intake and ultrasound, but out of it, 32(94.11%) patients had no clinical features (Table 2). Our patients of fatty liver were either asymptomatic or had pain or heaviness in right hypochondrium (Table 2). The patients of alcoholic hepatitis presented with jaundice, anorexia, fever, pain in right hypochondrium, abdominal distention. The patients of cirrhosis presented with anorexia, weight loss, weakness, fatigue, jaundice, pruritus, GI bleeding, abdominal distention due to ascites, oedema of lower limbs, sleep disturbances and confusion. Our presentation is almost similar to Torruellas et al.<sup>19</sup> In our patients of fatty liver, about 13(26%) patients had normal serum AST and serum ALT levels. Rest of the patients of fatty liver and most the patients of alcoholic hepatitis and cirrhosis had raised serum AST and serum ALT levels (Table 5). Generally if a patient having history of regular intake of alcohol and whose AST and ALT raised, alcoholic liver disease should be suspected. Further if AST value is 2 or more than 2 times than ALT, then alcoholic liver disease can be comfortably diagnosed. In our study all the cases of hepatitis and cirrhosis, AST: ALT ratio was 2 or >2. Our results are comparable to the study of Diehl AM et al.<sup>20</sup> We performed ultrasound study in all the patients (Table 7) and all the patients of fatty liver revealed liver steatosis, which appeared as hyper-echogenicity due to increased parenchymal reflectivity produced by intracellular fat.<sup>21</sup> We performed AUDIT scoring on all patients. The need for this score is because many patients who take alcohol regularly still deny of doing so, or they under report alcohol intake. AUDIT score of 8 or more was found in 7 patients and AUDIT score of 16 was found in 1 patient. These were the patients suffering from alcoholic hepatitis or cirrhosis. Our sensitivity is 80% and specificity is 90%. Our pattern of performing this study was like this. First, detail history was taken and AUDIT scoring was done, then physical examination was done, then proper lab investigations were done and we diagnosed the patients suffering alcoholic fatty liver, alcoholic hepatitis or cirrhosis. These were the patients whom we approached with sobriety, we screened them regularly and treated with psychological and pharmacological agents, as alcoholic liver disease is potentially reversible.

## CONCLUSION

Alcoholic liver disease affects only small percentage of regular drinkers. It is diagnosed by taking a detailed

history, AUDIT scoring, physical examination, proper lab investigations and ultrasound studies. Since alcoholic liver disease in most of the patients is potentially reversible, hence after proper diagnosis and with a sober approach, regular efforts, psychological counselling and use of pharmacological agents, we can treat the patients of alcoholic liver disease and bring them to the normal life, which is the purpose of this study.

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