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Original Research Article

Study of clinical and biochemical profile of acute alcoholic liver disease in a teaching hospital in Telangana

Shamsunder Khatroth*

Department of General Medicine, MNR Medical College, Fasalwadi, Sangareddy, Telangana, India

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***Correspondence:**
Dr. Shamsunder Khatroth,
E-mail: shamsunder_md@yahoo.in

ABSTRACT

Background: Chronic alcohol consumption gives rise to various health risks that include liver disease, heart disease, pancreatitis, central nervous system disorders and certain forms of cancer. Alcoholic liver disease (ALD) is a spectrum of clinicopathological abnormalities, reflecting an acute or chronic inflammation of the liver parenchyma induced by alcohol use. It is associated with changes in various biochemical parameters and also various clinical manifestations in the patients. The objective of the present study to evaluate clinical and biochemical profile of acute alcoholic liver disease.
Methods: The prospective hospital-based case control study was done at MNR Medical College, in the department of General Medicine for duration of one year from March 2017 to April 2018. A total of 120 cases diagnosed clinically and biochemically as Acute alcoholic liver disease were included in the study.
Results: The age group ranged from 20 to 60 years and the male to female ratio was 2.42. Majority of the patients were in the age group of 30-40 years (54.1%). Majority of the patients (66.6%) consumed >60 grams/24hours of alcohol. Jaundice, nausea and vomiting were seen in 83.3% cases followed by hepatomegaly in 66.6% cases. Majority of them had been consuming alcohol for more than 5 years.
Conclusions: Chronic alcohol consumption is more common in adult males. Chronic alcoholics consume more amount of alcohol. Alcoholic liver disease has a varied clinical presentation and is associated with deranged biochemical parameters.

Keywords: ALD (Alcoholic liver disease), Biochemical parameters, Liver enzymes

INTRODUCTION

Alcoholism is condition resulting from excess drinking of beverages that contain alcohol. The major health risk of alcoholism includes liver disease, heart disease, pancreatitis, central nervous system disorders and certain forms of cancer.[1]

Alcoholic liver disease (ALD) is a spectrum of clinicopathological abnormalities, reflecting an acute or chronic inflammation of the liver parenchyma induced by alcohol use. The prevalence of ALD worldwide is 94.8 per 10000. Alcohol is directly hepatotoxic. Toxic protein-aldehyde, endotoxins, oxidative stress, immunologic activity and pro inflammatory cytokines contribute to the liver injury.[2]

Alcohol can be manifested in liver damage from fibrosis to end stage of cirrhosis and may eventually lead to carcinoma of liver. The liver is particularly vulnerable to disease related to heavy drinking, most commonly termed as alcoholic hepatitis or cirrhosis. The progression of alcoholic liver disease is characterized by steatosis, inflammation, necrosis and cirrhosis. When severe cirrhosis occurs, death is the outcome.[3]

Illicitly brewed liquor has been found to be more toxic than licit drinks despite low level of alcohol in a study.[4]

The clinical spectrum of alcoholic liver disease (ALD) comprises of alcoholic fatty liver disease, alcoholic hepatitis, and cirrhosis.[1] Alcoholic fatty liver disease develops in about 90% of individuals who ingest more than 60 gm/day alcohol but this is completely reversible with abstinence.[5] Liver function tests may show increased aspartate tansaminase (AST) to alanine transaminase (ALT) ratio in alcoholic hepatitis to altered albumin globulin ratio and increased prothrombin time (PT) in cirrhosis.[6]

As many as 50% of the patients among them eventually develop a state of irreversible liver damage or cirrhosis which may complicate into portal hypertension leading to upper gastrointestinal hemorrhage, ascites, splenomegaly and other stigma of chronic liver disease.[6,7]

The pattern of liver disease varies geographically, among various ethnic groups with different practices and time.[8]

Alcoholic liver disease causes elevations of serum aspartate transaminase (AST) and alanine transaminase (ALT).[9]

More than 80% of patients with alcoholic liver disease have De Ritis Ratio (AST: ALT ratio) of 2 or more.[10] This ratio is a valuable diagnostic marker of ALD.[11]

Hyperbilirubinemia is frequent in alcoholic liver disease. Tests for alkaline phosphatase, γ- glutamyl transpeptidase (GGT), serum albumin, and prothrombin time, are also indicator tests of altered hepatic activity.[12]

Hematologic tests, namely, RBC counts, WBC counts, hemoglobin levels and mean corpuscle volumes are strong indicators of alcoholic liver disease as reported by other researchers.[13]

METHODS

The prospective hospital-based case control study was done at MNR Medical College in the department of General Medicine for duration of one year from March 2017 to April 2018. A total of 120 cases which were diagnosed clinically and biochemically as Acute alcoholic liver disease in the department of General medicine were included in the study.

Inclusion criteria

- Age group from 20-60 years
- both genders
- history of alcohol intake

Exclusion criteria

- Patients with diabetes mellitus
- Autoimmune disease
- Hemolytic anaemia
- Infections of the liver

Patients attending General Medicine outpatient department and satisfying the above criteria were selected. Complete demographic details such as age, gender, occupation, present illness, past history of liver disease, any treatment history, drug allergies, were recorded. Personal history included detailed history of alcohol intake, smoking, dietary history, family history of alcoholic liver disease, and socio-economic status. Abdominal ultra-sonographic findings were recorded.

Laboratory investigations included complete blood picture, complete urine examination. Blood sample of 5ml was drawn by venipuncture under aseptic precautions in the fasting condition in a plain tube. Serum was separated and biochemical parameters of total bilirubin, conjugated and unconjugated bilirubin, total protein, albumin, albumin:globulin ratio, aspartate transaminase, gamma glutamyl transferase tests were done.

Acute Alcoholic Liver (ALD) disease was diagnosed with the help of clinical and biochemical findings.

RESULTS

In the present study, majority of the patients were in the age group of 31-40 years (54.1%). Next common age group was among 21- 30 years accounting for 20.8% cases. The 41-50 years age group contributed 14.1 % cases. Least number of cases (10.8%) were seen in the higher age group of above 50 years (Table 1).

Table 1: Age-wise distribution of cases.

Age (years)	No. of cases	Percentage
21-30	25	20.8
31-40	65	54.1
41-50	17	14.1
51-60	13	10.8
Total	120	100

In the present study, as expected for Indian population, there was a male predominance with 70.8% patients being males and 29.1% being female patients. The male to female ratio was 2.42 (Table 2).

Table 2: Gender-wise distribution of cases.

Gender	No. of cases	Percentage
Male	85	70.8
Female	35	29.1
Total	120	100

Majority of the patients ie., 66.6% patients had history of consuming > 60 gm/24hr of alcohol. 20.8% patients had history of consuming between 50-60 gm/24 hours of alcohol and only 12.5% consumed <50gm alcohol in 24 hours (Table 3).

Table 3: Distribution of cases based on amount of alcohol consumption.

Quantity consumed (gm/24hr)	No. of cases	Percentage
<50 gm/24 hr	15	12.5
50-60 gm/24 hr	25	20.8
>60 gm/24 hr	80	66.6
Total	120	100

Majority of patients (66.6%) had a history of alcohol consumption of more than five years duration. Only 5 cases (4.1%) gave history of shorter duration of 1 to 2 years. Almost 29% cases gave history of alcohol consumption of 2 to 4 years duration (Table 4).

Table 4: Distribution of cases based on duration of alcohol consumption.

Duration of alcohol consumption (years)	No. of cases	Percent
1-2	5	4.1
2-3	15	12.5
3-4	20	16.6
>5	80	66.6
Total	120	100

Jaundice, nausea and vomiting were seen in 83.3 % cases followed by hepatomegaly in 66.6% cases. Other common clinical features were loss of appetite/anorexia and splenomegaly. Signs of liver failure were also common and were seen in 58.3% cases (Table 5).

Table 5: Clinical features.

Clinical features	No. of cases	Percentage
Anorexia	60	50
Nausea and vomiting	100	83.3
Abdominal pain	30	25
Fever	30	25
Ascites	20	16.6
Jaundice	100	83.3
Hepatomegaly	80	66.6
Splenomegaly	40	33.3
Signs of liver failure	70	58.3

In present study, bilirubin was raised in 83.3%, cases. The serum bilirubin ranged from 3.6 mg/dl to 8.8 mg/dl. The enzymes such as AST, ALT and ALP each were also elevated in 66.6 % cases. The serum AST ranged from 60 IU/L to 480 IU/L and the serum ALT ranged from 80 to 520 IU/L. ALP enzyme was also elevated with a range of 290 to 320 IU/L. The enzyme GGT was elevated in 95.8% cases and ranged from 75 to 200 IU/L. Elevated GGT is very common and specific for alcoholic liver disease. Hypoalbuminemia was seen in 41.6% (Table 6).

Table 6: Biochemical parameters.

Biochemical parameters	No. of cases	Percent
Bilirubin >2 mg/dl	100	83.3
AST > 40 IU/L	80	66.6
ALT > 40 IU/L	80	66.6
ALP > 280 IU/L	80	66.6
GGT > 66 IU/L	115	95.8
Albumin <3 gram/dl	50	41.6
Globulin > 3.5 gram/ dl	60	50

Occupation-wise distribution of the cases: There were 60% farmers, 20% private service employees, 10% were daily wage labourers and 10% were unemployed

DISCUSSION

In the present study a total of 120 cases were studied.

Age and gender distribution

Majority (54.1%) of the patients in our study were in the age group of 31-40 years. Next common age group was among 21- 30 years. In a study by Chavan et al majority of the patients (34%) were in the age group of 30-39 years.[14]

In the present study, 70.8% (85/120) were male and 29.1% (35/120) were females. Nand et al study comprised of 201 male alcoholic patients with mean age of 46.2±9.86 years and mean weight of 58±6 kg.[15] Ray et al studied a total of 224 patients. Majority (32%) of the alcoholic liver disease (ALD) patients were in the age group of 40-49 years. All the cases studied were male.[16] Pathak et al studied a total of 181 patients of which 80.7% (146) were male and 19.3% (35) were females. The mean age of presentation in years was 52.08 ± 13.11 and median age was 52 years.[17]

Occupation

In present study, most of the patients were farmers (60%), private service employees (20%), labourers (10%), unemployed were 10%. In the study by Pathak et al most of the patients were army/ex-army 30.9% (56), followed by farmers (6.1%) and private service (5%), whereas, no occupation was documented in 57.5% of the patients.[17]

Amount and duration of alcohol consumption

In the study by Chavan et al most of the patients (88%) were consuming 180 ml of alcohol/day, and 53% of alcoholics were consuming for a period of 11 to 20

years.[14] In the present study, majority of the patients consumed >60 grams/24hrs (66.6%) of alcohol, 20.8% of people consumed 50- 60 gm /24 hrs and 12.5% consumed 50 gm /24 hrs. In the study by Ray et al study majority of the patients consumed 81-90 grams (30%) of alcohol per day for duration of 9-12 years (32%). Intake of poor quality country liquor was noted among their study group.[16]

In present study majority (66.6%) of the patients had been consuming alcohol for more than 5 years and most of them were consuming whisky, scotch, rum and beer. Nand et al observed that majority of them (79%) were consuming country-made spirits. Other alcohols consumed were branded spirits like whisky (6.5%) and variable drinkers (14%) while only 1 patient (0.5%) was consuming beer.[15]

Clinical features

In the present study, jaundice and nausea and vomiting were seen in 83.3% cases followed by hepatomegaly 66.6% cases. Chavan et al reported nausea and vomiting as an important symptom in 89% of the alcoholics, followed by pain in abdomen (68%) and fluid retention in (66%). They also reported jaundice as an important finding in alcoholics and was seen in 88%, ascites in 64% and pedal edema in 56%. Hepatomegaly was another important finding seen in 36%. Other signs of liver cell failure were seen in 44% of their patients.[14] In the present study, on ultrasound, hepatomegaly was seen in 68% cases and splenomegaly in 59% cases. Nand et al observed abdominal pain (55%), distension (78%) and jaundice (60%) as the most common symptoms while ascites (72%), pedal edema (60%) and icterus (62%) were the most common clinical signs, followed closely by splenomegaly (57%). Hepatic failure, parotid swelling (20%) and alopecia (17%) were most common amongst the peripheral signs followed by clubbing (9%) and spider nevi (9%). In their study ultrasound revealed hepatomegaly (42%) to be more common than small shrunken liver (13%) in alcoholic liver patients. Splenomegaly (57%) was common and it was mild (42%) in most of the patients. Ascites (72%) was most common as a marker of portal hypertension, followed by splenomegaly and dilated portal vein (53%).[15]

Ray et al reported jaundice and hepatomegaly as the most commonly observed clinical findings.[16] Haemetemesis or melena was reported in 30% of total ALD patients in our study and anorexia was noted as the most common symptom in our study. Pathak et al reported jaundice as the most common presentation, which was present in 57.5% (104) of their patients, followed by hepatomegaly (48.6%), ascites (45.3%) and edema (36.5%).[17]

Biochemical parameters

In the present study, bilirubin was raised in 83.3%, AST was raised in 66.6 % and ALT was raised in 66.6%, hypoalbuminemia seen in 41.6% cases. Chavan et al observed raised bilirubin in 97%, raised SGOT in 96 % and raised SGPT in 78%, hypoalbuminemia was seen in 68% cases, liver cirrhosis was seen in 43%. Fatty liver was seen in 32% of alcoholics studied.[14] Nand et al reported Liver function tests with elevated transaminases with mean AST/ALT ratio of 2.15±0.88. Hyperbilirubinemia was seen in 85% patients (mean bilirubin 5.28±6.03 mg/dL). However, serum bilirubin >3 mg/dL was found in around 52% of patients. Mean albumin levels were 2.79±0.62 g/dL and severe hypoalbuminemia (< 3 g/dL) was seen in 6 5 %, and coagulopathy (mean INR 2.08±0.89) were also common biochemical findings.[15] Mitra et al observed leukocytosis in 27% patients and anemia in 68% patients. Hyperbilirubinemia was seen in 79% patients with mean total bilirubin level 6.2±2.5 mg/dl and 70% patients showed elevated liver enzymes with mean AST/ALT ratio of 2.2±1.3. Mean albumin level was 2.11±0.9 g/dl and mean INR was 2.7±0.7.[18]

CONCLUSION

Chronic alcohol consumption is more common in adult males. Chronic alcoholics consume more amount of alcohol. Alcoholic liver disease has a varied clinical presentation and is associated with deranged biochemical parameters.

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