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"CLINICAL, BIOCHEMICAL AND HISTOPATHOLOGICAL STUDY OF ALCOHOLIC LIVER DISEASES"

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ABSTRACT To study the various clinical features and Liver Function Test in alcoholic liver diseases and histopathological changes that occurs in alcoholic liver diseases. To correlate the histopathology observed with the amount and duration of alcohol consumption. The study was conducted including the patients admitted in Liver Care Unit at Gandhi Hospital, Hyderabad. A total of 50 patients of alcoholic liver diseases were studied. The results obtained are analysed. The wide prevalence of alcoholic liver disease including cirrhosis among Indian males was noted with significantly lower quantity and duration of alcohol ingestion. The severity of liver damage is directly proportional to the quantity and duration of alcohol consumed. Clinical features and biochemical changes may forecast the liver histopathology among the patients of alcoholic liver disease.

KEYWORDS : Biochemical, Histopathological, Alcohlic Liver Diseases, Liver Function Tests.

INTRODUCTION

Worldwide alcohol consumption is increasing; alcohol is the commonest addictive drug in the present world. Alcohol is used by approximately 75% of the population of the United States, with a 7% incidence of alcoholism. In addition, alcohol accounts for approximately 100,000 deaths in the U.S. each year, with nearly 20% of those deaths attributable to cirrhosis and it has become a necessary part of social existence for all ages and sexes and which ravages every organ in the human body.[1]

The definition of an alcoholic is usually taken to be an individual who consumes an amount of alcohol capable of producing pathology (Criteria Committee, National Council on Alcoholism, 1972). For most individuals this is an excess of 80 gm of ethanol per day.[2]

Alcohol toxicity on the liver causes major morbidity and mortality. Not all those who abuse alcohol develop liver damage; the incidence of cirrhosis among alcoholics at autopsy is about 10-15%.

Only 8-30% of long term alcohol abusers develop alcoholic cirrhosis and a minority of individuals will not progress beyond the stage of fatty liver despite persistent drinking. Some of this variation in individual susceptibility is accounted for by differences in cumulative amount, duration and pattern of drinking.[3]

An alcoholic can develop 3 classical pathological abnormalities in liver. They are fatty liver, alcoholic hepatitis and cirrhosis. There is lack of clinical, laboratory and histopathological correlation. Chronic alcoholic patient without clinical or laboratory evidence of liver damage have histological damage as evidenced by an 8.5% prevalence of cirrhosis in the study.[4]

The present study reports various clinical features, Liver function test abnormalities and histopathological changes in chronic alcoholics. From this to find out whether alcoholic liver damage occurs in every alcoholic, and also to study the relationship of the quantity and duration of alcohol consumption to the various histopathological findings, and to assess the valuability of routine liver biopsy in a chronic alcoholic, so as to detect the liver damage at the earliest and to prevent the progress of alcoholic liver damage.

AIMS & OBJECTIVES

1. To study the various clinical features of alcoholic liver diseases.
2. To study LFT in alcoholic liver diseases.
3. To study the histopathological changes that occurs in alcoholic liver diseases.
4. To correlate the histopathology observed with the amount and duration of alcohol consumption

MATERIAL & METHODS

The present study is carried out in Gandhi Medical College / Hospital, Hyderabad, from March 2018 to February 2020. A total of 50 patients with alcoholic liver diseases were included in this study.

INCLUSION CRITERIA: The criterion for the selection of the patients for the study was those patients with the history of consumption of alcohol of >60gm per day and clinical symptoms and signs of alcoholic liver disease.

EXCLUSION CRITERIA: The exclusive criteria were patients with liver diseases due to non-alcoholic causes and patients with alcoholic liver diseases who are found to have other causative factors. Co-morbid conditions like severe coagulopathy not corrected with FFP/Vit K. Patients with tense ascites and hepatic space occupying lesions. Patients who did not consent for biopsy were excluded from the study.

Investigations

CBP, LFT, Sr. Creatinine, PT with INR, Chest X Ray, ECG, HbsAG, HTV Antibodies, USG Abdomen.

Liver Biopsy

Method used: Percutaneous needle biopsy using Bard 20G/16cm and 20G/20cm liver biopsy gun. The instrument consists of a one handed cocking with 22mm penetration depth. It has 2 firing buttons with accurate depth markings on the needle. Pulling the top slide will open the cannula exposing the needle with biopsy sample notch in it. Then pull back on the bottom slide to withdraw th stylet and lock in place. Instrument is ready to fire when both slides are locked back

RESULTS

A total of 50 patients of alcoholic liver diseases were studied. The results obtained are analysed. Majority of patients are males (94%). 3 of them were females (6%).

Distribution of alcoholics according to the quantity of alcohol consumption

Quantity of Alcohol	Frequency	Percent
60-80	12	24.0
80-100	18	36.0
100-120	8	16.0
>120	12	24.0
Total	50	100.0

Majority of the patients (36%) were consuming 80-100 gms of alcohol /day. 24% consumed between 60-80 gms and 24% consumed more than 120 gms/day. 16% of them consumed 100-120gms/day.

Distribution of Alcoholics according to duration of Alcohol consumption (in years)

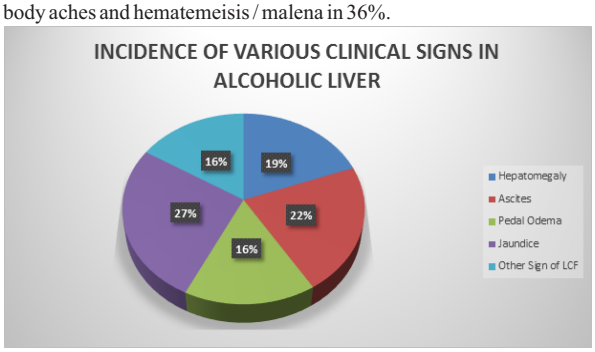
DURATION OF ALCOHOL CONSUMPTION	FREQUENCY	PERCENT
<10	19	38.0
10—15	12	24.0
15—20	6	12.0
>20	13	26.0
Total	50	100.0

It is difficult to determine the quantity of alcohol consumed by the patient. However after careful history taking tentative consumption of amount of alcohol was calculated 38% of the alcoholics were consuming alcohol for duration of <10 years. 26% of alcoholics were consuming for a period more than >20years. 24% and 12% of them consumed for a duration of 10-15yrs and 15-20yrs.

Incidence of various symptoms in alcoholic liver diseases

SYMPTOMS	FREQUENCY	PERCENT
Pain abdomen	23	46.0
Nausea	29	58.0
Anorexia	35	70.0
Weight loss	23	46.0
Fever and body aches	18	36.0
Hematemesis/Malena	18	36.0
Features of fluid retention	20	40.0

Nausea was seen in 58% of alcoholic liver disease patients. 46% of them had pain abdomen features of fluid retention in 40%, fever and body aches and hematemeisis / malena in 36%.



Jaundice was an important finding seen in 66 %. Hepatomegaly was seen in alcoholics seen in 48%, Ascites in 54% and pedal edema in 40 %. Other signs of liver cell failure like spidernaevi, loss of axillary-pubic hair and gynaecomastia were seen in 40% of the patients.

The Incidence of various LFT abnormalities

Liver Function test	HS (n=8)		ASH (n=11)		FIBROSIS (10)		CIRRHOSIS (n=21)		Total (50)	
	Count	%	Count	%	Count	%	Count	%	Count	%
Blb>3	0	0%	11	100.0%	7	70.0%	15	71.4%	33	66.0%
ALP>120	0	0%	3	27.3%	2	20.0%	4	19.0%	9	18.0%
Ab<3.5	0	0%	2	18.2%	6	60.0%	21	100.0%	29	58.0%
Gb>3.5	0	0%	0	0%	2	20.0%	19	90.5%	21	42.0%
PT>1.5	0	0%	10	90.9%	7	70.0%	19	90.5%	36	72.0%
SGOT>50	0	0%	11	100.0%	10	100.0%	20	95.2%	41	82.0%
SGPT>50	0	0%	11	100.0%	7	70.0%	3	14.3%	21	42.0%
GGT>125	0	0%	6	54.5%	4	40.0%	12	57.1%	22	44.0%
SGOT/SGPT>2	0	0%	7	63.6%	6	60.0%	13	61.9%	26	52.0%

Hyperbilirubinemia was seen in 66% of patients. Hypoalbuminemia was seen in 58% of ALD patients. Raised AST and ALT were found in 82% and 42%. PT was elevated in 72% of patients. AST/ALT ratio > 2 was found in 52% of patients.

Incidence of various Ultrasonography findings in alcoholics

USG FINDINGS	Frequency	Percent
Hepatomegaly	24	48.0
Cirrhosis	11	22.0
Splenomegaly	20	40.0
PV Dilated	13	26.0
Ascites	27	54.0

Hepatomegaly was seen in 52% of patients, ascites was seen in 54%. Evidence of splenomegaly in 26%, PV dilatation in 26%. Direct evidence of cirrhosis is seen in 22% of patients on ultrasonography.

CORRELATION OF LIVER BIOPSY WITH CLINICAL AND LABORATORY PARAMETERS

Variable	Liver Biopsy								P-value
	HS		ASH		FIBROSIS		CIRRHOSIS		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Age	33.5	6.2	38.5	6.7	44.8	7.3	50.8	9.2	<0.001
Qty	78.8	22.3	100.9	26.9	115.5	36.8	106.4	40.2	0.2
Duration	8.1	1.6	9.7	2.4	17.1	6.7	20.6	6.6	<0.001
BMI	24.2	0.6	22.3	1.1	21.4	2.7	19.8	1.9	<0.001
Audit	10.8	3.4	19.2	4.8	22.1	5.4	22.7	4	<0.001
MCV	76.6	7.3	81.1	6.4	88.9	11.7	93.3	8.3	<0.001
Platelet count	4.3	0.6	2.7	0.5	1.7	0.5	1	0.3	<0.001
Ab	4.9	0.4	3.9	0.5	3.3	0.3	2.7	0.4	<0.001
Gb	2.7	0.3	3	0.6	3.8	0.3	4.4	0.5	<0.001
SGOT	38.9	5.7	320.2	90.1	158.6	91.9	89.3	36.7	<0.001
SGPT	33.1	7.5	147.1	75.6	72.2	36.3	42.4	21.8	<0.001
GGT	83.3	14.8	140.5	35.1	118.2	22.6	133.4	31.1	<0.001
ALP	90.1	5.3	116.8	23.7	105.1	18.6	110	22.9	0.049
PT	1.1	0.1	1.9	0.2	1.7	0.2	2.2	0.5	<0.001
Blb	1.6	1	13.7	4.3	9.7	4.5	7.3	3.1	<0.001

DISCUSSION

In the present study, 50 alcoholics who were admitted to Gandhi medical college were studied and the results of the study are discussed under the following headings.

Majority of the patients were in the age group of 40 - 49yrs (36%), followed by age group of 30-39yrs (28yrs). Only 8% were in the age group of 20-29yrs and more than 60yrs. This correlated with the study by D N Amarapurkar in which the mean age of presentation of alcoholics was 41+11years[4] Sayantan ray et al in their study also showed majority of ALD patients were in age group of 40-49yrs (32%).[3] Gordon Bekett et al in their study showed that the common age group of presentation of alcoholics was 40-50 years[5]

In a recent study from eastern India, out of the 28 patients investigated, 57% revealed stigmata of chronic liver disease and they gave a history of 150 to 200 ml alcohol intake for more than ten years[6]

Majority of the patients (38%) consumed alcohol for a period of < 10 yrs. 26% consumed for more than 20 yrs. 24% consumed for 10-15 years. Our study correlated with sayantan ray etal [3] study, majority of patients consumed for a duration of 9-12yrs. Thorkild et al, showed that mean duration of alcohol consumption was 10-13yrs[7].

Morgan and Sherlock in their study revealed that mean duration of alcohol intake was 20.4yrs in men and 16.8yrs in women[8]

Hepatomegaly was seen in 48% of the patients. Cirrhosis was seen in

22% and dilated portal vein in 26% of patients. Splenomegaly was found in 40% of patients. Splenomegaly was found in 81 % of cirrhotic and 30% of fibrosis patients. Hepatomegaly was found in 100% of hepatic steatosis patients, 91% of steatohepatitis and 60% of hepatic fibrosis patients. Our study correlated with study of sayanthan ray etal[3], splenomegaly was found in 92% of cirrhotic patients. Hepatomegaly was found in 100% of steatosis and steatohepatitis patients.

In the present study fatty liver was seen in 16 %, alcoholic hepatitis in 22%, hepatic fibrosis in 20% and cirrhosis in 42% of the patients. Majority of patients in our study had cirrhosis and alcoholic steatohepatitis because the average dose of alcohol consumption was 102+/-35.5 gms/day. Our study correlated with a study by sayanthan ray etal showed fatty liver in 18%, alcoholic hepatitis in 30% and cirrhosis in 52% patients in Calcutta.[3]

In one study by D N Amarapurkar et al, the histopathological study in alcoholics showed that 15% had normal liver, 40% had fatty change,15% had alcoholic hepatitis and 10% had cirrhosis.20% had other causes like viral hepatitis, drug induced hepatitis[4]. In other study by D N Amarapurkar et al, the various histopathological changes in 90 liver biopsies showed 13.3% normal liver, 24.2% fatty change, 2.5% alcoholic hepatitis, 58.8% cirrhosis and 1.6% hepatocellular carcinoma[4].

In the present study, hepatic steatosis was seen in patients who consumed alcohol of 78.8 ± 22.3 gms for a duration of 8.1 ± 1.6years. Alcoholic hepatitis was seen in those patients who consumed alcohol of 100.9± 26.9 gms for a duration of 9.7± 2.4 years. Hepatic fibrosis was seen in patients who consumed alcohol of 115.5 ±36.8 for a duration of 17.1 ±. 6.7years. Cirrhosis was seen in those patients who consumed alcohol of 106± 40.2 gms for a duration of 20.6± 6.6 years.

In our study, Histopathological findings shown to correlate well with duration of alcohol intake, did not correlate with quantity of alcohol consumption. Histopathological findings found to correlate significantly with clinical symptoms except fever, nausea, clinical signs, ultrasound findings, biochemical and liver function tests except for alkaline phosphatase.

Sayanthan ray etal[3] study showed, hepatic steatosis was seen in patients who consumed 60.25±1.11 gms for a duration of 12.8±3.17years. Alcoholic hepatitis was seen in patients who consumed 75.62±11.5gms for a duration of 13.8±4.4years, cirrhosis who consumed 144.0±50.37gms/day for a duration of 17.6±4.5years. Their study showed significant correlation with duration as well as quantity of alcohol consumption.

As per study by Savolainen et al, minimum amount of alcohol intake associated with fatty liver ranged from 40-80gm per day for 10-12 yrs[9]. Fatty liver develops in majority of the individuals who consume alcohol more than 60gms per day[10].

Medenhall in their study showed that alcoholic hepatitis was seen in those individuals who consumed 160gms of alcohol per day for an average of 9yrs[2]. According to Lelbach, alcoholic cirrhosis developed in individuals who consumed 190gmsper day for 10yrs, although there are wide individual variations.

Our study as well as the above mentioned comparative studies shows that the severity of liver disease is in relationship with the amount and duration of alcohol intake, statistically correlated with duration of consumption. Our study did not correlate with quantity of consumption, may be due to underestimation of alcohol consumed by the patient and varying percentages of alcohol in local available beverages.

CONCLUSIONS

- Mean age of presentation was 40 - 49 years in our study, a decade earlier than other countries, correlated with other Indian studies.
- Mean alcohol intake was found to be 102.6gms/day with a mean duration of 15.5yrs.
- Anorexia and nausea were common symptoms seen in 70% and 58% of patients. Incidence of hyperbilirubinemia [66%] found to be common, comparable with other studies.
- AST elevation was found in 82% of patients in our study unlike other studies.
- AST/ALT Ratio >2 was seen only in 52% of patients.
- Prolonged PT was seen in 72% patients, more in hepatitis patients [100%] than in cirrhotic patients [90%]
- Hepatomegaly was low in our study-48%.
- Most of hepatic steatosis patients had hepatomegaly, there were no significant biochemical abnormalities in steatosis patients.
- Cirrhosis was the most common histopathological stage of alcoholic liver disease. Histopathology correlated with duration of alcohol consumption but not with quantity of alcohol consumed which can be attributed to adulteration, underestimation of quantity consumed.
- Histopathological changes correlated with clinical symptoms except nausea, fever, significant correlation with clinical signs and biochemical abnormalities except for alkaline phosphatase.

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