Research Article

Profile of imaging patterns in patients with alcoholic liver disease in Rural Maharashtra

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ABSTRACT

Background: The spectrum of alcohol-related liver injury varies from simple steatosis to cirrhosis. These are often grouped into three histological stages of alcoholic liver disease (ALD): Fatty liver or simple steatosis, alcoholic hepatitis, and cirrhosis of liver. Ultrasound (USG) scanning is accepted as the first line imaging investigation in patients with suspected liver disorders. **Aim:** The study was conducted to assess imaging patterns by USG abdomen of ALD. **Patients and Methods:** In this prospective hospital-based cross sectional study patients admitted with alcohol-related liver injury included. Assessment of clinical presentations with hematological, biochemical parameters, and evaluation of imaging patterns by ultrasonography of Abdo-pelvis was done in all patients. Upper gastro-duodenal endoscopy performed in 40% of patients. Ascitic fluid analysis was in done 68% patients with ascites. **Results:** Cirrhosis was the common finding in this study in 65% of the patients. Among those cirrhosis with portal hypertension was seen in 56% and cirrhosis without portal hypertension was seen only in 9%. Hepatomegaly was seen in 13% of patients and 22% patients had fatty liver. **Conclusion:** Cirrhosis of liver with portal hypertension was commonest imaging pattern in seen in middle aged men with very high quantity and more than two decades of alcohol consumption; next common imaging pattern was fatty liver, which was seen in those with moderately high quantity and around more than one decade duration of alcohol consumption. The severity of liver damage was directly related to the quantity and duration of alcohol consumption.

Keywords: Alcohol, cirrhosis of liver, fatty liver

Introduction

The Hindu Ayurvedic texts describe both the beneficent uses of alcoholic beverages and the consequences of intoxication and alcoholic diseases. Ayurvedic texts concluded that alcohol was a medicine if consumed in moderation, but a poison if consumed in excess.[1]

The association of alcohol with cirrhosis was first recognized by Matthew Baillie in 1793.[2] Rokitansky and Carl (1849) for the first time described fatty Liver on direct observation in subjects who have been excessively drinking spirits.

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Mallory (1911) first described the dramatic histological abnormality in the Liver that has since gone by his name, also referred to as alcoholic hyaline as it is exclusively seen in the Liver of alcoholic patients. Morgan Sherlock (1977), Krasner *et al.*, (1977) emphasized the increased importance of alcohol in the etiology of Liver diseases.[3]

Spring and Buss studied that in spite of high mortality due to cirrhosis the incidence of alcohol consumption is increasing rapidly. The early recognition and treatment of alcoholic liver disease (ALD) becomes important both in developed and under-developed countries.[4]

The leading cause of liver disease is ALD, either alone or in association with other comorbidities such as obesity or viral hepatitis. The liver is also the most common target organ of chronic alcohol abuse. In Germany and the United States, chronic alcohol consumption is responsible for over 50% of chronic liver diseases.[5] In South Korea,

7–31% of cirrhosis cases have been addressed to alcohol in a few single center studies.[6]

Ultrasound scanning is accepted as the first line imaging investigation in patients with suspected liver disorders. In the present study, the various ultrasonographic studies have been done in association with mean quantity and duration of alcohol consumption, various signs and symptoms and various liver function test (LFT) abnormalities.

Patients and Methods

The prospective hospital-based case-control study was done at Pravara Rural Hospital and Medical College, Loni from September 2013 to September 2015. A total of 100 cases of ALD were included in the study.

Inclusion criteria

- Patient diagnosed of ALD
- Patients aged above 16 years
- Patients of both sexes will be taken for study.

Exclusion criteria

- Patients with hepatitis secondary to other than significant alcohol consumption
- Patients aged below 16 years.

Results

Cirrhosis is the common finding in this study in 65% of the patients. However, cirrhosis with portal hypertension seen in 56% and without portal hypertension only in 9%. Hepatomegaly seen in 13% of alcoholics and 22% patients had fatty liver [Table 1].

Cirrhosis of liver with portal hypertension seen in patients who consumed 84.732 ± 35.90 g for duration of 18.19 ± 8.04 years. Cirrhosis without portal hypertension seen in patients who consumed 82.22 ± 15.83 g alcohol for duration of 22.11 ± 7.50. Moreover, hepatomegaly seen in those who consumed alcohol for 16.13 ± 6.65 years with quantity of 60.90 ± 43.79 g. Fatty liver seen in patients who consumed 50.76 ± 10.37 g of alcohol for 13.61 ± 7.21years. The Chi-square statistics is 0.5951. And the $P = 0.897555$. The result is not significant as *P*-value is greater than Chi-square test. Hence, it can be concluded that ultrasonographic findings and consumption of alcohol over years not significant [Table 2].

In cases of cirrhosis of liver without portal hypertension most common finding is pain in abdomen (55.5%). Then, jaundice is present in 33.3% of the patients.

Ascites and signs of liver failure are the most common findings in case of cirrhosis of liver with portal hypertension 96.42% each. Then, pedal edema is common finding with 58.92%. 55.35% patients had history of malena. 46.42% patients had jaundice. 33.92% patients had history of hematemesis.

Table 1: Incidance of ultrasonography findings in alcoholics

USG findings	Number
Cirrhosis with portal HT	56
Cirrhosis without portal HT	9
Hepatomegaly	22
Fatty liver	13

HT: Hypertension, USG: Ultrasound

Table 2: Relation between various ultrasonographic findings and mean quantity and duration of alcohol consumption

USG findings	mean±SD of quantity of alcohol in grams	Mean±SD of duration of alcohol aconsumption in years
Cirrhosis with portal HT	84.732±35.90	18.19±8.04
Cirrhosis without portal HT	82.22±15.83	22.11±7.50
Hepatomegaly	60.90±43.79	16.13±6.65
Fatty liver	50.76±10.37	13.61±7.21

HT: Hypertension, USG: Ultrasound

In case of fatty liver 84.61% patients had pain in abdomen is main symptom followed by jaundice in 61.53% of the patients. Nausea and vomiting was seen in 23.07% of patients.

In case of Hepatitis pain in abdomen was present in 81.81% of the patients. Jaundice is seen in 59.09% of patients. Nausea and vomiting is present in 22.72% of patients and fever was seen in 40.9% of patients. Malena is seen in 4.54% of patients [Table 3].

In cirrhosis of liver without portal hypertension, 55.55% patients had raised bilirubin, raised prothrombin time and international normalized ratio (PTINR) and hypoalbuminemia. However, 100% of the patients had raised PT.

In cases of cirrhosis of liver with portal hypertension 92.85% patients had raised PT and 85.71% showed raised serum glutamic oxaloacetic transaminase (SGOT) levels. 78.57% patients had hypoalbuminemia. Raised PT-INR levels seen in 66.07% patients. Bilirubin levels are raised in 60.71% of patients.

In Hepatitis and fatty liver disease raised SGOT is important findings 90.9% and 53.84%, respectively [Table 4].

Discussion

Ultrasonography findings in alcoholics

Cirrhosis is the common finding in this study in 65% of the patients. However, cirrhosis with portal hypertension seen in 56% and without portal hypertension only in 9%. Hepatomegaly seen in 13% of alcoholics and 22% patients had fatty liver.

In study by Suthar *et al.*, cirrhosis of liver seen in 36% of the patients, 40% patients shows fatty liver and 24% shows hepatomegaly.[7] In study by Parmar and Vyas, 62% had fatty liver and 37% had cirrhosis of liver.[8]

Table 3: Incidence of symptoms and signs in relation to ultrasonographic findings

Clinical features	Cirrhosis of liver without PH (*n*=9)		Cirrhosis of liver with PH (*n*=56)		Fatty liver (*n*=13)		Hepatitis (*n*=22)	
	No	%	No	%	No	%	No	%
Pain in abdomen	5	55.5	21	37.5	11	84.61	18	81.81
Jaundice	3	33.3	26	46.42	8	61.53	13	59.09
Nausea and vomiting	2	55.5	19	33.92	3	23.07	5	22.72
Ascites	0	0	54	96.42	0	0	0	0
Pedal edema	0	0	33	58.92	1	7.69	0	0
Malena	0	0	31	55.35	0	0	1	4.54
Hematemesis	0	0	19	33.92	0	0	0	0
Fever	0	0	11	19.64	0	0	9	40.90
Signs of liver cell failure	0	0	54	96.42	0	0	0	0

PH: Pulmonary hypertension

Table 4: Incidence of LFT abnormalities in various Ultrasonographic findings

LFTs	Cirrhosis of liver without PH (*n*=9)		Cirrhosis of liver with PH (*n*=56)		Fatty liver (*n*=9)		Hepatitis (*n*=22)	
	No.	%	No.	%	No.	%	No.	%
Hypoalbuminemia	5	55.55	44	78.57	3	23.07	5	22.72
↑Bilirubin total	5	55.55	34	60.71	0	0	11	50
↑SGOT	5	55.55	48	85.71	7	53.84	20	90.9
↑SGPT	4	44.44	33	58.92	0	0	19	86.36
↑ALP	1	11.11	7	12.5	0	0	4	18.18
↑PTINR	5	55.55	37	66.07	2	15.38	5	22.72
↑Prothrombin time	9	100	52	92.85	7	53.84	11	50

PH: Pulmonary hypertension, LFT: Liver function test, SGOT: serum glutamic oxaloacetic transaminase, SGPT: Serum glutamic pyruvic transaminase, ALP: Alkaline phosphatase

In study by Biswas *et al*., it shows normal sonography in 63.04% of patients, 10.87% had fatty liver and hepatitis and chronic liver disease in 15.22% of the patients.[9] In study by Biswas *et al*., 63.04% patients show no abnormality. 10.86% patients show fatty liver and hepatitis. Moreover, 15.21% patients showed cirrhosis of liver.[9]

Relation between various ultrasonographic findings and mean quantity and duration of alcohol consumption

Cirrhosis of liver with portal hypertension seen in patients who consumed 84.732 ± 35.90 g for duration of 18.19 ± 8.04 years. Cirrhosis without portal hypertension seen in patients who consumed 82.22 ± 15.83 g alcohol for duration of 22.11 ± 7.50. Moreover, hepatomegaly seen in those who consumed alcohol for 16.13 ± 6.65 years with quantity of 60.90 ± 43.79 g. Fatty liver seen in patients who consumed 50.76 ± 10.37 g of alcohol for 13.61 ± 7.21years.

Incidence of symptoms and signs in relation to ultrasonographic findings

In cases of cirrhosis of liver without portal hypertension most common finding is pain in abdomen (55.5%). Then, jaundice is present in 33.3% of the patients. Ascites and signs of liver failure are the most common findings in case of cirrhosis of liver with portal hypertension 96.42% each. Then pedal edema is common finding with 58.92%. 55.35% patients had history of malena. 46.42% patients had jaundice. 33.92% patients had history of hematemesis.

In case of fatty liver, 84.61% patients had pain in abdomen is main symptom followed by jaundice in 61.53% of the patients. Nausea and vomiting was seen in 23.07% of patients. In case of Hepatitis pain in abdomen was present in 81.81% of the patients. Jaundice is seen in 59.09% of patients. Nausea and vomiting is present in 22.72% of patients and fever was seen in 40.9% of patients. Malena is seen in 4.54% of patients.

Incidence of LFT abnormalities in various ultrasonographic findings

In cirrhosis of liver without portal hypertension 55.55% patients had raised bilirubin, raised PTINR and hypoalbuminemia. But 100% of the patients had raised PT. In cases of cirrhosis of liver with portal hypertension, 92.85% patients had raised PT and 85.71% showed raised SGOT levels. 78.57% patients had hypoalbuminemia. Raised PT-INR levels seen in 66.07% patients. Bilirubin levels are raised in 60.71% of patients. In Hepatitis and fatty liver disease raised SGOT is common findings 90.9% and 53.84%, respectively.

Conclusion

From the present study, it was concluded that the alcohol drinking is associated with various changes on ultrasonic bases. Cirrhosis is the common finding in this study. Furthermore, that ultrasonographic findings and consumption of alcohol over years is not significant. In cases of cirrhosis of liver without portal hypertension most common finding is pain in abdomen. Ascites and signs of liver failure are the most common findings in case of cirrhosis of liver with portal hypertension. In cirrhosis of liver without portal hypertension, the patients had raised bilirubin, raised PTINR and hypoalbuminemia.

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