

A study of imaging patterns in patients of alcoholic liver disease

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Abstract

Background: Alcoholic liver disease (ALD) is one of the main consequences of alcohol abuse. USG is one of the important noninvasive modality for diagnosis of alcoholic liver disease. **Aim and objective:** To study the imaging patterns in Alcoholic Liver disease patients. **Methodology:** Total 110 patients were studied. Patients diagnosed with alcoholic liver disease were included in the study. All patients underwent required investigations. Ultrasonography was done to find the imaging patterns in ALD patients. Data analysed with appropriate statistical tests. **Results:** Cirrhosis without portal hypertension seen in patients who consumed for duration of 22.11 ± 7.50 . Hepatomegaly seen in those who consumed alcohol for 16.13 ± 6.65 years. Fatty liver seen in patients who consumed alcohol for 13.61 ± 7.21 years. consumption duration of alcohol was significantly not associated with ultrasonographic findings ($p > 0.05$).

Key Word: alcoholic liver disease.

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INTRODUCTION

Alcoholic liver disease (ALD) is one of the major consequences of excessive alcohol consumption.¹ In India the prevalence of current use of alcohol ranged from a low of 7% in the western state of Gujarat to 75% in the North-eastern state of Arunachal Pradesh. There is also an extreme gender difference. Prevalence among women has consistently been estimated at less than 5%.² Population based surveys have documented that men usually must drink 40 to 80 grams of alcohol daily and women 20 to 40 grams daily for 10 to 12 years to achieve significant risk of liver disease.³ However, clinicians should consider anyone drinking more than 30-50 g/d for more than 5-10 years at risk of developing ALD.⁴ The spectrum of ALD ranges

from asymptomatic and potentially reversible alcoholic steatosis to acute alcoholic hepatitis (AH), liver cirrhosis and ALD-related hepatocellular carcinoma (HCC).⁵ The amount and duration of alcohol consumption, affect the development and progression of alcoholic liver disease (ALD). A number of laboratory tests and investigations are available to screen for alcohol intake. Liver biopsy remains the gold-standard diagnostic tool for ALD, but noninvasive accurate alternatives like USG (ultrasonography) are commonly used nowadays. The appearance of fat in the liver is highly variable on ultrasonography, however, in general, a fatty liver will have a hyperechoic texture and macroscopic fat will appear as hyperechoic masses.⁶ The sensitivity and specificity of a hyperechoic pattern on ultrasound for hepatic steatosis in patients with a liver replaced by at least thirty percent steatosis is 91% and 93% respectively. In acute hepatitis there are few signs other than hepatomegaly. The attenuation is normal. However Kurtz and associates have reported, a brighter delineation of portal vein radicals. On Ultrasonography, patients with fibrosis may have a coarsened echo pattern to their liver and patients with cirrhosis may have a nodular liver contour. The sensitivity of US for significant fibrosis is about 57% and 71% for patients with established cirrhosis. Overall, specificity is approximately 88%.⁷ The demonstration by ultrasound of portal vein flow reversal,

ascites, and intraabdominal venous collaterals indicates serious liver injury with less potential for complete reversal.⁸ early detection of ALD will reduce further complications. A non invasive, simple investigation is preferred for early and quick diagnosis of ALD. Present study was conducted to see the imaging patterns of ALD patients with USG.

AIM AND OBJECTIVE

To study the imaging patterns in patients of alcoholic liver disease

MATERIAL AND METHODS

The present study is prospective longitudinal study, carried out in tertiary health care centre. Total 110 patients attended OPD during study period. Patients with history of significant alcohol intake, physical signs of liver disease and supportive laboratory data⁹ were diagnosed as patients with Alcoholic Liver Disease.

Inclusion Criteria: 1. Patient diagnosed of alcoholic liver disease. 2. Patients aged above 18 years.

Exclusion Criteria: 1. Patients aged below 18 years. 2. Patients with hepatitis secondary to other than significant alcohol consumption.

Data was collected with pre tested questionnaire. Data included sociodemographic data, clinical history. The quantity (in grams) and duration(in years) of alcohol consumption was also noted. A through clinical examination was done. Signs of liver cell failure were noted such as fetor hepaticus, jaundice, pigmentation, purpura, finger clubbing, white nails, vascular spiders, palmar erythema, gynaecomastia, testicular atrophy, distribution of body hair, parotid enlargement, Dupuytren's contracture etc. All patients underwent haematological investigations and liver function tests. Ultrasonography abdomen was done in all patients. Convex/ Curvilinear probe of 3.5 to 5 MHz was used for ultrasonography and colour doppler imaging. B mode scanning is used to look for echogenicity of liver. Liver size and span was examined in every patient also the edges also examined. Liver span of more than 15.5cm and above considered as hepatomegaly.¹⁰ The morphology and exhotexture was also examined. A fatty liver will have a hyperechoic texture and macroscopic fat will appear as hyperechoic masses.¹¹ Similar to alcoholic fatty liver, sonographic features of alcoholic hepatitis include hepatomegaly and fatty liver.¹² Sonographic features of alcoholic cirrhosis includes bluntness of liver edge, coarseness of liver parenchymal texture, irregularity of liver surface, hepatomegaly, and attenuation of the ultrasound beam are the most useful signs for the assessment of cirrhosis. Reduced portal flow velocity, portal vein diameter of > 13 mm, dialatation of splenic vein

more than 1 cm and the lack of mild caliber variation in the superior mesenteric vein, ascites and splenomegaly suggest a diagnosis of portal hypertension.^{12,13} Data analysis was done with appropriate statistical tests.

RESULTS

The mean age was 46.21±8.07 years. Age of the patients ranges from 21years to 75 years. Majority were in the age group of 31 to 40 years 40 (36.66%) followed by 41-50 years 32 (29.09%) only one patient was below 20 years and 2 (1.81%) were above 70 years. In our study out of 110 patients 105 were males and 5 were females. Male to female ratio was 21: 1.

Majority of the patients were consuming alcohol for duration of 16 to 20 years 28 (25.45%) followed by 11 to 15 years 26(23.64%). There were 22.73% patients who had drinking duration of 5-10 years. Minimum duration of alcohol consumption in our study was 2 years and maximum duration was 33 years. Table 2 shows Distribution of alcoholics according to quantity of consumption of alcohol in grams. Majority of the patients 49 (44.55%) were consuming 40- 60 grams of alcohol. 35 (31.82%) patients consumed 61-80 grams. Patients who consume more than 100 gram were 19 (17.27%). Majority of the patients presented with distension of abdomen 66 (60%) followed by pain in abdomen 56 (50.91%). Patients also presented with yellowish discoloration of skin, sclera and urine, malena and haematosi.

In clinical examination we found ascites 63(57.27%) was most commonly observed sign in alcoholic patients. Jaundice was observed in 50% of patients. Other signs observed were pedal edema, hepatomegaly and signs of liver failure like spider naevi, gynacomastia, parotid enlargement etc In our study patients underwent ultrasonography for studying changes in liver. USG findings were cirrhosis with portal hypertension , cirrhosis without portal hypertension, hepatomegaly and fatty liver. Cirrhosis was most commonly observed 72 (65.45%) in patients with ALD. Cirrhosis with portal hypertension was observed in 62 (56.36%) patients and cirrhosis without portal hypertension was seen in 10(9.09%) patients. hepatomegaly was observed in 24 (21.82%) patients. fatty liver was recorded in 14(12.73%) patients. (fig 1) Cirrhosis of liver with portal hypertension seen in patients who consumed for duration of 18.19±8.04 years. Cirrhosis without portal hypertension seen in patients who consumed for duration of 22.11±7.50. Hepatomegaly seen in those who consumed alcohol for 16.13±6.65 years. Fatty liver seen in patients who consumed alcohol for 13.61±7.21years. consumption duration of alcohol was significantly not associated with ultrasonographic findings (p>0.05).(table 3)

Table 1: Distribution Of patients According To Duration Of Consumption In Years

Sr no	Duration Of Drinking In Years	Numbers	Percentage
1	less than 5	4	3.64
2	5 to 10	25	22.73
3	11 to 15	26	23.64
4	16 to 20	28	25.45
5	21 to 25	14	12.73
6	26 to 30	7	6.36
7	more than 30	6	5.45

Table 2: Distribution of Alcoholics According to Quantity Of consumption Of Alcohol in Grams

Sr no	Alcohol Quantity in grams	Number of cases	Percentage
1	40 to 60	49	44.55
2	61 to 80	35	31.82
3	81 to 100	7	6.36
4	More than 100	19	17.27
5	Total	110	100

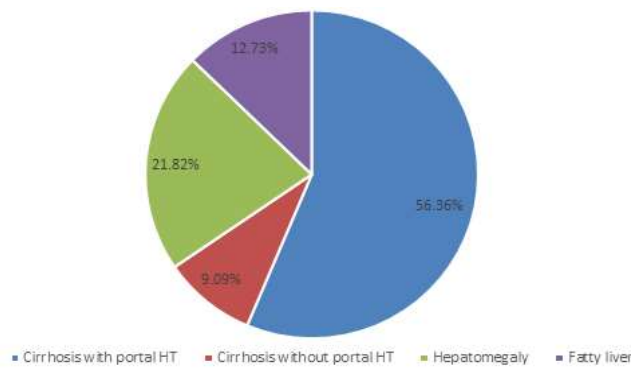


Figure 1 : USg findings in alcoholic liver disease patients

Table 3: Relation between various Ultrasonographic findings and mean duration of alcohol consumption

Sr no	USG findings	Mean±SD of duration of alcohol aconsumption in years
1	Cirrhosis with portal HT	19.18±8.02
2	Cirrhosis without portal HT	23.52±7.50
3	Hepatomegaly	15.67 ±3.36
4	Fatty liver	13.21±4.81

P >0.05 not significant

DISCUSSION

In present study, the mean age was 46.21±8.07 years. Age of the patients ranges from 21years to 75 years. Majority were in the age group of 31 to 40 years 40 (36.66%) followed by 41-50 years 32 (29.09%). Similar findings were seen in Hemang S *et al.*¹⁴ where they observed 58% patients were in the age group of 41 to 50 years and 36% were in the 31 to 40 years age group. The mean age was 41 years. In accordance with our study Sarmistha Biswas *et al* noted major age group was 40 years and above(76%).¹⁵ In our study male preponderance was observed with Male to female ratio of 21: 1. Similar findings were observed in Sarmistha Biswas *et.al*¹⁵ . In a study by Om k Pathak *et.al*. 80.7% male and 19.3% female were observed which is having more number of females than our study.¹⁶ In our study majority of the patients were consuming alcohol for duration of 16 to 20 years28 (25.45%) followed by 11 to 15 years 26(23.64%). Majority of the patients 49 (44.55%)

were consuming 40- 60 grams of alcohol. 35 (31.82%) patients consumed 61-80 grams. In Hemang S. *et.al*. the mean duration of alcohol consumption was 16.25 years, with a minimum of 6 years and a maximum of 33 years.¹⁴ In a study by Walter A *et.al* 40% of the patients consuming alcohol 60 grams per day. This followed by the 28% of the subjects consuming 81-90 g per day, 16% of the subjects consuming 61-70 g of alcohol per day.¹⁷ In our study majority of the patients presented with distension of abdomen 66 (60%) followed by pain in abdomen 56 (50.91%). Most commonly observed sign was ascites 63(57.27%) and Jaundice (50%). Similar results were seen in Hemang S *et al.*¹⁴ In Om Pathak *et.al*. Jaundice was the most common presentation, which was present in 57.5% of the patients, followed by hepatomegaly (48.6%), ascites (45.3%), edema (36.5%) and pallor(10.5%). Malena is seen in 26% and hematemesis in 17.1%. Fever is seen in 16% of the patients.¹⁶ In Nitya Nand *et al* distension of

abdomen (78%) was most common followed by ascites (72%). Abdominal pain was seen in 55%.¹⁸ We observed Cirrhosis was most commonly observed 72 (65.45%) in patients with ALD. Cirrhosis with portal hypertension was observed in 62 (56.36%) patients and cirrhosis without portal hypertension was seen in 10(9.09%) patients. hepatomegaly was observed in 24 (21.82%) patients. fatty liver was recorded in 14(12.73%) patients. consumption duration of alcohol was significantly not associated with ultrasonographic findings ($p>0.05$). In study by Sarmistha Biswas *et al*, shows 63.04% shows no abnormality. 10.86% patients shows fatty liver and hepatitis. And 15.21% patients showed cirrhosis of liver.¹⁵ various studies show different pattern in USG of ALD patients. Cecil Parmar *et.al* had 62% patients with fatty liver and 37% with cirrhosis of liver.¹⁹ In study by Hemang S. *et al*. cirrhosis of liver observed in 36% of the patients, 40% patients showed fatty liver and 24% showed hepatomegaly.¹⁴

CONCLUSION

Cirrhosis with or without portal hypertension, Hepatomegaly and fatty liver were USG patterns observed in ALD patients.

REFERENCES

1. Rehm J, Mathers C, Popova S, Thavorncharoensap M, Teerawattananon Y, Patra J: Global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. *Lancet* 2009;373(9682):2223-33
2. Vivek Benegal India: alcohol and public health 2005 *Addiction*, 100, 1051-1056.
3. Feldman, Mark, Lawrence S. Friedman, and Lawrence J. Brandt, eds. *Sleisenger and Fordtran's gastrointestinal and liver disease: pathophysiology, diagnosis, management*. Elsevier Health Sciences, 2010:Chapter 84:1383-1399.
4. Becker U, Deis A, Sørensen TI, Grønbaek M, Borch-Johnsen K, Müller CF, Schnohr P, Jensen G. Prediction of risk of liver disease by alcohol intake, sex, and age: a prospective population study. *Hepatology* 1996; 23: 1025-1029
5. O'Shea RS, Dasarthy S, McCullough AJ; Practice Guideline Committee of the American Association for the Study of Liver Diseases; Practice Parameters Committee of the American College of Gastroenterology. *Hepatology*. 2010;51(1):307-28
6. Valls C, Iannaccone R, Alba E, Murakami T, Hori M, Passariello R, Vilgrain V. Fat in the liver: diagnosis and characterization. *Eur Radiol* 2006; 16: 2292-2308.
7. Palmentieri B, de Sio I, La Mura V, Masarone M, Vecchione R, Bruno S, Torella R, Persico M. The role of bright liver echo pattern on ultrasound B-mode examination in the diagnosis of liver steatosis. *Dig Liver Dis* 2006; 38: 485-489.
8. Mark E. Mailliard, Michael F. Sorrell *Alcoholic Liver Disease in: Kasper, D., Fauci, A., Hauser, S., Longo, D., Jameson, J., and Loscalzo, J. (2015). Harrison's Principles of Internal Medicine 19/E (Vol. 1 and Vol. 2). McGraw Hill Professional. 2052-2054.*
9. McCullough AJ, O'Connor JF. Alcoholic liver disease: Proposed recommendations for the American College of Gastroenterology. *AMJ Gastroenterol* 1998;93:2022-36.
10. Gosink BB, Leymaster CE.; Ultrasonic determination of hepatomegaly *J Clin Ultrasound*. 1981 Jan;9(1):37-44.
11. Torruellas C, French SW, Medici V. Diagnosis of alcoholic liver disease. *World J Gastroenterol* 2014; 20(33): 11684-11699.
12. Sien-Sing Yang; Alcoholic Liver Disease: Clinical and Sonographic Features: *J Med Ultrasound* 2008;16(2):140-149.
13. Bolondi L., Gandolfi L., Arienti V., Caletti, G. C., Corcioni, E., Gasbarrini, G., and Labo, G. (1982). Ultrasonography in the diagnosis of portal hypertension: diminished response of portal vessels to respiration. *Radiology*, 142(1), 167-172.
14. Suthar H, Suthar K, Mewada B. Clinical profile of cases of alcoholic liver disease. *Int J Med Sci Public Health*. 2013; 2(2): 394-398.
15. Biswas, Sarmistha; Paul, Sujat; Syeed, Abu; Mahbub, Md. Shahriar; Imran Khan, Mohammad Ashik; Gupta, Ratan Das; Miah, Md. Titu; Ayaz, Kfm; Das, Apama; Alam, Md. Billal; Mogni Mowla, Syed Ghulam Spectrum of Alcoholic Liver Disease in Tribal Alcoholics of Chittagong Hill Tracts of Bangladesh; *Journal of Medicine* . Jan 2011, Vol. 12 Issue 1, p7-11.
16. Pathak OK, Paudel R, Panta OB, Pant HP, Giri BR, Adhikari B. Retrospective Study of the Clinical Profile and Prognostic Indicators in Patients of Alcoholic Liver Disease Admitted to a Tertiary Care Teaching Hospital in Western Nepal. *Saudi Journal of Gastroenterology : Official Journal of the Saudi Gastroenterology Association*. 2009;15(3):171-175.
17. Walter, A., and Mohammed Ashraf. "A study correlating the quantity and duration of alcohol consumption with liver function tests." *IOSR Journal of Dental and Medical Sciences* Volume 13, Issue 3 Ver. III. (Mar. 2014), PP 70-75.
18. Nitya Nand, Parveen Malhotra, Dipesh Kumar Dhoot. "Clinical Profile of Alcoholic Liver Disease in a Tertiary Care Centre and its Correlation with Type, Amount and Duration of Alcohol Consumption" *Journal of The Association of Physicians of India* June 2015 Vol. 63: p14-20.
19. Dr. Cecil Parmar, Dr. Monark Vyas. "Retrospective Study of the Clinical Profile and Prognostic Indicators in Patients of Alcoholic Liver Disease Admitted to a tertiary Care teaching Hospital International Journal of Scientific Research, Vol.2, Issue.11 November 2013.

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