


Original Article

# A retrospective observational study to assess the cirrhosis risk in alcoholic patients



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## Article info

Received: 09 Feb 2021

Revised: 04 Apr 2021

Accepted: 12 Jun 2021

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## Keywords:

Social history, ALD, BMI, Encephalopathy, Family history, Child-Pugh score

## ABSTRACT

Cirrhosis is a late-stage liver disease in which/ advanced stage of scarring and conditions, such as hepatitis and chronic alcoholism. This disease is a condition in which your liver is scarred and permanently damaged. Scar tissue replaces healthy liver tissue and prevents your liver from working normally. Irreversible change in the normal liver tissue results in the degeneration of functioning liver cells and their replacement with fibrous connective tissue. In the present study, the risk assessment in alcoholic patients is assessed using laboratory data. Other biochemical parameters and severity are assessed using the child-pugh score. In the present study, 98 patients were identified of which 8 patients were excluded due to various reasons, and 90 patients' data were analyzed. In order to assess the risk of cirrhosis in alcoholic patients, we used the cpugh score for assessing the severity and survival rate of subjects. A total of 90 patients were enrolled in this observational study. The study confirmed that more than 60 % of the subjects possess a severe risk of cirrhosis and risk factors such as age, gender, ALD, high BMI, social history family history, and encephalopathy.

## 1. Introduction

Cirrhosis is a late-stage liver disease in which/ advanced stage of scarring and conditions, such as hepatitis and chronic alcoholism [1, 2]. The liver carries out several necessary functions, including detoxifying harmful substances in your body, cleaning your blood, and making vital nutrients [3, 4]. Cirrhosis occurs in response to damage to your liver. Each time your liver is injured, it tries to repair itself [5-7], and in the process, scar tissue forms [8, 9].

Cirrhosis is a condition in which your liver is scarred and permanently damaged. Scar tissue replaces healthy liver tissue and prevents your liver from working normally (Figure 1) [10]. Cirrhosis of the liver, a final pathway for different types of CLDs is defined as diffuse fibrosis of the liver parenchyma and the conversion of normal liver architecture into structurally abnormal nodules [11-13].

Irreversible alteration in the normal liver tissue and bile duct results in the degeneration of functioning liver tissue and bile duct leading to their replacement with fibrous connective tissue such as cytotoxicity of aflatoxin (Figure 2) [14]. Cirrhosis results from different mechanisms of liver injury that lead to necro inflammation and fibrogenesis; histologically it is characterized by diffuse nodular regeneration surrounded by dense fibrotic septa with subsequent parenchymal extinction and collapse of liver structures, together causing pronounced distortion of hepatic vascular architecture [15]. This distortion results in increased resistance to portal blood flow and hence in portal hypertension and hepatic synthetic dysfunction [16].

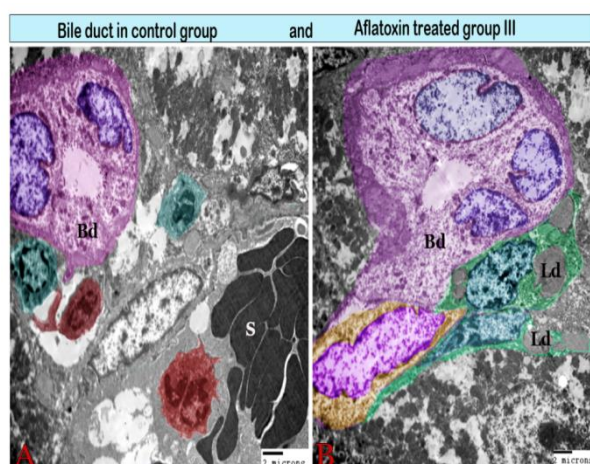
Clinically, cirrhosis has been regarded as an end-stage disease that invariably leads to death, unless liver transplantation is done, and the only preventive strategies have been

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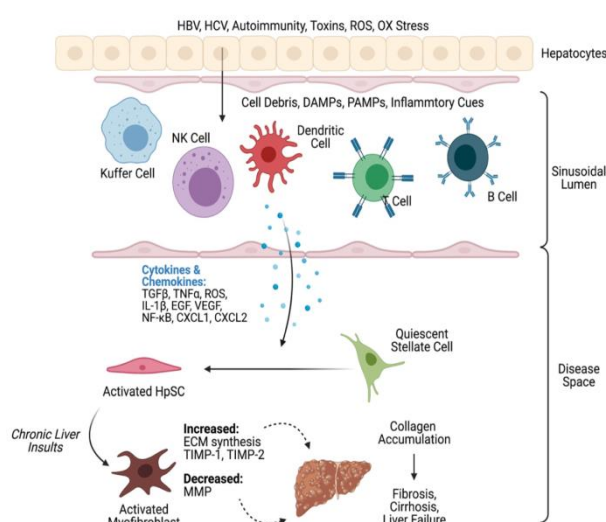
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screening for esophageal varices (abnormal veins in the tube that connects two organs of the stomach and throat) and hepatocellular carcinoma [17, 18].

Cirrhosis isn't curable, but it's treatable. Doctors have two main goals in treating this disease: to stop the damage to your liver and prevent complications [19]. Alcohol abuse, hepatitis, and fatty liver disease are some of the main causes [20]. Cirrhosis can lead to several complications, including liver cancer. In some people, the symptoms of cirrhosis may be the first signs of liver disease [21].



**Fig. 2.** cytotoxicity of aflatoxin on the bile duct [14].



**Fig. 1.** Schematic image showing the immunological mechanisms of liver failure, cirrhosis, and fibrosis [10].

## 2. Materials and methods

### 2.1. Study design

The study is a retrospective & observational study.

### 2.2. Sources of data

Patient data collection form.

Patient case note/prescription.

### 2.3. Inclusion criteria

In patients and outpatients of department general medicine and surgery unit of SVS Hospital & Medical College.

Male and female patients with no age restrictions.

Patients with an alcohol history of more than 6 years.

### 2.4. Exclusion criteria

Patients who underwent major surgery.

All patients with immune-deficient diseases like HIV

Patients with concomitant diseases like TB

Pregnant and lactating women with comorbid other than those listed in inclusion criteria.

### 2.5. Data collection

By collecting case reports and assessing biochemical parameters.

Patient questionnaire/interview.

### 2.6. Study procedure

This is a retrospective and observational study where patients eligible are enrolled in the study. The data collection form was prepared and used. This form mainly contains the demographic details of the patient and diagnosis. The study was conducted at SVS Medical College hospital. All information relevant to the study was collected from the time of admission till the date of discharge and the data will be analyzed using a suitable method for statistical analysis.

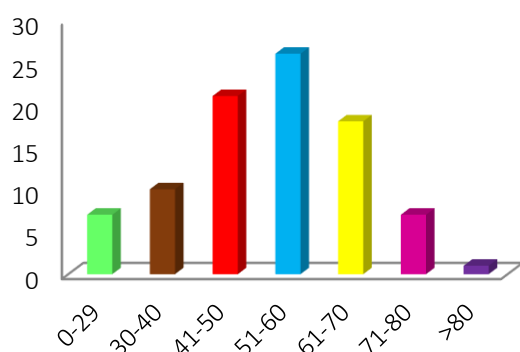
### 3. Results

#### 3.1. Age-wise prevalence of Cirrhosis in subjects

According to the obtained results, Cirrhosis is highly prevalent in 51 – 60 years, age group i.e., 26 patients (28.88%), and least prevalent in more than 80 yrs. age group i.e., 1 patient (1.11%) (Table 1). Figure 3 shows the prevalence of cirrhosis in different age groups. In table 2, it is observed that, among the 90 patients, Cirrhosis is more prevalent in males-63 patients (70%) than in females-27 patients (30%). Additionally, Figure 4 demonstrates the interaction between gender and the prevalence of cirrhosis. Among the subjects of Cirrhosis, there are more ALD subjects 76 (84.44%) than Non-ALD subjects 14 (15.55%) (Table 3). Prevalence of cirrhosis with and without ALD is shown in Figure 5.

**Table 1.** Table showing Age-wise prevalence of Cirrhosis

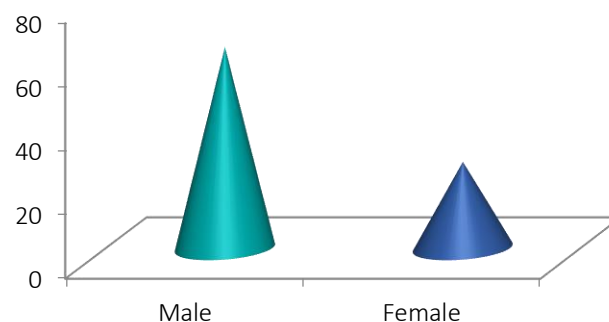
Age group	No. of patients	Percentage
0-29	07	7.77
30-40	10	11.11
41-50	21	23.33
51-60	26	28.88
61-70	18	20
71-80	07	7.77
>80	01	1.11
Total	90	100



**Fig. 3.** Bar Diagram showing Age-wise prevalence of Cirrhosis Gender-wise prevalence of Cirrhosis in subjects.

**Table 2:** Table showing Gender wise prevalence of Cirrhosis.

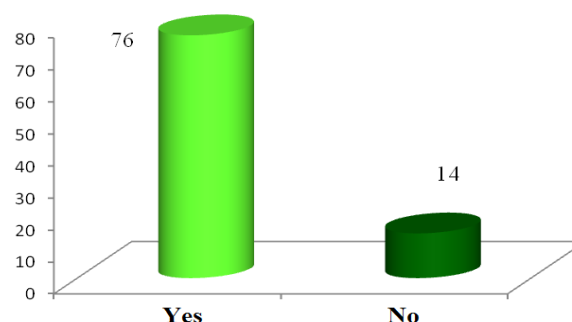
Gender	No. of patients	Percentage
Male	63	70
Female	27	30
Total	90	100



**Fig 4.** Bar Diagram showing Gender-wise prevalence of Cirrhosis.

**Table 3.** Prevalence of Cirrhosis in subjects with and without ALD

ALD	No. of patients	Percentage
YES	76	84.44
NO	14	15.55
Total	90	100



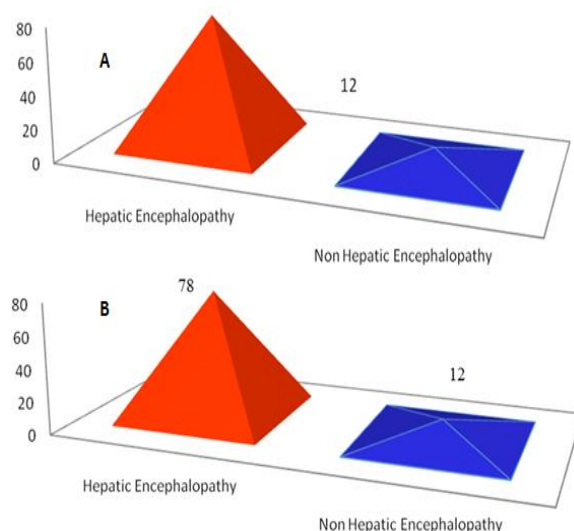
**Fig. 5.** Bar chart showing the prevalence of Cirrhosis with and without ALD.

### 3.2. Prevalence of Cirrhosis with and without Hepatic encephalopathy

Among the subjects of Cirrhosis, there are more Hepatic encephalopathy subjects 78 (86.66%) than non-Hepatic encephalopathy subjects 12 (13.33%) (Table 4). Figure 6 shows the prevalence of Cirrhosis with and without Hepatic encephalopathy.

**Table 4.** Prevalence of Cirrhosis in subjects with and without Hepatic encephalopathy.

Hepatic encephalopathy	No. of patients	Percentage
YES	78	86.66
NO	12	13.33
Total	90	100

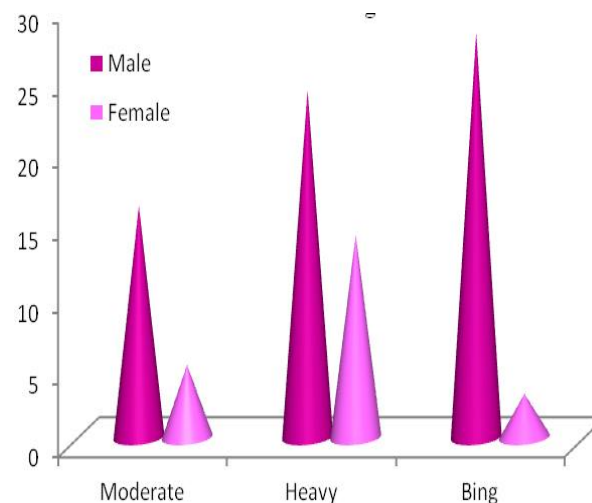


**Fig. 6.** Bar chart showing the prevalence of Cirrhosis with (A) and without (B) Hepatic encephalopathy.

**Table 6.** Drinking patterns of subjects.

Drinking Patterns	No. of Patients		Percentage	
	Male	Female	Male	Female
Moderate	13	09	14.44	10
Heavy	22	14	24.44	15.55
Binge	28	04	31.11	4.44
Total	90		100	

According to the obtained data, Cirrhosis is highly prevalent in Binge drinking male group i.e. 28 patients (31.11%), Moderate drinking female i.e. 09 patients (10 %) and least prevalent in the moderate drinking male group i.e. 13 patients (14.44%), Binge drinking females i.e. 04 patients (4.44%) (Table 6).



**Fig. 7.** Bar Diagram showing drinking patterns of subjects.

### 4. Discussions

Alcohol abuse is considered a major cause of both acute and chronic liver disease [22, 23]. It has been reported that chronic liver disease can cause 25–65% of cirrhosis [24]. It is not completely clear whether alcohol-induced chronic liver disease is related solely to the total amount of alcohol ingested over time or whether other factors, such as genetic factors, type of alcoholic beverage ingested and drinking patterns, play a significant role [25-27]. Moreover, excessive alcohol intake plays a major role in the deterioration of virus-related chronic liver disease and its progression to hepatocellular carcinoma (HCC), overweight and type 2 diabetes could induce liver lesions potentially leading to cirrhosis and hepatocellular carcinoma (HCC) [28-31].

Patients with cirrhosis may present to their primary care physician with non-specific signs and symptoms of the liver disease such as fatigue, loss of appetite, or itchy skin, or with the features suggestive of liver failures such as jaundice and fluid retention manifesting as



ankle swelling or abdominal distension [32, 33]. However, many patients with cirrhosis remain asymptomatic and hence go unrecognized until their liver begins to fail [34, 35]. A total of 98 subjects were observed, among them 90 were included in the study. All the patients were enrolled in the control group since this is a retrospective observational study, and no interventions were made in this study, we found that subjects with alcoholic history of more than 6 years with ALD without have an increased risk of cirrhosis [36, 37]. Various risk factors such as age, gender, ALD, hepatic encephalopathy, family history, BMI, educational status, and drinking patterns were analyzed [38, 39]. Apart from these standard risk factors, child-pugh score is used for calculating the severity of cirrhosis and the survival percent of subjects based on the total bilirubin levels, serum albumin, PT INR [40, 41]. According to child-pugh score- 32.22% of subjects have severe cirrhosis where the survival rate for a year is only 45% and 36.66% of subjects are at a moderate stage with an 80% of survival rate.

## 5. Conclusions

The prospective and observational study was performed to assess the risk factors in the subjects that lead to the development of Cirrhosis has been initiated, thus a total of 98 cases have been enrolled out of which 90 were selected for the study. Both males and females of different age groups have been observed in the study. Various risk factors such as Age, Gender, ALD, Hepatic encephalopathy, educational status, Family history, BMI, and drinking patterns, were analysed. Apart from these standard risk factors, Child-Pugh scoring tool is used for assessing Cirrhosis severity and survival percent of subjects.

It is concluded that the following are the risk factors for developing Cirrhosis: 1) in age-increased age is more risk, 2) in gender-males are more at risk than females, 3) hepatic encephalopathy, 4) ALD, 5) in education-illiterate, 6) in family history-independent, 7) in BMI-higher BMI is more risk, 8) in drinking patterns - binge drinking is a risk.

## Abbreviations

ALD: Alcoholic Liver Disease

BMI: Body Mass Index

CLDs: Chronic Liver Diseases

## Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

## Informed Consent

The authors declare not to use any patients in this research.

## Ethics approval and consent to participate

No human or animals were used in the present research.

## Consent for publication

All authors read and approved the final manuscript for publication.

## Availability of data and material

All the data are embedded in the manuscript.

## Funding

There was not any financial support for this study.

## Author contributions

All authors are equally involved in the preparation of this manuscript and endorse the manuscript.

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Soumya P, Priya TS, Qureshi HA, Firdous A (2021) A retrospective observational study to assess the cirrhosis risk in alcoholic patients. Cellular, Molecular and Biomedical Reports 1 (3): 129-137. doi:10.55705/cmbr.2021.361362.1063

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