

Study of Etiology and Prevalence of Esophageal Varices in Patients of Liver Cirrhosis

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Abstract: *Objective:* To determine the cause and prevalence of esophageal varices in patients suffering from liver cirrhosis. *Design:* Cross-sectional study. *Setting:* Department of Medicine, Adesh Institute of Medical Sciences and Research, Bathinda, Punjab. *Methods:* 140 diagnosed patients of liver cirrhosis were recruited from Jan 2016 to Jan 2017. On the basis of history, clinical examination and biochemical parameters, patients were categorized according to Child Pugh classification as A, B and C. After that, every patient underwent esophagogastroduodenoscopy (EGD) for presence and grading of esophageal varices. *Results:* Out of 140 patients, 31(22.14%) were female and 109(77.85%) were male. The mean \pm SD age was 49.99 ± 13.51 years and mean \pm SD duration of disease was 40.02 ± 9.19 months. Majority of the patients, 107(76.42%) had a history of alcohol, 28(20%) had Hepatitis C, 4(2.85%) had Hepatitis B and 1(0.71%) had Hepatitis C and Hepatitis B co-infection. On child Pugh classifications, 50(35.7%) were class A, 53(37.85%) were class B and 37(26.4%) patients were in class C. On endoscopy, 118 were having varices and 22 were without varices. Out of 118 having varices, 44 were with small varices, 60 were with medium varices and 14 were having large varices. *Conclusion:* Alcohol is the most common cause of liver cirrhosis in this region. Male are more affected as compared to females. Most of the patients are in Child Pugh class B and the majority of the patients with liver cirrhosis have medium varices.

Keywords: Hepatitis C, Liver cirrhosis, esophageal varices.

INTRODUCTION

Cirrhosis of the liver is the end stage of a complex process of hepatocyte injury resulting in partial degeneration and fibrosis of the liver. Liver cirrhosis is a condition defined histopathologically as fibrosis of liver parenchyma, resulting in nodule formation [1]. In the past, it was considered that liver cirrhosis is irreversible, but now, it is proven that liver cirrhosis can be reversed by removing the cause leading to cirrhosis, like alcoholic cirrhosis can be reversed after discontinuing alcohol and in the same way reversal of fibrosis can be seen after treating successfully hemochromatosis.

Incidence of cirrhosis varies from country to country and region to region. The worldwide incidence of liver disease is 5-10% [2]. In countries where alcohol consumption is more common, alcoholic related cirrhosis is about 50.3% and where alcohol consumption is low, hepatotropic viruses are the major cause of cirrhosis, (39.5%) [3].

The damage to hepatic parenchyma leads to activation of stellate cells called myofibroblasts which in turn secrete transforming growth factor-B1 (TGF-B1) leading to fibrotic response and proliferation of

connective tissue. The balance between matrix metalloproteinases and naturally occurring tissue inhibitors of metalloproteinase (TIMP1-2) is disturbed, causing matrix breakdown and replacement of liver parenchyma by connective tissue leading to scar tissue formation [4]. The scar tissue and presence of regenerating nodules of hepatocytes obstruct the portal blood circulation resulting in portal hypertension. Complications of liver cirrhosis are portal hypertension, dilated portosystemic collateral veins (commonly esophageal varices), ascites, spontaneous bacterial peritonitis, hepatic encephalopathy, hepato-renal syndrome, hepato-pulmonary syndrome.

Prevalence of esophageal varices is higher in patients with decompensated cirrhosis i.e. 60% as compared to those with compensated cirrhotic patients which is 30% [5]. Esophageal varices are the second leading cause of death in cirrhotic patients. In liver cirrhosis patients prognosis of the disease can be assessed by categorizing patients according to Child Pugh classification [6]. This study was carried out to determine the most common cause of liver cirrhosis and prevalence of different grades of esophageal varices in Punjab, India.

MATERIALS &METHODS

This was a cross sectional study conducted in the Department of Medicine conducted meticulously from Jan 2016 to Jan 2017. 140 patients with hepatic cirrhosis were recruited from Department of Medicine (Gastroenterology), Adesh Institute of Medical Sciences and Research, Bathinda, Punjab. Irrespective of the cause, diagnosed patients were selected having an age range of 20 to 75. Detailed history was taken and a clinical examination was performed according to inclusion and exclusion criteria. Patients were categorized according to Child Pugh classification as A, B and C (Table 1). All patients were subjected to endoscopy using Upper GI Gastroscope (EG-600FP) after an overnight fast of 12hours. On the endoscopic findings, four groups were formed; group I patients with no varices, group II with small varices, group III with medium varices and group IV with large varices (Table 4). The data was entered and analyzed using SPSS 17.0. Mean±SD was given for normally

distributed quantitative variables. Frequencies and percentages were given for qualitative variables.

RESULTS

A total of 140 patients having liver cirrhosis were taken. 31 were females (22.4%) and 109 were males (77.85%). The mean±SD age of the patients was 49.99±13.51 years. The mean± SD duration of disease of the patients was 40.02±9.19 months. The patients of alcohol abuse were 107 with a percentage of 76.42%. Hepatitis C was present in 28 patients having a percentage of 20%. The patients having combined hepatitis B and hepatitis C were 1 with the percentage of 0.71%. Hepatitis B patients were 4 having a percentage of 2.85%. In Child Pugh class A, there were 50 patients (35.7%), 53 patients were in Child Pugh B (37.85%) and 37 patients were in Child Pugh C (26.4%). The patients having no varices were 22 but 118 patients were having esophageal varices. 44 were having small varices, 60 were with medium varices and 14 patients were with large varices.

Table-1: Child-Pugh score [7]

Measure	1 POINT	2 POINT	3 POINT	UNITS
Bilirubin [total]	<34 [≤ 2]	34-50 [2-3]	>50[>3]	$\mu\text{mol/l}$ [mg/dl]
Serum albumin	>35	28-35	<28	mg/L
INR	<1.7	1.71-2.20	>2.20	No unit
Ascitis	none	Suppressed with medication	Refractory	No unit
Hepatic encephalopathy	none	Grade I-II [or suppressed with medication]	Grade III-IV (or refractor y)	No unit

Points	Class	Life expectancy (Years)	Mortality
5-6	A	15-20	10%
7-9	B	4-14	30%
10-15	C	1-3	82%

Table-2: Alcohol Screening Questionnaire (AUDIT)

Questions	Scoring system				
	0	1	2	3	4
How often do you have a drink containing alcohol?	Never	Monthly or less	2 - 4 times per month	2 - 3 times per week	4+ times per week
How many units of alcohol do you drink on a typical day when you are drinking?	1 -2	3 - 4	5 - 6	7 - 9	10+
How often have you had 6 or more units if female, or 8 or more if male, on a single occasion in the last year?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
How often during the last year have you failed to do what was normally expected from you because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
How often during the last year have you needed an alcoholic drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
How often during the last year have you been unable to remember what happened the night before because you	Never	Less than monthly	Monthly	Weekly	Daily or almost daily

had been drinking?					
Have you or somebody else been injured as a result of your drinking?	No		Yes, but not in the last year		Yes, during the last year
Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested that you cut down?	No		Yes, but not in the last year		Yes, during the last year

Total score>8 indicates harmful alcohol use and possible alcohol dependence.

Table -3 : Guideline for diagnosing Esophageal varices[8]

1. A screening esophagogastroduodenoscopy (EGD) for the diagnosis of esophageal and gastric varices is recommended when a diagnosis of cirrhosis has been made		
2. Surveillance endoscopies are recommended on the basis of the level of cirrhosis, presence and size of the varices: Patients with and Repeat EGD		
Compensated cirrhosis	No varices	Every 2-3 years
	Small varices	Every 1-2 years
Decompensated cirrhosis	-	Yearly intervals
3. Progression of gastrointestinal varices can be determined on the basis of the size classification at the time of EGD. In practice, the recommendations for medium-sized varices in the three-size classification are the same as for large varices in the two-size classification:		

Size of varix	Two-size classification	Three- size classification
Small	<5mm	Minimally elevated veins above the esophageal mucosal surface
Medium		Tortuous veins occupying less than one-third of esophageal lumen
Large	>5mm	Occupying more than one-third of the esophageal lumen

Table- 4: Baseline characteristics of the patients with liver cirrhosis (n=140)

Characteristics of patient	Liver cirrhosis pts
Male	109 (77.85%)
Female	31 (22.14%)
Age(years)	49.99±13.51
Duration of disease(months)	40.02±9.19
Etiology	
HCV	28 (20%)
HBV	4 (2.85%)
HBV,HCV	1 (0.71%)
Alcohol	107 (76.42%)
Child Pugh class	
A	50 (35.7%)
B	53 (37.85%)
C	37 (26.45%)
Esophageal varices	
1.No varices	22 (15.7%)
2.Varices present	118 (84.2%)
a)Small varices	44 (37.2%)
b)Medium varices	60 (50.8%)
c)Large varices	14 (10%)

DISCUSSION

In liver cirrhotic patients, gastrointestinal hemorrhage from varices is the most common complication leading to death [9]. The present study findings revealed that alcohol is the most common cause of liver cirrhosis in 107 patients out of 140 patients studied i.e., a percentage of 76.42% [10]. HCV patients came out to be 28 (20%) and HBV came out to be 4 (2.85%) and Co-infection HBV and anti HCV is 1 (0.71%). In the present study, the patients with Child class 'A' was 50 (35.7%) Child class 'B' was 53 (37.85%) and Child class 'C' was 14 (10%) that is majority of patients were in Child class B. On the basis of endoscopy, patients were evaluated for presence or absence of varices and categorization of esophageal varices was also done to evaluate the progression of esophageal varices.

Cirrhosis is the most advanced form of liver disease. Variceal hemorrhage is one of the most lethal complications of cirrhosis. Once esophageal varices have formed the risk of bleeding is 20% to 35% within 2 years [11]. In patients who have first episode of bleeding the mortality rate is 17% to 57% and those who have survived the first episode and do not get treatment have a risk of recurrent bleeding of 66% within 6 months of the first episode [12]. The cirrhotic patients with large varices have more chances for bleeding. Preventive efforts would be to identify the patients having large varices [9].

In 1997, the American College of Gastroenterology recommended screening endoscopy for patients of liver cirrhosis [13]. Also, in 1998, the American Association for the study of liver disease recommended screening endoscopy to identify varices particularly for patients in Class B and C, and in class A when there is evidence of portal hypertension (thrombocytopenia or large portal vein collaterals on abdominal imaging) [14]. Prophylactic therapy if started immediately after identifying large varices will decrease the incidence of bleeding leading to reduction in the mortality rate [15].

In the present study, most of the patients i.e., 118 patients out of 140 were having varices and only 22 patients were having no varices. On categorization of the varices according to grading, medium sized varices were most common among all varices that are in 60 patients, small varices were in 44 patients and large varices were in 14 patients this was in contrary with some previous studies which may be due to different sample population [11, 16].

It is concluded that Alcohol is the most common cause of cirrhosis and most of the patients are

in Child Class B. Varices are seen in most of the cirrhotic patients and mostly are medium varices.

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