

ORIGINAL ARTICLE

OESOPHAGEAL VARICES AND ASSOCIATED FACTORS IN CIRRHOTIC PATIENTS WITH HEPATITIS C

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Background: Infection with hepatitis C virus is reported to have infected almost 71 million people worldwide. This study was done to assess the frequency and associated factors leading to oesophageal varices in patients presenting with hepatitis C related liver cirrhosis. **Methods:** A cross-sectional study was conducted at Patel Hospital, Karachi, Pakistan from 9th May to 5th October 2019. Patients of either gender having age >20 years presenting with HCV related liver cirrhosis, and Child Pugh class A, B and C were consecutively enrolled in the study. Data on variables like: age, gender, Childs Pugh Score (A/B/C), smoking status, laboratory characteristics like hemoglobin (Hb), TLC, platelets, serum albumin level, cholesterol, alkaline phosphate (ALK), alkaline transaminase (ALT), ascites and presence of oesophageal varices was recorded and analysed using SPSS-21.0. **Results:** Out of 167 patients, mean age was 44.86 ± 14.74 years. Eight-nine (53.3%) of the patients were males. The mean duration of cirrhosis was 5.78 ± 1.10 months. Thrombocytopenia was observed in majority ($n=130$, 77.8%) of the patients. There were 33 (19.8%) patients with Child Pugh score A while Child-Pugh score B and C was found in 67 (40.1%) each. The frequency of oesophageal varices was 141 (84.4%). A significantly higher proportion of oesophageal varices were found among thrombocytopenic patients ($p < 0.001$), ascites ($p = 0.024$), and having "C" Child-Pugh score ($p = 0.012$). **Conclusion:** Oesophageal varices were found in a considerable proportion. Thrombocytopenia, ascites and Child-Pugh class C were found as leading contributing factors to oesophageal varices.

Keywords Oesophageal varices; Thrombocytopenia; Child-Pugh score; Hepatitis C; Liver cirrhosis

Citation: Ali SM, Farrukh SZI, Haqqi SAH, Siddiqui AR, Qadri MZ, Niaz SK. Oesophageal varices and associated factors in cirrhotic patients with Hepatitis C. J Ayub Med Coll Abbottabad 2022;34(4):834-7.

DOI: 10.55519/JAMC-04-10746

INTRODUCTION

Infection with hepatitis C virus is reported as one of the leading causes of morbidity and mortality related to health with ever-increasing frequency. Almost 71 million people have been infected with chronic hepatitis C worldwide. Prevalence of HCV infection in Pakistan is 4.8%. Patients who are infected acutely due to HCV infection, 50–70% of them will develop chronic liver disease. Chronic infection can lead to cirrhosis, liver cancer and liver failure.^{1,2} This requires a large proportion of health-related services because of its feared complications resulting in prolonged hospitalization and need for liver transplantation.³ Cirrhosis is histologically defined as liver parenchyma fibrosis and the conversion into abnormal nodules of normal liver architecture.⁴ Cirrhosis is among the leading causes of death and results in serious complications like ascites, hepatic encephalopathy, spontaneous bacterial peritonitis and variceal hemorrhage.^{5,6} Oesophageal varices are known to be dilated submucosal veins that occur in patients with hypertension of the underlying portal.^{7,8}

We planned this study to find out the frequency and factors leading to oesophageal varices in patients

presenting with hepatitis C virus related liver cirrhosis in order to establish the local perspective as there is paucity of local data on screening study for oesophageal varices. As the outcomes are poor, prevention and regular screening are the only tools in preventing fatal complications once variceal bleeding has occurred. Data from this study would help in understanding the disease burden and its determinants in our population and timely detection and management of varices may lead to good quality of life.

MATERIAL AND METHODS

A cross-sectional study was carried out at the Patel Hospital in Karachi Pakistan from 9th May to 5th October 2019. Ethical considerations were addressed prior to conducting the study. The study's intent and protocol were clarified to the patient included in this study after obtaining informed consent.

Patients of either gender having age >20 years presenting with hepatitis C related liver cirrhosis, with Child Pugh class A, B and C were consecutively included. Whereas patients with history of prior diagnostic evaluations who underwent endoscopy, known to have oesophageal varices, not fit for endoscopy with

history of congestive cardiac failure, stroke, asthma, COPD, chronic renal failure or myocardial infarction, history of NSAID use or non-consenting patients were excluded. The required sample size of 167 was calculated using World Health Organization software with assumptions of reported prevalence of oesophageal varices as 69.3%,⁹ confidence level of 95%, and absolute precision of 7%.

Upper GI endoscopy was done with the help of Olympus video gastroscope by an expert gastroenterologist who had experience of procedure for more than 5 years. Local anaesthetic, 4% xylocaine solution was used for gargles before the procedure and injection midazolam intravenous was given if required. Hepatitis C virus related liver cirrhosis was defined as hepatitis C antibody positive (ELISA method) for more than one year presenting with any 3 or more of the following on ultrasound including: reduction of liver size, nodularity of liver surface (labelled as positive when liver surface showed irregularity and humping), coarsening of liver echotexture (labelled as positive when decreased echogenicity) when assessed by ultrasound abdomen, ascites, and portal hypertension.

Oesophageal varices are abnormal enlarged vessels proven by endoscopy. Presence of one or more column of dilated veins in the oesophagus was labelled as oesophageal varices. In order to assess the prognoses of chronic liver diseases, classification was done as Child-Pugh scores A, B and C, based on severity of the liver disease. Whereas a person who smokes at least five cigarettes a day for at least one year was labelled a smoker.

The findings of quantitative and categorical variables (age, gender, Childs Pugh Score (A/B/C), smoking status, laboratory characteristics like hemoglobin (Hb), TLC, platelets, serum albumin level, cholesterol, alkaline phosphate (ALK), alkaline transaminase (ALT), ascites and presence of oesophageal varices were noted.

Data analysis was done using SPSS 21.0. Mean and standard deviation was used to describe for age, duration of cirrhosis, Hb, TLC, platelets, serum albumin level, cholesterol, ALK, and ALT. Frequency and percentages were used to describe gender, smoking status, thrombocytopenia, ascites, Child Pugh score, and oesophageal varices. Chi-square test and independent t-test were used to apply inferential statistics. *p*-value equal to 0.05 has been taken as significant.

RESULTS

Of 167 patients, mean age was 44.86 ±14.74 years. There were 89 (53.3%) males and 78 (46.7%) females. The mean duration of cirrhosis was 5.78 ±1.10 months. There were 55 (32.9%) smokers.

The mean haemoglobin, TLC, and platelet was found to be 7.06±0.76 g/dl, 7.76±6.17 x 1000/μL, and

95.39 ±91.13 x 1000/μL respectively. Thrombocytopenia was observed in majority (n=130, 77.8%) of the patients. There were 33 (19.8%) patients with child pugh score A while B and C child pugh score were observed in 67 (40.1%) each.

The majority of the patients (n=141, 84.4%) had oesophageal varices. A statistically significant association of oesophageal varices was found among patients who were thrombocytopenic (*p*-0.001), having ascites (*p* 0.024), and having Child-Pugh score “C” (*p* 0.012). In particular, out of 141 patients with oesophageal varices, thrombocytopenia was found in 123 (87.23%) patients while 18 (12.76%) patients had no thrombocytopenia. Ascites was found in 126 (89.36%) patients with oesophageal varices whereas 15 (10.63%) patients with oesophageal varices had no oesophageal varices. In addition, a significantly higher proportion (n=62, 93%) of the child pugh score "C" was reported among patients with oesophageal varicose veins, followed by the "B" in 56 (84 percent), while "A" was reported among 23 (70 percent) of the patients.

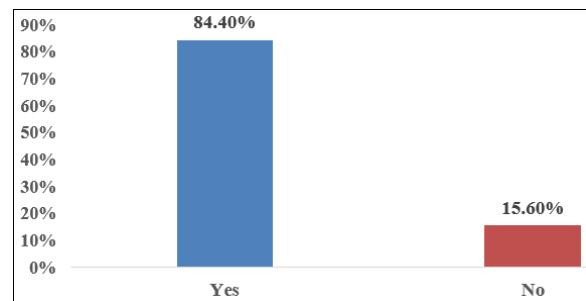


Figure 1: Frequency of oesophageal varices (n=167)

Table 1: Comparison of oesophageal varices with predicting variables (n=167)

Variables	Total	Oesophageal Varices			<i>p</i> -value
		Yes (n=141)	No (n=26)		
	n	n (%)	n (%)		
Gender					
Male	89	73 (82)	16 (18)	0.359	
Female	78	68 (87)	10 (13)		
Smoking status					
Smokers	55	47 (85)	8 (15)	0.798	
Non-smokers	112	94 (84)	18 (16)		
Thrombocytopenia					
Yes	130	123 (95)	7 (5)	0.001	
No	37	18 (49)	19 (51)		
Ascites					
Yes	145	126 (87)	19 (13)	0.024	
No	22	15 (68)	7 (32)		
Child Pugh Score					
A	33	23 (70)	10 (30)	0.012	
B	67	56 (84)	11 (16)		
C	67	62 (93)	5 (8)		
All data presented as number (%), Chi-square test applied, <i>p</i> -value <0.05 taken as significant					

Table 2: Median difference of clinical and laboratory characteristics with the presence of oesophageal varices (n=167)

Variables	Oesophageal Varices			p-value
	Overall	Yes (n=141)	No (n=26)	
Age, years	44.86 ±14.74	45.37 ±14.07	42.08 ±17.99	0.297
Duration of cirrhosis, months	5.78 ±1.10	5.81 ±1.12	5.69 ±0.97	0.645
Haemoglobin, g/dl	7.06 ±0.76	7.06 ±0.78	7.02 ±0.65	0.811
TLC, x 1000/μL	7.76 ±6.17	7.54 ±6.06	8.98 ±6.72	0.275
Platelet, x 1000/μL	95.39 ±91.13	79.68 ±71.02	180.57 ±134.01	<0.001
Alpha fetoprotein	19.19 ±15.41	20.30 ±16.55	14.01 ±6.13	0.106
Cholesterol	126.25 ±17.67	126.34 ±17.34	125.77 ±19.78	0.88
HDL	35.47 ±6.12	35.76 ±6.02	33.92 ±6.56	0.159
LDL	69.68 ±11.05	70.41 ±11.15	65.77 ±9.76	0.049
TGL	120.95 ±23.89	120.12 ±24.05	125.51 ±22.92	0.293
Bilirubin, mg/dL	1.59 ±0.91	1.69 ±0.97	1.56 ±0.90	0.523
Alkaline Phosphate, IU/L	1.47 ±0.62	1.50 ±0.64	1.31 ±0.47	0.139
Alkaline Transaminase, IU/L	2.81 ±0.59	2.81 ±0.58	2.78 ±0.63	0.867

All data presented as median (IQR), p-value <0.05 was taken as significant

DISCUSSION

In all cirrhotic cases, oesophageal varicose veins eventually develop and, when formed, tend to increase for size and bleed.⁸ Higher morbidity and mortality are associated with variceal haemorrhage than other forms of upper gastrointestinal bleeding.⁸ At the time of diagnosis of liver cirrhosis, endoscopic screening is considered safe in all patients for oesophageal varicose veins.¹⁰

The finding of this study showed oesophageal varices in 84.4% of the patients. A considerable number of patients with oesophageal varices had thrombocytopenia, ascites, and Child-Pugh score C. In particular, out of 141 patient oesophageal varices, thrombocytopenia was found considerably higher. Similarly, ascites was also found higher in patients with oesophageal varices. These findings matched with the published studies as well.¹¹⁻¹⁷ Various previous studies reported the number of platelets per spleen diameter ratio as the most viable non-invasive tool for varice determination.¹⁸⁻²²

In our study, child pugh score "C" and "B" were considerably higher in patients with oesophageal varicose veins. Variceal bleeding is confirmed to be a life-threatening occurrence with a five-percent incidence in patients with small oesophageal varicose veins and up to fifteen percent in patients with large oesophageal varicose veins.²³ Different studies have reported a mortality rate of about 10–20% per bleeding episode, and a one-year survival rate of only sixty-three percent.^{24,25}

Amin *et al* evaluated oesophageal varices prevalence in F4 stage of hepatitis C virus related hepatic-cirrhosis and found the prevalence to be 69.3% in Pakistan.⁹

Serum albumin concentration, portal vein diameter, and splenomegaly have been identified as independent variables for evaluating oesophageal

varices in another study.¹⁶ Though, small sample size will remain the limitation of this study. Despite of this, the current study has reported current magnitude of the problem in at risk population. As the incidence of hepatitis C and liver cirrhosis is remarkably increasing in Pakistan, identification of the predicting factors is vitally important for the management of the disease. Further multicentre large-scale studies are recommended to further validate the findings.

CONCLUSION

A considerably higher proportion of oesophageal varices was observed in our cohort. Furthermore, thrombocytopenia, ascites and higher child pugh score were found significant leading factors.

AUTHORS' CONTRIBUTION

SMA, SZUIF: Conceptualization of the study design, write-up. SAHH, ARS, MZQ, SKN: Data collection, data analysis, data interpretation, proof reading.

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Submitted: March 3, 2022

Revised: May 10, 2022

Accepted: May 10, 2022

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