



## FREQUENCY OF FUNDAL VARICES IN CIRRHOTIC PATIENTS WITH UPPER GASTROINTESTINAL BLEED.

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**ABSTRACT... Objectives:** Acute upper gastrointestinal bleeding (AUGIB) is a common medical emergency in cirrhosis. These patients mainly bleed from esophageal varices. The aim of the present work was to determine the prevalence of fundal varices; gastro-oesophageal varices type2 (GOV-2) and isolated gastric varices type1 (IGV-1), as a cause of AUGIB. **Study Design:** Cross-sectional study. **Setting:** Gastroenterology Department of Nishtar Hospital Multan, Pakistan, using non-probability consecutive sampling. **Period:** July to December 2018. **Material and Methods:** Emergency upper gastrointestinal (UGI) endoscopy was performed in 165 cirrhotic patients and the findings documented. **Results:** The mean age was  $50.15 \pm 12.72$  years. There were 103 (62.4%) males and 62 (37.6%) females ( $p < 0.0001$ ). Hepatitis C virus (HCV) was the cause of cirrhosis in 75%, followed by HBV in 10% and HBV & HCV co-infection in 6%. Bleeding fundal varices were found in 25 (15%) patients, 15 IGV-1 and 10 GOV-2. Other major causes of bleeding included: esophageal varices 93 (56.4%) and portal hypertensive gastropathy (PHG) 33 (20%). All fundal varices were found in advanced liver disease patients ( $p < 0.05$ ). **Conclusion:** AUGIB is more common in males and advance liver disease. Although not frequent, fundal varices are an important cause of AUGIB, with a strong association with severity of cirrhosis. Our study demonstrates a higher prevalence of fundal varices (especially IGV-1) than other studies.

**Key words:** Cirrhosis, Fundal Varices, Portal Hypertension, Upper Gastrointestinal Bleeding.

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### INTRODUCTION

The prevalence of acute upper gastrointestinal bleeding (AUGIB) is between 100-170 per 100,000 population.<sup>1,2,3</sup> In the USA there are approximately 250,000 to 300,000 hospitalizations and an estimated 15,000 to 30,000 deaths per year as a result of AUGIB.<sup>4</sup> AUGIB has an inpatient mortality rate of 10%.<sup>5</sup> Even though there have been drastic improvement in methods of diagnosis and treatment, this mortality has remained unchanged over the past 30 years.<sup>3,5,6</sup> After adjusting for initial hospitalization, the mortality rate of AUGIB is similar to acute myocardial infarction (0.64% versus 0.77%).<sup>7</sup>

Around 60-65% cases of AUGIB in cirrhotic patients are due to variceal bleeding.<sup>8</sup> The severity

of liver disease predicts the outcome of variceal bleeding. Child Class C patients have a 40% 6 week mortality rate after a bleeding episode as compared to 0% mortality in Child Class A.<sup>9,10,11</sup> Even though gastric varices are less common as compared to esophageal varices, they bleed more often. The purpose of our study was to investigate the frequency of fundal varices (IGV-1 and GOV-2) as a cause of AUGIB in cirrhotic patients.

### METHODS

This cross-sectional study was carried out from July to December 2018 at the Gastroenterology Department of Nishtar Hospital Multan, Pakistan using non-probability consecutive sampling.

Patients undergoing emergency UGI endoscopy for first time episode of AUGIB (hematemesis or malena) were subjected to detailed history, examination and complete liver workup. A total of 165 cirrhotic patients were selected for study after taking informed consent. All those who did not give consent, pregnant females, patients having hepatocellular carcinoma or other malignancies, diabetes, hypertension were excluded.

The endoscopic findings were confirmed by a Consultant gastroenterologist having at least 3 years of post fellowship experience. The Child-Turcotte-Pugh (CTP) score was calculated for each patient and patients were classified according to CTP A, B or C. Gastric varices were identified according to the Sarin classification.<sup>12</sup> Fundal varices were identified as IGV-1 (varices limited to fundus only) and GOV-2 (esophageal varices extending along the greater curvature to the fundus). The collected data was organized and analyzed using the SPSS version 20. A p value of <0.05 was considered significant.

## RESULTS

Out of the total 165 patients, 103 were males and 62 were females ( $p < 0.0001$ ). Mean age of our

study was  $50.15 \pm 12.72$  years. The mean age of males was  $48.61 \pm 12.35$ , while mean age of females was  $52.72 \pm 13.04$  ( $p < 0.005$ , significant difference between the means). Minimum age of patients was 16 years and the maximum age 99 years. More than one third of patients belonged to the 41-50 years age group (Table-I). Hepatitis C virus was the cause of cirrhosis in more than 75% of patients who had AUGIB, with 10% due to HBV and 6% due to both HBV and HCV. Non-viral cause of cirrhosis was only in 14 patients. Only 2 patients had history of alcoholism. As can be seen from Table-I, 83.6% cases of AUGIB occurred in decompensated liver disease patients (Child Class B or C), while 17% cases were from Child Class A ( $p < 0.0001$ ).

Fundal varices were found in 25 patients presenting with AUGIB, 15 of which were IGV-1 and 10 were GOV-2. All cases of bleeding fundal varices were found in advanced liver disease (18% in advanced liver disease versus 0% in CTP-A,  $p = 0.01$ ) The most common endoscopic finding was esophageal varices ( $n=93$ ), followed by PHG in 33 patients. Less frequent findings included duodenal ulcers, esophageal ulcers, gastric ulcers and gastric erosions (Table-II).

Variables	Total no. of patients N (%) <sup>*</sup>	Fundal Varices		p value <sup>***</sup>
		Present n (%) <sup>**</sup>	Absent n (%) <sup>**</sup>	
Age of patients	< 40 years	38 (23.0)	7 (18.4)	0.9
	41-50 years	57 (34.5)	8 (14)	
	51-60 years	46 (27.9)	6 (13)	
	> 60 years	24 (14.5)	4 (16.7)	
Gender	Male	103 (62.4)	16 (15.5)	0.86
	Female	62 (37.6)	9 (14.5)	
Cause of Cirrhosis	Non-Viral	14 (8.5)	3 (21.4)	0.85
	HBV	17 (10.3)	2 (11.8)	
	HCV	124 (75.2)	18 (14.5)	
	HBV & HCV	10 (6.1)	2 (20)	
Stage of Liver Disease	Compensated (CTP-A)	27 (16.4)	0 (0)	0.01
	Decompensated (CTP-B/C)	138 (83.6)	25 (18.1)	

**Table-I. Demographic data of studied cirrhotic patients and factors associated with bleeding fundal varices**

<sup>\*</sup>percentage shown along the column for that category <sup>\*\*</sup>percentage shown across the row <sup>\*\*\*</sup> $p < 0.05$ , significant

Esophageal Varices	93 (56.4)
Gastropathy	33 (20)
Fundal Varices	25 (15.2)
IGV-1	15
GOV-2	10
Duodenal Ulcers	6 (3.6)
Esophageal Ulcers	5 (3.0)
Gastric Ulcers	2 (1.2)
Gastric Erosions	1 (0.6)
<b>Table-II. Endoscopic findings of AUGIB cirrhotic patients n(%)</b>	

## DISCUSSION

The demographic analysis of our study revealed that AUGIB is much more common in male cirrhotic patients as compared to female patients (62.4% versus 37.6%,  $p < 0.0001$ ) and this is compatible with many other studies.<sup>13,14,15,16</sup>

Mean age at presentation in some studies is around 65-70 years.<sup>17,18</sup> In contrast to these studies mean age of cirrhotic patients presenting with AUGIB in our study was 50.15 years. This may be explained by the fact that viral liver disease is much more prevalent in our younger population. Our results are somewhat compatible to four studies: Romcea et al.<sup>13</sup>, Svoboda et al.<sup>19</sup>, GonzálezGonzález et al.<sup>20</sup>, and Gabr et al.<sup>16</sup> (56.76, 56.9, 56.5 and 58.57 years old, respectively). The vast majority (75%) of cases of cirrhosis were due to HCV, which was comparable to some<sup>16</sup>, however it contradicts the many western studies in which alcohol is the most common cause of cirrhosis.<sup>19,20,21,22</sup>

Majority (83%) of our cirrhotic patients with AUGIB have advanced liver disease (CTP B or C), indicating that severity of disease is a risk factor for AUGIB. Several studies report similar results.<sup>14,15,16,19,23</sup> Bleeding esophageal varices was the most common endoscopic finding, which was consistent with most other studies<sup>16</sup> Three western studies<sup>21,23,24</sup> found PHG as the most common non-variceal cause of bleeding, which is similar to our study. Different studies found gastric varices ranging from 8.3% to 9.4%.<sup>13,16</sup> However these figures did not quantify the frequency of pure fundal varices (IGV-1 and GOV-2). Our study shows a higher frequency of bleeding fundal varices (15%) and statistically significant ( $p < 0.05$ )

association with advanced liver disease.

## CONCLUSION

AUGIB is more common in males and advanced liver disease. Our study showed that 15% of AUGIB in cirrhosis is due to bleeding fundal varices (IGV-1 and GOV-2) and they have a strong association with advanced liver disease. The prevalence of fundal varices is quite a high in Southern Punjab as compared to other parts of the world. The main limitation to this study was that the sample size was small and it was a single centre study. More studies need to be performed so as to validate the increased prevalence of fundal varices in cirrhotic patients in this part of the world.

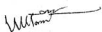



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### AUTHORSHIP AND CONTRIBUTION DECLARATION

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2	Farooq Mohyud Din Chaudhary	Data collection, Design, Interpretation of results, Writing.	
3	Asim Tameez Ud Din	Data collection, Drafting, Writing.	
4	Sana Mohyud Din Chaudhary	Data collection, Writing.	
5	Asma Tameez Ud Din	Data collection, Writing.	