ORIGINAL ARTICLE

Characteristics and Associations of Esophageal Varices in Liver Cirrhosis Patients

IMRAN ANWAR KHAN[1], ASIM SALEEM[2], SADAF YOUSAF[3], *MUHAMMAD SARFRAZ[4], MUHAMMAD ABSAR ALAM[5], AFTAB MOHSIN[6]*

[1]Continental Medical College/Hayat Memorial Hospital, Lahore, Pakistan
[2]Gujranwala Medical College/Teaching Hospital, Gujranwala, Pakistan
[3]Rashid Latif Medical College/ Arif Memorial Hospital, Lahore, Pakistan
[4]Independent Medical College/ Independent University Hospital, Faisal Abad, Pakistan
[5,6]Allama Iqbal Medical College/ Jinnah hospital, Lahore, Pakistan
Correspondence to Dr. Imran Anwar Khan, Email: irfanmed3@yahoo.com: Tel: +923008623755;

ABSTRACT

Aim: To elaborate the frequency of the characteristics of esophageal varices in liver cirrhosis patients in our population.

Methods: This retrospective analysis was performed on the data of the liver cirrhosis patients who underwent UGIE from July 2010 to December 2013 at Liver clinic, 250 Shadman Lahore. Esophageal varices (EV) were categorized into 3 grades: small and straight EV were Grade I, tortuous varices occupying <1/3 of the esophageal lumen were grade II, and larger occupying >1/3 of the esophageal lumen were grade III EV.

Results: Out of a total of 2089 patients, 92.6% had esophageal varices while 7.45% had no esophageal varices. 766(39.6%) had grade I esophageal varices (EV), 465(24%) had grade II EV, while 703(36.4%) had grade III EV. 111(5.8%) patients had gastroesophageal varices (GOV), among which 3.3% had GOV 1, while 2.5% had GOV 2. 336 patients had been found having positive red color signs over their esophageal varices. 26(1.3%) had diffuse redness over esophageal varices.141(7.3%) had hematocystic spots.

Conclusion: Esophageal varices are frequently seen in liver cirrhosis patients during upper gastrointestinal endoscopy. These have multiple characteristics including grade, location, red color sign, and extension into stomach etc., the elaboration of which has a definite role in their management. Esophageal varices are more prevalent in male gender and aged patients suffering liver cirrhosis in our studied population

Keywords: Liver cirrhosis, Esophageal varices, Grading of varices, Red color sign

INTRODUCTION

Liver cirrhosis is very common among the patients in Pakistan[1]. It leads to portal hypertension, resulting varices formation, especially in gastrointestinal tract[2]. Esophageal varices are detected during upper gastrointestinal endoscopy (UGIE) as dilated submucosal vessels[3] more frequently in lower part of esophagus. These are categorized into three grades depending on their size and protrusion into esophageal lumen[4]. Grade I esophageal varices are small and usually straight, grade II EV are convoluted and protrude upto less than 1/3 of the esophageal lumen, while grade III are large esophageal varices that occupy more than 1/3 of the esophageal lumen. More recently, esophageal varices are categorized into two groups (small and large) with a cut-off size of 5 mm, a size of an open biopsy forceps.[5]Small are non-bandable while large esophageal varices are bandable. Occasionally, esophageal varices also spread to stomach and are known as Gastroesophageal varices (GOV). Sarin[6] classified GOV into two types: One that extends along lesser curvature of the stomach (GOV1) and second that extend along greater curvature of the stomach (GOV2). Sometimes, esophageal varices possess red color sign[7] which make them susceptible to bleed. Among these signs, longitudinal whip like marks are named as red wale markings (RWM). Red spots less than 3mm in diameter are known as cherry-red spots, while blood filled blisters more than 4mm in diameter are called hematocystic spots. Occasionally, varices are diffusely red. Gastroesophageal reflux disease (GERD) is more prevalent among liver cirrhosis patients as compared to general population[8,9]. Local studies about these cumbersome characteristics of esophageal varices are scarce. Therefore, the objective of the present study was to elaborate the frequency of the characteristics of esophageal varices in liver cirrhosis patients in our population. This study will also determine the associations of esophageal varices with age, weight, and gender of the patients who underwent UGIE at Liver clinic, Lahore, Pakistan.

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METHODOLOGY

This retrospective analysis was performed on the data of the liver cirrhosis patients who underwent UGIE from July 2010 to December 2013 at Liver clinic, 250 Shadman Lahore. Esophageal varices (EV) were categorized into 3 grades: small and straight EV were Grade I, tortuous varices occupying <1/3 of the esophageal lumen were grade II, and larger occupying >1/3 of the esophageal lumen were grade III EV. The red color signs like red wale markings, cherry-red spots, hematocystic spots, and diffuse redness, as well as shape and location of esophageal varices were also noted. The EV with their protrusion into the stomach were named as GOV. Those extending along lesser curvature of stomach were GOV 1, and those extending along greater curvature were GOV 2. Presence active bleed from varices and coexisting hiatal hernia were also documented. The gender, grade of esophageal

varices, presence of red color sign, type of GOV, presence of active bleed, and coexisting hiatal hernia were the qualitative variables, while age and weight of the patients were the quantitative variables. The whole data was evaluated on SPSS version 25. During descriptive analysis, means and standard deviations were calculated for the presentation of quantitative variables, and frequencies and percentages for qualitative variables. Chi-square test for independence and Independent sample T test were applied on qualitative and quantitative variables respectively to determine their significant association with presence of esophageal varices. The p values were taken statistically significant if <0.05.Moreover, odds ratio along with their 95% confidence interval (CI) were also computed for each association.

RESULTS

A total of 2089patients with history of liver cirrhosis underwent UGIE, out of which 92.6% had esophageal varices while 7.45% had no esophageal varices (Fig. 1). 766(39.6%) had grade I esophageal varices (EV), 465(24%) had grade II EV, while 703(36.4%) had grade III EV.111(5.8%) patients had gastroesophageal varices (GOV), among which 3.3% had GOV 1, while 2.5% had GOV 2.336 patients had been found having positive red color signs over their esophageal varices. 26(1.3%) had diffuse redness over esophageal varices. 141(7.3%) had hematocystic spots. 101(5.2%) had cherry red spots while 68(3.5%) had red wale markingsover the esophageal varices. 35(1.8%) patients hadactively bleeding esophageal varices. 82(4.2%) liver cirrhosis patients also had coexisting hiatal hernia) (Table 1).

Among liver cirrhosis patients who underwent UGIE, 1331(63.7%) were male while 758(36.3%) were female. 94.6% (1259 out of 1331) male had esophageal varices while 89.1% (675 out of 758) female had esophageal varices. Esophageal varices were significantly more prevalent in male gender (p < 0.01). The mean age of the patients diagnosed having esophageal varices was 51.25±10.03 years while the mean age of the patients diagnosed having no esophageal varices was 49.26±11.11 years. The mean age of the patients having esophageal varices was more than the mean age of the patients having no esophageal varices (p=0.019). The mean weight of the patients diagnosed having esophageal varices was 72.60±15.72 kg while the mean weight of the patients diagnosed having no esophageal varices was 72.28±16.36 Kg. The mean weight of the patients having esophageal varices has no association with the mean weight of the patients having no esophageal varices (p=0.808) (Table 2).

Fig.1: Prevalence of esophageal varices among liver cirrhosis

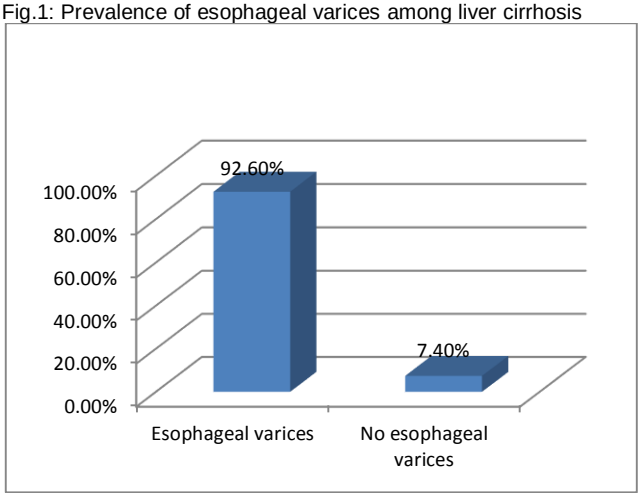

Table 1: Characteristics of Esophageal varices (n = 1934/2089).

Characteristics	Frequency%
Grade of Esophageal varices	
Grade I	39.6% (766)
Grade II	24.0% (465)
Grade III	36.4% (703)
Gastroesophageal varices (GOV)	
GOV 1	3.3% (63)
GOV2	2.5% (48)
Red signs over esophageal varices	
Diffuse redness	1.3% (26)
Hematocystic spots	7.3% (141)
Cherry-red spots	5.2% (101)
Red wale markings	3.5% (68)
Active bleeding from EV	
Yes	1.8% (35)
No	98.2% (1899)
Coexisting hiatal hernia	
Yes	4.2% (82)
No	95.8% (1852)

GOV = Gastroesophageal varices; EV= Esophageal varices

Table 2: Association of presence of esophageal varices with different parameters (n = 115/1004).

Parameters /Categories*	Esophageal varices		p-value	Odd ratio with 95% Confidence interval
	present	Absent		
Male Female	1259 (94.6%) 675 (89.1%)	72 (5.4%) 83 (10.9%)	<0.01	0.465 (0.335–0.646)
Mean Age (Years)	51.25±10.03	49.26± 11.11	0.019	0.845 (0.334 - 3.647)
Mean Weight (Kilograms)	72.60± 15.72	72.28± 16.36	0.808	1.317 (-2.261–2.903)

*Chi-square test for independence was used for parameter no 1, &Independent sample T-test was usedfor parameter no 2&3

DISCUSSION

Upper gastrointestinal endoscopy is performed in every liver cirrhosis patient, especially to look for esophageal and gastric varices at index visit[10] In our data, 92.6% liver cirrhotic patients had esophageal varices. In a similar study of 830 patients from Aziz Bhatti Shaheed Hospital, Gujrat, Pakistan, Muhammad Afzal et al[11] found 90.48% prevalence of esophageal varices among liver cirrhosis patients, while Waseem Sarwar Malghani and his colleagues[12] from Multan, Pakistan found the most common cause of upper gastrointestinal bleed was also esophageal varices.

Esophageal varices have a broad spectrum of characteristics which play role in choosing therapeutic strategy[13]. So, these characteristics should be noted during upper Gastrointestinal endoscopy of all portal hypertensive patients having esophageal varices. There is a high risk of hemorrhage from esophageal varices if these have red color signs[14].

In a study from Nigeria[15], 28.6% esophageal varices havered color signs. In this study, red wale marking was the commonest red sign. In our study, it was observed that 336(32.49%) esophageal varices possess red color signs, and hematocystic spots were the commonest one while red wale markings were present in only 3.5% esophageal varices only.

In our study, grade I esophageal varices were more prevalent while in a similar study, Jahanzeb & his colleagues[16]noted grade III esophageal varices as the commonest among all grades of esophageal varices (77%). Khalid Mumtaz et al[17] observed the prevalence of GOV1 1.1% (in 16 out of 1436 liver cirrhotic patients) and the prevalence of GOV2 1.0% (in 15 out of 1436 patients). Similarly, in our liver cirrhotic patients, only 3.3% and 2.5% had GOV 1 and GOV 2respectively. It means esophageal varices are frequent finding during upper GI endoscopy, however gastroesophageal varices are found infrequently. We found coexisting hiatal hernia in 82(4.2%) patients. However, internationally, data suggests that GERD is more frequently observed during endoscopy in liver cirrhosis patients as compared to general population[9]. Rosana Bihari Schechter et al[8] found that 37% liver cirrhosis patients were suffering GERD. In 1280 patients' study from China[18]. 36.4% liver cirrhosis patients were found having reflux esophagitis during endoscopic examination. In our data, the mean age of the patients having esophageal varices (51.25±10.03 years) was significantly more than the mean age of cirrhotic patients without esophageal varices (49.26±11.11 years) (p=0.019).Cheng-Yi Chen[19] concluded that age has no adverse influence on the mortality of the patients suffering liver cirrhosis. Amooko Duah et al[20] determined that presence or absence of esophageal varices has no association with the age of the patients (p=0.197). Jesus Carale and colleagues[21] demonstrated that portal hypertension is more aggressive in male gender among suffering liver cirrhosis. F. Fabbian[22] noted the reduced risk of mortality by variceal hemorrhage among the females as compared to males. In our study, we found significantly more prevalence of esophageal varices among male gender (p<0.01). Whether male gender suffer more aggressive liver disease and subsequent varices formation in our population, more prospective studies with large sample size are required to validate the findings.

CONCLUSION

Esophageal varices are frequently seen in liver cirrhosis patients during upper gastrointestinal endoscopy. These have multiple characteristics including grade, location, red color sign, and extension into stomach etc., the elaboration of which has a definite role in their management. Esophageal varices are more prevalent in male gender and aged patients suffering liver cirrhosis in our studied population.

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