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ORIGINAL ARTICLE

Association of Portal Hypertensive Gastropathy with Esophageal Varices among Patients of Viral Cirrhosis

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ABSTRACT

Objectives: To find out the prevalence of portal hypertensive gastropathy among patients of viral cirrhosis undergoing endoscopy and to determine its association with esophageal varices in patients of cirrhosis.

Patients and Methods: This cross-sectional study was conducted at Medical Unit, Jinnah Hospital Lahore from 3rd September 2016 to 2nd January 2017. A total of 120 patients with liver cirrhosis fulfilling the inclusion criteria were approached and an informed consent was taken before enrolling in the study. All patients underwent upper gastrointestinal tract endoscopy by consultant endoscopist. Data was entered on SPSS Version 17 for further analysis.

Results: Out of 120 patients, 43% were males and 57% were females. The mean age of participants was 39.71+11.6 SD years. Portal hypertensive gastropathy was present in 12.5% patients and esophageal varices in 42.5% patients. HBsAg and anti-HCV was positive in 60.8% and 45.8% patients respectively. Non-significant association was found between portal hypertensive gastropathy and esophageal varices (p-value 0.364).

Conclusion: Emergence of portal hypertensive gastropathy and Esophageal varices was noticed among patients of viral cirrhosis. However non-significant association was found between portal hypertensive gastropathy and esophageal varices.

Keywords: Cirrhosis, Esophageal varices, Portal hypertensive gastropathy

Author`s Contribution
[1]Conception, Synthesis and Planning of the research-[2-4]Active participation in active methodology, [5]Interpretation and discussion, [6,7]Analysis

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Introduction

Cirrhosis being the decompensated disease, is responsible for high rate of morbidity and mortality. The quality of life and survival of patients with cirrhosis can be improved by appropriate and timely management. More than 25,000 deaths and 373,000 hospital discharges in the United States in 1998 have been reported according to a report from The National Centre for Health.[1] Portal hypertension leads to an increase in blood flow in veins of the lower esophagus and stomach. These veins are not designed for the higher pressure, and thus they begin to expand, resulting in varices. Once varices develop, they can remain stable, increase in size (if the liver disease worsens), or decrease in size (if the liver disease improves).

Portal hypertension is a progressive complication of cirrhosis. Therefore, management of the patient with cirrhosis and portal hypertensive gastrointestinal bleeding depends on the phase of portal hypertension,

Practice guidelines for the diagnosis and treatment of gastroesophageal variceal haemorrhage, endorsed by the American Association for the Study of Liver Diseases (AASLD), American College of Gastroenterology (ACG), American Gastroenterological Association (AGA), and American Society for Gastrointestinal Endoscopy (ASGE), were published in 1997.[2] Esophageal varices are a common complication of advanced cirrhosis that results directly from portal hypertension. In people with cirrhosis, varices develop when blood flow through the liver is obstructed by scarring, increasing the pressure inside the portal vein.

The strongest predictor for the development of varices in those with cirrhosis who have no varices at the time of initial endoscopic screening is Hepatic vein pressure gradient (HVPG) >10 mmHg.[3] Patients with an HVPG >20 mmHg (measured within 24 hours of variceal haemorrhage) have been identified as being at a higher risk for early rebleed (recurrent bleeding within the first week of admission) or failure to control bleeding and a higher 1-year mortality compared to those with lower pressure.[4] Esophagogastroduodenoscopy (EGD) is a gold standard in the diagnosis of varices. In a consensus meeting on methodology and therapeutic strategies in portal hypertension, in Italy, it was recommended that the size classification is as simple as possible, i.e. in 2 grades (small and large).[5] either done by semi-quantitative morphological assessment or by quantitative size with a suggested cut-off diameter of 5 mm, with large varices being those greater than 5 mm. When varices are classified in 3 sizes—small, medium, or large—as occurs in most centres by a semi-quantitative morphological assessment (with small varices generally defined as minimally elevated veins above the esophageal mucosal surface, medium varices defined as tortuous veins occupying less than one-third of the esophageal lumen, and large varices defined as those occupying more than one-third of the esophageal lumen), the recommendations for medium-sized varices are the same as for large varices because this is how they were grouped in prophylactic trials.[6] The presence of coarse irregular echo-texture of the liver on ultrasonography along with either HBsAg or anti-HCV antibody positivity for 5-10 years was labeled as viral cirrhosis. The presence of mosaic-like pattern of gastric mucosa along with any of the three characteristics i.e. Red Point Lesions, Cherry Red Spots or Black-Brown Spots, scattered diffusely over the gastric mucosa as seen on endoscopy, is labelled as portal hypertensive gastropathy.[7,8] The presence of dilated mucosal veins (< 50% of adjacent normal veins) seen in a lower third of oesophagus with the help of endoscopy is labelled as having esophageal varices.[8]

Present study was planned to find out the association of portal hypertensive gastropathy with esophageal varices in patients of cirrhosis.

Patients and Methods

This cross-sectional study was conducted at Medical Unit, Jinnah Hospital Lahore from 3rd September 2016 to 2nd January 2017. About 120 patients diagnosed with viral cirrhosis and duration of illness between 5 to 10 years undergoing screening gastric endoscopy were included in the study. Patients with (i) Severe acute upper GI bleed (>250 ml of blood in vomitus in a day. (ii) Hemodynamically unstable (BP < 80/60) determined by history and examination, (iii) Previously diagnosed with varices or portal hypertensive gastropathy determined by history and previous medical records, (iv) Patients on prophylactic beta-blocker or nitrates therapy determined by history and previous medical records (v) Any evidence of portal vein or splenic vein thrombosis determined by abdominal ultrasound (vi) Patients with a history of previous portosystemic shunt surgery or transjugular intrahepatic portosystemic shunt stent placement determined by history and previous medical records. (vii) Patients with history of Hematologic disorders such as Aplastic anaemia, Myelodysplastic syndrome, any other haematological malignancy or bleeding/coagulation disorder or those on anticoagulant therapy determined by history, (viii) Pregnancy determined by history and investigations. (xi) Patients on NSAID, steroids or antiviral therapy for more than 4 weeks determined by history and medical record were excluded from study. After taking informed consent, all patients underwent upper gastrointestinal tract endoscopy by consultant endoscopist. Findings of endoscopy (presence of portal hypertensive gastropathy and varices) were noted. Confidentiality of the data was ensured.

Data Analysis was done by SPSS version 17.0, Numerical variable were summarized as mean and standard

deviation (SD). Qualitative variables were presented in the form of frequency and percentages. Chi-square test was applied to check statistical significance. Data was stratified by age, gender, duration of CLD, HBsAg, Anti HCV and Child-Pugh Class (A, B,C) to estimate cirrhosis severity. Post-stratification chi-square test was applied. P-value < 0.05 was considered as statistically significant

Results

Out of 120 patients, there were 52 (43.3%) males and 68 (56.7%) females. The mean age was 39.71±11.6 SD years. Minimum and maximum duration of illness was 05 and 10 years respectively with the mean of 7.5±1.72 SD years. Out of total 120 study subjects, portal hypertensive gastropathy and esophageal varices were present in 15(13%) and 51(43) patients respectively. Table1 showed frequency distribution of HBsAg, Anti-HCV and Class of child Pugh, A, B, and C in patients of cirrhosis.

Table 1: Frequency of different factors in patients of Cirrhosis (n=120)

Groups	Frequency (n)	Percentage (%)
HbsAg		
Positive	73	61
Negative	47	39
Anti-HCV		
Positive	55	46
Negative	65	54
Child Pugh Class		
A	75	13
B	57	47
C	48	40

Association of portal hypertensive gastropathy with esophageal varices is shown in table 2.

Table 2: Association of portal hypertensive gastropathy with esophageal varices in patients of cirrhosis

Esophageal varices	Portal hypertensive gastropathy		p-value
	Yes (n=15)	No (n=105)	
Yes (n=51)	8	43	0.364
No (n=69)	7	62	

As shown in the table, non-significant association was found between portal hypertensive gastropathy and esophageal varices (p-value 0.364). Table 3 showed associations of Portal hypertensive gastropathy with different effect modifiers present in patients of cirrhosis.

Table.3 Association of Portal Hypertensive Gastropathy with related factors in patients of cirrhosis

Variables	Portal Hypertensive Gastropathy		p-value
	Yes (n=15)	No (n=105)	
Age (years)			
<40 (n=58)	8	50	0.679
≥ 40 (n=62)	7	55	
Gender			
Male (n=52)	9	43	0.164
Female (n=68)	6	62	
Duration of illness (years)			
< 8 (n=52)	9	43	0.053
≥ 8 (n=68)	6	62	
HbsAg			
Positive (n=73)	10	63	0.621
Negative(n=47)	5	42	
Anti-HCV			
Positive (n=55)	6	49	0.628
Negative(n=65)	9	56	
Child Pugh Class			
A (n=15)	0	15	
B (n= 57)	8	49	0.93
C (n= 48)	7	41	

Discussion

The present study showed that frequency of portal hypertensive gastropathy and Esophageal varices was 12.5% and 42.5% respectively. There was an insignificant association between Portal hypertensive gastropathy and Esophageal varices (p-value 0.364). Similarly, there was not a significant association between portal hypertensive gastropathy and other factors like age, duration of illness,

gender, HBsAg, Anti-HCV and Child Pugh class, with p value >0.05.

In one of the previous studies, a strong positive association has been reported between the presence of PHG and esophageal varices ($p < 0.0001$). PHG was also found associated with the histological and biochemical severity of liver disease in patients with HCV and advanced fibrosis.[9]

From another study, on univariate analysis lower platelet counts (117±55 vs. 167±90; $p < 0.001$), increased spleen size (14.1±2.9 cm vs. 12±2.4cm; $p < 0.001$) were found in PHG patients as compared to those without it. Similarly, lower platelet/spleen ratio was noted in patients with severe PHG (916±400 vs. 1477±899; $p < 0.001$). Furthermore, CTP score > 8 MELD score > 12 and platelets/spleen ratio < 900 were significantly associated factors with severe PHG.[10] In existing research, significant positive correlation has been reported between esophageal variceal grade and PHG but not with Aetiology or Hypersplenism. In one of the studies the frequency of PHG was 79.27% compared to 12.5% in our study. They also observed that grade of Oesophageal varices had significant association with PHG, suggesting a common pathophysiology of both entities.[12] In the same study it was reported that out of 217 patients, 66.4% were HCV positive,16.6% were HBV positive and 6.9% had co-infection with HCV/HBV, and only 1 (0.5%) had co-infection of HBV/HDV. Twenty-one patients (9.7%) were classified as having cryptogenic cirrhosis.[11]

Another report mentioned the 80% prevalence of gastropathy and it was correlated with the duration of disease, presence and size of esophago gastric varices, and a previous history of endoscopic variceal sclerotherapy. They also observed that during 18 ± 8 months of follow-up, gastropathy was stable in 29% of patients, deteriorated in 23%, improved in 23%, and fluctuated with time in 25%. The evolution of gastropathy with time was identical in patients with and without previous or current sclerotherapy. Acute bleeding from gastropathy occurred in 8 of 315 patients (2.5%). The bleeding-related mortality rate was 12.5%. Chronic bleeding occurred in 10.8 % patients.[12]

In another study done by Fontana RJ et al, out of 1,016 HCV patients, 37% of HALT-C patients had PHG with 34% having mild and 3% with severe changes. The mucosal mosaic pattern was identified in 33%, red marks in 15%, and Gastric Antral Vascular Ectasia (GAVE) features in only 3%. Independent correlates of PHG included biochemical markers of liver disease severity (lower serum albumin, higher bilirubin), portal hypertension (lower platelet count), insulin resistance (higher glucose), and non-African American race.[9]

In another study, out of 360 patients who underwent EGD (esophago gastro deudenoscopy) screening, 63% were male and 37% were females. Two hundred and eighty-one (78%) had hepatitis C while 79 (22%) suffered from hepatitis B-related cirrhosis. Three hundred patients (83.3%) had PHG, among these 24% had severe PHG. A Higher proportion of esophageal varices (89.7%) was present among those who had PHG ($p < 0.001$).[10] it is recommended that patients with cirrhosis undergo endoscopic screening for varices at the time of diagnosis.[13] Since the prevalence of medium/large varices is approximately 15–25%, the majority of subjects undergoing screening EGD either do not have varices or have varices that do not require prophylactic therapy.[14] There is, therefore, a considerable interest in developing models to predict the presence of high-risk varices by non-endoscopic methods. Several studies have evaluated possible non-invasive markers of esophageal varices in patients with cirrhosis, such as the platelet count, fibrotest, spleen size, portal vein diameter, and transient elastography.[15,16] However, the predictive accuracy of such non-invasive markers is still unsatisfactory, and til large prospective studies of non-invasive markers are performed, endoscopic screening is still the main means of assessing for the presence of esophageal varices.[16] Cost-effective analyses using Markov models have suggested either empiric β-blocker therapy for all patients with cirrhosis or screening endoscopy for patients with compensated cirrhosis, or universal β-blocker therapy without screening EGD for patients with decompensated cirrhosis.[17,18] However a recent trial shows that β-blockers do not prevent the development of varices and are associated with significant side effects, and do not consider endoscopic variceal ligation as an alternative prophylactic therapy.[18] Until prospective studies validate these approaches, screening EGD is still the recommended approach.

EGD also remains the main method for diagnosing variceal hemorrhage.[13] The diagnosis of variceal haemorrhage is made when diagnostic endoscopy shows one of the following: active bleeding from varix, a "white nipple" overlying varix, clots overlying varix or varices with no other potential source of bleeding.

Conclusion

Emergence of portal hypertensive gastropathy and Esophageal varices were noticed among viral cirrhosis patients with insignificant association between each other, Moreover, modifiers have no significant association with PHG.

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