ORIGINAL ARTICLE

Frequency of Esophageal Varices and Comparison of Serum Albumin levels with and without Esophageal Varices in Patients Presenting with Chronic Liver Disease

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ABSTRACT

Background: Esophageal varices are common complication of chronic liver disease. Different preventive strategies can be implemented if detected early. Low serum albumin can be its proxy indicator in patients with compensated chronic liver disease.

Aim: To determine frequency of esophageal varices in patients of compensated chronic liver disease and to compare frequency of low serum albumin levels among patients with and without esophageal varices.

Methods: This cross-sectional study comprised 220 patients and conducted in Medical OPD of Sharif Medical City Hospital Lahore over a period of six months from 1st July 2014 to 30th December 2014. Two hundred All patients of either sex with age from 20 to 60 years intended to be treated for compensated chronic liver disease were enrolled. Under aseptic measures phlebotomy was done for measurement of serum albumin levels. Gastroscopy was carried out to diagnose and grade esophageal varices. Frequency of esophageal varices were compared in patients with and without low serum albumin levels (<3.5mg/dl)

Results: There were 134(60.9%) were male patients while 86(39.1%) were female with mean age of 49.7±8.7 years. Forty nine patients (22.3%) had esophageal varices. Forty two out of 133(31.5%) patients showed esophageal varices in low serum albumin level group, while only 7 out of 87(8%) patients had esophageal varices in normal albumin level group ($p<0.01$, significant). Gender and age distribution was similar in patients with and without esophageal varices showing non-significant statistical differences.

Conclusion: The frequency of esophageal varices is quite high (22.3%) in patients of compensated chronic liver disease. As the frequencies differ statistically in groups with and without low serum albumin, low serum albumin can be used a noninvasive tool for detecting esophageal varices.

Keywords: Esophageal varices, Serum albumin, Gastroscopy, Chronic liver disease

INTRODUCTION

Chronic liver disease is a major health problem which occurs due to progressive destruction and regeneration of liver parenchyma which interferes with liver functions[1]. There is one of the world's highest burdens of chronic hepatitis and associated mortality in Pakistan[2]. Portal hypertension is one of major complications that lead to development of esophageal varices[1]. Patients with chronic liver disease and portal hypertension have high risk of variceal bleed and each episode of bleeding carries about 30 percent risk of mortality[1].

The American College of Gastroenterology has recommended upper gastrointestinal endoscopy as a tool for all patients with cirrhosis at time of diagnosis[3]. Endoscopic band ligation and non selective beta blockers can decrease risk of variceal bleeding upto about 50%[4]. However, upper gastrointestinal endoscopy is an invasive diagnostic as well as screening tool for patients with liver cirrhosis and complications like portal hypertension[5]. Therefore, the role of non invasive methods for the prediction of esophageal varices becomes more important.

A number of studies have been recently attempted on non invasive methods of predicting esophageal varices.[6] A study conducted on esophageal varices and hypoalbuminemia as marker of esophageal varices in chronic liver disease showed that esophageal varices were present in 32% of the patients of chronic liver disease.[7] Moreover, in patients with esophageal varices about 55% of the patients had low serum albumin level while in patients without esophageal varices about 16.4% of the patients had low serum albumin level thus

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concluding that low serum albumin is related to the presence of esophageal varices.

In one study 73 patients were evaluated in Pakistan of whom 51(69.9%) were males and 22(30.1%) were females. Forty four patients (60.3%) were having esophageal varices on endoscopy (group I) and 29 patients (39.7%) were having no varices (group II). 30 patients in group-I have serum albumin levels less than 2.2g/dl and 6 patients in group-II have serum albumin levels less than 2.2g/dl with a sensitivity of 68.18% and positive predictive value 83.33%. The odds ratio was 8.21[8].

In another study 197 patients 97 male (49.2%) and 100 female (50.8%)] were evaluated. Sensitivity of hypoalbuminemia as a predictor of esophageal varices was 53.2% and specificity was 91%. PPV was 73.3% and NPV was 80.8%. The odds ratio was 11.57[7]. Furthermore in an international study various non-invasive predictors of esophageal varices in cirrhosis were evaluated in 300 patients. Serum albumin was one of the noninvasive predictors included in study. In univariate analysis, aspartate aminotransferase, alkaline phosphatase, total bilirubin, albumin, and platelets count were directly correlated with the presence of esophageal varices. However, in multivariate analysis, only aspartate aminotransferase (P=0.01), total bilirubin (P=0.04), and platelets count (P<0.01) were confirmed as predictors[9].

The rationale of this study is that there is large burden of chronic liver disease and esophageal varices as its complication in Pakistan[2] with increased risk of upper gastrointestinal bleeding resulting in high morbidity[1]. Therefore, the guidelines recommended screening of all patients with chronic liver disease for varices with the help of upper gastrointestinal endoscopy[3] but due to resources limitation and high patient burden in Pakistan, all patients with chronic liver disease cannot be screened for esophageal varices with endoscopy therefore simple and cheap predictive markers are needed.

PATIENTS AND METHODS

This cross-sectional study comprised 220 patients and conducted in Medical OPD of Sharif Medical City Hospital Lahore over a six months period from 1st July 2014 to 30th December 2014. Patients age 20-60, either sex, compensated chronic liver disease with no history and signs of decompensation i.e. encephalopathy, jaundice determined by history and examination and having evidence of shrunken liver with coarse echotexture on ultrasound abdomen were included. Patients with severe acute upper GI bleed and hemodynamically unstable, previously diagnosed with varices or portal hypertensive gastropathy, prophylactic beta blocker or nitrates therapy, any evidence of portal vein or splenic vein thrombosis and history of hematologic disorders and myelodysplastic syndrome or on anticoagulant therapy were excluded. All patients presenting to Medical OPD of Jinnah Hospital Lahore intended to be treated for compensated chronic liver disease were included. Under aseptic measures phlebotomy was done and blood was sampled in standard serum vial and sent immediately to pathology laboratory for measurement of serum albumin levels. Data collected was entered and analyzed in the SPSS version 17. Chi square test was used to check statistical significance. A p value ≤0.05 was considered.

RESULTS

There were 134 (60.9%) were male patients while 86(39.1%) were female patients with mean age of 49.7±8.7 years ranging from 28 to 60 years. 49 patients (22.3%) showed esophageal varices on endoscopy while rest 171 patients (77.7%) did not have esophageal varices. In patients with esophageal varices, 3 patients (1.4%) were in grade I, 8 patients (3.6%) were in grade II, 38 patients (17.3%) were in grade III. 133 patients (60.5%) showed low albumin level while rest 87(39.5%) had normal levels (Table 1). Forty two out of 133(31.5%) patients showed esophageal varices in low serum albumin level group, while only 7 out of 87(8%) patients had esophageal varices in normal albumin level group. Statistically the difference was significant [P<0.01] (Table 2). Gender and age distribution was similar in patients with and without esophageal varices showing non-significant statistical differences (Table 3).

Table I: Demographic information of the patients

Variable	No.	%
Gender		
Male	134	60.9
Female	86	39.1
Age (years)		
< 40	40	18.2
41 – 50	62	28.2
> 50	118	53.6
Esophageal varies		
Yes	49	22.3
No	171	77.7
Grades of e*sophageal varies*		
Not applicable	171	77.7
I	3	1.4
II	8	3.6
III	38	17.3
Low serum albumin level		
Yes	133	60.5
No	87	39.5

Table 2: Comparison of low serum albumin level with esophageal varies

Low serum albumin level	Esophageal varices	
	Yes	No
Yes	42	91
No	7	80
P value	<0.01 (Significant)	

Table 3: Comparison of gender and age with esophageal varies

Variable	Esophageal varices		P value
	Yes	No	
Gender			
Male	35	99	0.087 (NS)
Female	14	72	
Age (years)			
< 40	9	31	0.57 (NS)
41 – 50	11	51	
> 50	29	89	

DISCUSSION

Portal hypertension is one of major complications that lead to development of esophageal varices. Patients with chronic liver disease and portal hypertension have high risk of variceal bleed and each episode of bleeding carries about 30 percent risk of mortality.[10.11] Esophageal varices can be prevented by early detection and prompt prophylaxis[12].

Gastroscopy is standard procedure to detect and treat esophageal varices. Noninvasive parameters like serum albumin can be a proxy marker of development of esophageal varices in patients with compensated liver disease. In our study, 49 patients (22.3%) showed esophageal varices on endoscopy while rest 171 patients (77.7%) did not have esophageal varices. In patients with esophageal varices, 3 patients (1.4%) were in grade I, 8 patients (3.6%) were in grade II, 38 patients (17.3%) were in grade III. 133 patients (60.5%) showed low albumin level while rest 87(39.5%) had normal levels (Table 1).

About one third of patients, had esophageal varices without a sign of decompensation. It is a high ratio which should be emphasized as it may lead to increased sensitization of treating physician to initiate early diagnostic cascade for detection of esophageal varices. Similarly many patients (60.5%) showed low albumin level making it a valid tool for progress of liver fibrosis[13,14].

Forty two out of 133(31.5%) patients showed esophageal varices in low serum albumin level group, while only 7 out of 87(8%) patients had esophageal varices in normal albumin level group (Table 2). Statistically the difference was significant (P<0.01). As the difference is highly significant, we may conclude that serum albumin can be a predictor of esophageal varices in patients with compensated liver disease.

CONCLUSION

The frequency of esophageal varices is quite high i.e., 22.3% in patients of compensated chronic liver disease. While comparing the frequency in groups with and without low serum albumin (<3.5mg/dl), 42 out of 133(31.5%) patients showed esophageal varices in low serum albumin level group, while only 7 out of 87(8%) patients had esophageal varices in normal albumin level (p value <0.01 Significant), so low serum albumin can be a proxy indicator of esophageal varices.

REFERENCES

1. Min YW, Bae SY, Gwak GY. A clinical predictor of varices and portal hypertensive gastropathy in patients with chronic liver disease. Clin Molecular Hepatol 2012; 18: 178-184.
2. Ali SA, Donahue RMJ, Qureshi H, Vermund SH. Hepatitis B and C in Pakistan: prevalence and risk factors. Int J Infect Dis 2009; 13(1): 9-19.
3. Nashaat EH, Abd-Elaziz H, Sabry M, Ibrahim AA. Non-endoscopic predictors of esophageal varices and portal hypertensive gastropathy. Nature Sci 2010; 8(6).
4. Esmat S, Omarn D, Rashid L. Can we consider the right hepatic lobe size/albumin ratio a noninvasive predictor of oesophageal varices in hepatitis Cvirus-related cirrhotic Egyptians patients?. Eur J Int Med 2011;23:267-72.
5. Giannini EG, Zaman A, Kreil A. Platelet count/spleen diameterratio for the noninvasive diagnosis of esophageal varices. Am J Gasteroenterol 2006; 101: 2511-2519?
6. Min YW, Bae SY, Gwak GY. A clinical predictor of varices and portal hypertensive gastropathy in patients with chronic liver disease. Clin Molecular Hepatol 2012; 18:178-84.
7. Humera Khan, Noorul Iman.Hypoalbuminemia a marker of esophageal varices in chronic liver disease due to hepatitis B and C. Rawal Med J 2009; 34(1):98-101.
8. Farooqi JI, Ahmed H, Ikramullah Q. Predictors of esophageal varices in patients of liver cirrhosis. JPMI 2007; 21(1):60-64.
9. Tafarel JR, Tolentino LHL, Correa LM. Prediction of esophageal varices in hepatic cirrhosis by noninvasive markers. Eur J Gastroenterol Hepatol 2011; 23(9):13.
10. Khattak MF, Salamat N, Bhatti FA, Qureshi TZ. Seroprevalence of hepatitis B, C and HIV in blood donors in northern Pakistan. J Pak Med Assoc 2002; 52:398–402.
11. Luby SP, Qamruddin K, Shah AA. The relationship between therapeutic injections and high prevalence of hepatitis C infection in Hafizabad, Pakistan. Epidemiol Infect 1997; 119:349–56.
12. Frank C, Mohamed MK, Strickland GT. The role of parenteral antischistosomal therapy in the spread of hepatitis C virus in Egypt. Lancet 2000; 355:887–91.
13. Armstrong GL. Commentary: modelling the epidemiology of hepatitis C and its complications. Int J Epidemiol 2003; 32: 725–26.
14. Hagan H, Snyder N, Hough E, Yu T, McKeirnan S, Boase J. Case-reporting of acute hepatitis B and C among injection drug users. J Urban Health 2002; 79:579–85.