ORIGINAL ARTICLE

Study of Predictive Value of Portal Vein Diameter and Serum Albumin for High Grade Esophageal Varices in Cirrhosis

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ABSTRACT

Aim: To find correlation of portal vein diameter and serum albumin with development of high grade varices in cirrhotic patients and thus select patients for screening endoscopy on priority basis.
Study design: Analytical & cross sectional study
Duration & study place: Medical & Gastroenterology Unit, Mayo hospital /KEMU Lahore from January 2009 - July 2010
Methodology: 250 patients with documented cirrhosis without having prior evidence of eosophageal varices bleed were inducted in study by proper examination and investigations and went for abdominal ultrasound. EGD was done in these patients to evaluate presence and correlate grade of eosophageal varices with Endoscope GIF 150.Univariate / Multivariate logistic.Non- endoscopic predictors of eosophageal varices were identified and correlated by Univariate/ Multivariate logistic regression Analysis.Comparison of variables mean values was done by unpaired Student t- test. Percentages were given for categorized variables. Categorical data was analysed by Chi square test. Mean± SD used for quantitative variables.
Results: Out of 250 patients,180 had esophageal varices while 70 patients were without varices. Forty five patients were observed to have high grade varices (grade III - IV) whileone hundred thirty five patients were found with low grade varices (grade I - II).There was strong correlation between high grade eosophageal varices and Portal Vein Diameter >12 mm&Serum Albumin < 2.5 G /dl
Conclusion: Portal Vein Diameter >12mm & Serum Albumin < 2.5G/dl had significant correlation with eosophageal varices presence. High grade varices were more likely predicted with an & Portal Vein Diameter >12 mm&low Serum albumin (< 2.5 G /dl)
Keywords: Endoscopy, screening, esophageal varices, cirrhosis

INTRODUCTION

Chronic liver disease is one of the most common cause of death all over the world. Most common causes are chronic alcohol abuse, viral causes like Hepatitis C & B, Autoimmune liver diseases, Metabolic etiologies as haemochromatosis and Wilson's disease and drugs like; alpha methyldopa& methotrexate etc[12].

Portal hypertension is caused by increased splanchnic blood flow and increased resistance to blood flow passing through the cirrhotic liver. Prevalence of eosophageal varices ranges from 25-30%. Approximately 25% to 20% patients rebleed within 2-3 years from rupture of eosophageal varices[4].

Variceal hemorrhage risk is about 25-35% per year and it leads to approximately 20-30% of all cases of upper variceal bleed. Eosophageal varices presence is considered an important prognostic factor regarding mortality and morbidity of cirrhotic patients[5].

It has been recommended thatpatients who arefound to have no varices, they should repeat endoscopy after the interval of 2-3 years whereas patients having Low grade varices should repeat endoscopy after period of 1-2 years to follow the development/ progression ofvarices[6,11].[7,11]
The objective of the study was identification of non-invasive parameters e.g., Portal Vein Diameter & Serum Albumin in cirrhotic patients having no prior history of eosophageal variceal bleed and their correlation with development of high grade varices and thus to pick & screen patients for upper Endoscopy on priority basis.

METHODOLOGY

This cross sectional & an analytical study was conducted from January 2009 to July 2010. Two hundred and fifty patients with cirrhosis of both sex were included in study having no prior history of upper eosophageal variceal bleed visiting OPD & emergency department.

Proper consent was taken. Specified Proforma was filled with thorough history and examination.- Investigations were ordered in these patients like viral markers, complete blood count, blood platelet count, LFTs, and ultrasonography for measuring portal vein diameter.

Eosophago Gastro Deudonoscopy was performed in these patients using Olympus video endoscope GIF 150. Band ligation or other necessary intervention was done where required[11].

Portal vein diameter was measured by Doppler ultrasonography. Bromocresol Green method was used to measure serum albumin. The instrument used was Sturno-300 Chemistry Analyzer fully automatic as well as Olympus AU-400 Chemistry Analyzer. Cirrhosis detected with various ultrasonoghraphic findings as irregularity of the liver surface & Ratio between transverse caudate lobe of liver to transverse right lobe showing width >00.66[19], & liver biopsy.

Sample Size calculation: 250 patients

Sample size calculated by Raosoft calculator. The Confidence interval and Confidence level were considered as 92% and the Margin of Error was 8%.

OPERTIONAL DEFINITIONS:

Size classification: Low Grade Eosophageal Varices (GradeI-II) defined as those who protruded into the eosophageal lumen minimally or they were flattened with air insufflation.

High Grade eosophageal Varices (Grade III-IV) were defined as those who had protrusion in the eosophageal lumen and they touched in center and filled 50% of eosophageal luminal cavity[11].

Size of varices is defined by Size classification while Grades (I-IV) of esophageal varices are defined by Paquet classification.

Inclusion criteria: Patients of Cirrhosis of both sex & No previous history of upper Gl bleed

Exclusion criteria

1. Previous history of medicine or interventional therapy for prevention of eosophageal variceal bleeding
2. History of less than 6 months of alcohol withdrawal
3. Previous history of upper varicealbleeding

Statistical Analysis: SPSS version 17 was used for Statistical analysis. Results were expressed in the form of Mean±SD. Chi square test was applied for examining theCategorical data.was determined by ROC curve was used for determining threshold of various variables. p-value of less than (<0.05) had significance value for our study.

Multivariate analysis of different variables was done by stepwise logistic regression analysis. was developed by Discriminant analysis was used to determine combined predictability of variables. Confidence interval of 92% was used for analysis. To predict the Grades of eosophageal varices, analysis of variance was applied[11].

RESULTS

Two hundred and fifty patients were studied. Male to female ratio was 1.5:1.0 .Mild ascites was present in Fifty two (20.8%) patients, one hundred twenty (48%) patients had moderate ascites while tense ascites was present in8 (3.2%) patients. Upper GI endoscopy was done in all patients. One hindered eighty (72%) patients were found to have eosophageal varices. High Grade eosophageal Varices had been detected in 45(25%) while Low Grade Eosophageal Varices were present in 135(75%). 15(8.3%) patients were found to have red markings on high grade varices and were managed. Hepatitis C was present in 165(66%) patients and Hepatitis B was detected in 20(8%) patients.

Linear correlation showed correlation of significant importance between eosophageal varices and Portal vein diameter (p-0.054) & Serum Albumin (p-0.010. Portal Vein Diameter (p-0.032) & Serum albumin (p-0.045) had correlation of significant importance with grades of Eosophageal Varices.

Cutoff values as12 mm for portal vein diameter and 2.5 G/dl for Serum Albumin were identified by ROC curve. Stepwise logistic regression analysis detected Predictors of eosophageal varices. Prediction of grades of eosophageal varices was done by ANOVA determining Serum Albumin <2.50 G/d & Portal Vein Diameter > 12 mm. Serum albumin < 2.5 G /dl (p - 0.028) & Portal Vein Diameter > 2 mm (p-0.072) and were found to have a strong predictive value for detection of High grade esophageal varices (CI > 92%).

DISCUSSION

Brennan MRS et al[5] study of one hindered fifty patients observed serum albumin & splenomegaly had strong prediction for high grade Eosophageal Varices. This is in accordance with our study.

Cales et al[18] studied 84 patients. 16 were without eosophageal varices (19%), low grade varices were found in 35(42%), which progressed into high grade esophageal varices during period of sixteen months. Our study results also concluded that seventy five% patients had esophageal varices.

Portal vein diameter >13 mm, Prothrombin level less than 70%,Platelet count <100,000/mm^3 were found to strong correlation with the development of eosophageal varices by Schepis et al[10]. These results match with our study conclusions.

Gill et al[19] study found eosophageal varices in seventy% patients during screening Endoscopy in patients having INR >1.5,Portal Vein Diameter > 13 mm&Platelet count < 140,000/ µL.these match with our study results were same.

Thomopoulos KC et al[11]Studied 184 patients and it concludedthat 92 patients (50%) were detected with small esophageal varices while large varices were found in 33(17.8%). These results are consistent with our study results, in which 135(75%) had low grade varices, while 45(25%) had high grade varices.

Portal gastropathy was found in (1.6%) patients in this study which is very near to Khurram M et al[22] study which found portal gastropathy in 11/299 (3.6%) patients, however findings of gastric ulcer 2(0.6%) patients were quite different from this study results 6(2.5%).

Nadeem MA et al[14] made conclusion that 76% patients were found to have ascites along with abdominal distension. Our study also showed these findings as (72%) as a presenting mode .

Mashud et al[14] showed that out of sixty cases in Dera Ismail Khan, 28(46.67%) patients were infected with Hepatitis B, 8(13.33%) with Hepatitis C. One case (0.16%) was found to have both viruses.

CONCLUSION

Serum Aalbumin< 2.5 G/dl & Portal Vein Diameter > 12 mm were found to have a very strong predictive value for high grade eosophageal varices. Surveillance endoscopy is recommended in cirrhotic patients if any of these predictors is found.

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