THICKENING OF GALLBLADDER WALL IN CHRONIC LIVER DISEASE – A MARKER FOR ESOPHAGEAL VARICES

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Abstract

This study was done to find out the relationship between gallbladder wall thickening and esophageal varices in chronic liver disease (CLD) patients. A total of 61 CLD patients were included and divided into two groups. Group A included 13 CLD patients with no oesophageal varices and Group B composed of 48 CLD patients with esophageal varices. Mean gallbladder wall thickness (GBWT) of Group B was 5.6 ± 0.2mm compared to 2.7 ± 0.1mm of Group A. The mean differences of GBWT were statistically significant between group A and group B ($P < 0.05$). The mean GBWT was significantly ($p < 0.05$) higher in CLD patients with grade III and IV varices ($6.1 \pm .8$ mm) compared to grade I and II (3.9 ± 0.7 mm). The result suggests that GBWT may be considered as an important marker for the presence of esophageal varices in CLD patients.

Ibrahim Med. Coll. J. 2012; 6(1): 18-20

Key words: Gallbladder thickening, Esophageal varices

Introduction

Chronic liver disease (CLD) is an emerging health problem in our country. Chronic liver disease results in liver damage and development of portal hypertension. One of the main feature of portal hypertension is the development of gastro-esophageal varices. As bleeding from esophageal varices is a life threatening condition, an early prediction and detection of esophageal varices is important. Endoscopic examination is an invasive as well as expensive procedure for detection of esophageal varices. Therefore, alternative non-invasive procedure is sought for the detection of esophageal varices. Portal hypertension leads to edema and congestion in gallbladder wall and causes 'congestive cholecystopahty' resulting into its wall thickening.[1] Colour and power doppler study can identify these dilated venous channels.[2,3] So, gallbladder wall thickening (GBWT) observed at ultrasonography in chronic liver disease patients may be used as a marker for the presence of esophageal varices.[4]

Therefore, the present study was designed to measure the GBWT by trans abdominal ultrasonography and to find out the correlation between GBWT and presence of esophageal varices in CLD.

Material and Methods

The study was conducted on 61 diagnosed patients of CLD at the Radiology & Imaging Department of BIRDEM during June 2006 to May 2007. The patients were divided into two groups: Group A consisted of 13 patients with no esophageal varices while Group B consisted of 48 patients with esophageal varices. Patients with hepatic failure or coma, bleeding episode, intrinsic diseases of gallbladder were excluded from the study.

Ultrasonographic examination was performed after fasting for eight hours and 3.5 to 05- MHz sector or

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convex transducer was used for optimal visualization of the gallbladder wall. The time gain compensation curve and transducer power were adjusted such that the gallbladder wall could be distinguished from the surrounding structures. Following initial scan in supine position, patients were turned into left decubitus position, as this position allows the liver and gallbladder to fall away medially from the ribs, unfolding the gallbladder and moving the overlying bowel away from the region of interest. Gallbladder wall thickness was measured in its thickest portion preferably at the anterior wall. Portal vein diameter, splenic size and presence or absence of ascites was also assessed during ultrasonogram.

After ultrasonographic examination of abdomen, every patient underwent endoscopic examination of upper GIT by gastroenterologist. Grading of oesophageal varices was done according to the defined standard.[5] All the relevant collected data were analyzed.

Result

A total of 61 CLD patients were studied. Group A consisted of 13 patients with no esophageal varices. Group B consisted of 48 patients with endoscopic confirmed esophageal varices. Among 61 cases 38 patients were male and 23 patients were female with age ranges from 34 to 69 years. The mean GBWT of Group A (2.7 ± 0.1 mm) was significantly less ($p < 0.01$) than that of Group B (5.6 ± 0.2 mm). Further analysis revealed that the mean GBWT of Group B patients with grade-I & II (3.9 ± 0.7 mm) esophageal varices and also grade III and IV (6.1 ± 0.8 mm) were significantly ($p < 0.01$) more than that of Group A cases (Table-1). The GBWT of CLD cases with Grade III and IV was significantly more ($p < 0.05$) than that of Grade 1 and II.

Table-1: *Gallbladder wall thickness of CLD cases with and without esophageal varices as determined by ultra sonogram (n=61)*

Group	Total Number(%)	Mean GBWT (mm)	GBWT Range (mm)
Group A	13 (21.3)	2.7±0.1	2-3.3
Group B with Grade 1&II EV	19 (31.1)	3.9±0.7	3-4.9
Group B with Grade III&IV EV	29 (47.5)	6.1±0.8	5-8.2

Note: EV: esophageal varices

Discussion

This cross sectional study was carried out with the objectives to find out the relationship between gallbladder wall thickening measured at abdominal sonogram and the grade of esophageal varices observed by upper gastrointestinal endoscopy in CLD cases with portal hypertension. The gallbladder wall thickens in response to a wide range of pathological processes like acute and chronic cholecystitis, ascites, hypoalbuminemia, right heart failure, renal failure and hepatitis. Previously it has been thought that GBWT in chronic liver disease is due to hypoalbuminemia. It has been reported that the stomach wall thickens in patients with congestive gastropathy[6] and it has been suggested that portal hypertension causing edema and congestion in gallbladder wall may also induce congestive cholecystopahty in CLD patients in the absence of hypoalbuminemia or ascites.[2,3] In portal hypertension, uphill type of oesophageal varices develop in the distal part of the esophagus and bleeding from these varices is a grave situation. So, early detection of varices is important in these groups of patients by non-invasive procedure like ultra sonogram.

The present work has revealed that GBWT measured at abdominal sonogram can play a significant role in detecting the presence of esophageal varices in patients with portal hypertension due to CLD. GBWT measured by ultra sonogram is an important marker for the diagnosis of esophageal varices compared to the invasive and expensive upper gastrointestinal endoscopic procedure. However, further studies can be carried out by larger number of study subjects with inclusion of other conditions causing portal hypertension.

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