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ORIGINAL ARTICLE

Frequency of Gall-Bladder Wall Thickness in Patients Suffering from Liver Cirrhosis

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ABSTRACT

Aim: To evaluate the frequency of gall bladder wall thickness in patients suffering from liver cirrhosis.
Study design: Cross-sectional study
Place and duration of study: Department of Internal Medicine, Bolan Medical Complex Hospital, Quetta from 01-01-2020 to 31-012-2020.
Methodology: Sixty eight diagnosed patients of liver cirrhosis, age ranging between 20 to 60 years, were randomly selected from indoor patient department and they were further evaluated for gall bladder wall thickness.The diagnosis of liver cirrhosis and portal venous hypertension was made by ultrasonography of abdomen, especially hepatobiliary system. The gall bladder wall thickness is also evaluated by ultrasonography.
Results: Mean age of the patients was 41.22±8.93 years. There were 35(51.5%) males while female patients were 33(48.5%). The mean duration of symptoms was 6.32±0.57 weeks. The duration of symptoms was ≤6 weeks in 45(66.2%) of patients, while 23(33.8%) of patients were having duration of symptoms >6 weeks. Twenty 20(29.4%) cases of liver cirrhosis patients were presented with gall bladder wall thickness, while rest 48(70.6%) were presented with normal gall bladder wall thickness on USG.
Conclusion: The gall-bladder wall thickness is very common finding associated with liver cirrhosis. It requires no surgical intervention or any other specific medical therapy.
Keywords: Gall-bladder wall thickness; liver cirrhosis; portal venous hypertension; hypoalbuminemia.

INTRODUCTION

The gall bladder wall thickness (GBWT) less Than 3 mm is considered normal, while thickness of three and more than three is considered abnormal.[1.] The most common cause of diffuse GBWT is a nonspecific change found in many disorders.[2.] It may be due to intrinsic diseases of gall bladder such as cholecystitis and carcinoma of gall bladder. The cholecystitis may be acute or chronic.[1,2.] The GBWT may be due to extracholecystic diseases, such as hepatitis, liver cirrhosis, congestive heart failure, pancreatitis, acquired immunodeficiency syndrome (AIDS), pancreatitis, myeloma, and acute pyelonephritis.[3.]

The gall bladder wall thickness is very common finding on ultrasonography (USG) of patients suffering from liver cirrhosis.[2,3.] The exact cause and mechanism is unknown, but most probably it is due to congestion of gall bladder and it is frequently seen with ascites.[1-3.]The GBWT in patients suffering from liver cirrhosisis most commonly associated with ascites and it may be due to portal venous hypertension(PVH) and/orhypoalbuminemia.[4.] The GBWT is also known as congestive cholecystopathy and it is mostly present in patients having hepatic and post hepatic PVH[3,4].

The patients suffering from extracholecystic diseases of gall bladder and having diffuse GBWT not need cholecystectomy.[1,4.] They improve with correction of cause of GBWT, such as treatment of hepatic and post hepatic PVH. The etiology of GBWT in liver cirrhosis is most probably due to PVH[2,4.] The features of PVH are ascites, congestive splenomegaly and collateral circulation in the form of esophageal varices, caput medusa and superior hemorrhoidal vein dilation[5.] The treatment of PVH is mostly with propranolol, which is a non-selective β-blocker. The nitroglycerin can be given in those patients, where beta blockers are contraindicated.[5,6.]

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MATERIALS AND METHODS

This cross-sectional study was conducted at Department of Medicine, Bolan Medical Complex Hospital Quetta from 1st January 2020 to 31st December 2020. A total 68 diagnosed patients of liver cirrhosis were randomly selected from indoor patient department. The complete and related historyand clinical examinations of selected patients were taken according to Performa. The patient'sage was ranging between 20 to 60 years. The both genders were included in this study. All the patients of liver cirrhosis were diagnosed by USG and they were further evaluated for PVH and GBWT by USG. Tease patients were further evaluated for features of PVH such as ascites, splenomegaly and collateral circulation. The GBWT was also evaluated by USG. The other evaluation consists of cytobiochemical analysis of ascetic fluid, liver function / biochemistry tests and other routine blood test, such as complete blood count, renal function tests and urine routine examination were taken for proper assessment, inclusion and exclusion of patients.

The patients suffering from cholilithiasis, cholecystitis, malignancies of gallbladder, congestive cardiac failure, chronic kidney disease and nephrotic syndrome were

excluded from study. The data of selected patients was entered and analyzed by SPSS-27.

RESULTS

Mean age of the patients was 41.22 with the standard deviation of 8.93 years. Thirty-two (47.05%) patients were age ≤40 years while 36(52.94%) patients were having age >41 years. The duration of symptoms was ≤6 weeks in 45(66.17%) of patients, while 23(33.82%) of patients were having duration of symptoms >6 weeks. The mean duration of symptoms was 6.32±0.57 weeks. The male patients were 35 (51.47%), while female patients were 33(48.52%) (Table 1). The 20 (29.41%) of liver cirrhosis patients were presented with gall bladder wall thickness, while rest 48(70.58%) were presented with normal gall bladder wall thickness on USG (Table 2). All the patients were having features of portal venous hypertension e.g. portal vein diameter >1.4 cm, ascites and splenomegaly.

Table 1: Baseline details of all the patients (n=68)

Variable	No.	%
Age (years)		
≤40 years	32	47.05
>41 years	36	52.94
Gender		
Male	35	51.47
Female	33	48.52
Marital status		
Single	15	22.79
Married	53	52.32
Occupation		
Office worker	10	14.70
Labour worker	46	67.64
House wife	12	17.64
Residence		
Rural	31	45.58
Urban	37	54.41
Socioeconomic status		
Lower Class	42	61.76
Middle Class	18	26.47
Upper Class	8	11.76
Education		
Primary	18	26.47
Middle	9	13.23
Matriculation	12	17,64
Intermediate	7	10.29
Graduate	2	2.29
Uneducated	20	29.41

Table 2: Comparison of gall-bladder wall thickness according to age, gender and duration (n=68)

Variable	Gall-bladder wall thickness		P-value
	Yes	No	
Age (years)			
≤40	8(11.76%)	24(35.29%)	0.001
>41	12(17.64%)	24(35.29%)	
Gender			
Male	11(16.17%)	24(35.29%)	0.004
Female	9(13-23%)	24(35.29%)	
Duration (weeks)			
≤6	15(22.05%)	30(44.11%)	0.013
>6	5(7.35%)	18(26.47%)	

DISCUSSION

The liver cirrhosis is very common disease in our country. It is end stage liver disease[6]. The liver cirrhosis mostly presents with features of PVH. The features of PVH are ascites, splenomegaly and collateral circulation[7]. The main cause of ascites is PVH, while other contributing factors are hypoalbuminemia, stimulation rennin angiotensin and aldosteron system and decreased metabolism of estrogen[6,7]. Regarding hyperaldosteronism two factors take part, the first is increased formation of aldosteron, while second is decrease destruction/metabolism of aldosteron. The PVH, ascites and hypoalbuminemia are frequently seen with GBWT in patients of liver cirrhosis[8].

The ultrasonography (USG) of gallbladder accurately measures the GBWT. The thickness is less Than 3 mm is normal, while thickness of three and more than three is considered abnormal[5,6]. It may be due to intrinsic or extrinsic diseases of gallbladder. Initially, there was suspection, that GBWT is only due to intrinsic diseases of gallbladder, but later on it was also found with many other diseases which were extrinsic to gallbladder[6,7].

The extrinsic GBWT is mostly associated with ascites, elevated portal venous pressure and decreased plasma colloid oncotic pressure. The diagnosis of PVH is made indirectly by measuring diameter of portal vein by USG. The decrease in serum albumin was found in many patients suffering from GBWT and it is responsible for decreased plasma oncotic pressure[5,6]. The normal portal vein diameter is up to 10 mm, when it is more than 11 mm, it is considered as abnormal. In advance cases of liver cirrhosis the portal vein diameter may around 14 mm[5-7].

The GBWT is very common finding in patients with liver cirrhosis. The major predominant factor is PVH. The hypoalbuminemia is having no role in the development of GBWT.[8] The ultrasound demonstration of gallbladder wall thickening in chronic liver disease should suggest the presence of PVH.According to study of Saverymuttuetal[9],60% of liver cirrhosis patients were having GBWT and it was improved with treatment with propranolol. In many studies improvement in GBWT was noted, when PVH was treated with beta blockers. These studies results suggest that GBWT is predominantly due to PH[1,8,9].

The GBWT is very important screening marker for esophageal varices (EV). The Birgit Tsaknakis observed that 46% of EV patients were having non-inflammatory GBWT, which is due to PVH.In another study, The GBWT and impaired contractility was noted in patients suffering from liver cirrhosis and its major cause was PVH[2,5,7]. The GBWT in patients of liver cirrhosis is associated with ascites, congestive splenomegaly and esophageal varices. In these patients PVH and decreased systemic vascular resistance was noted and these findings suggest, that GBWT is multifactorial, but PVH is major contributing factor[8-10].

In routine the GBWT is mostly associated with intrinsic disease of the gallbladder, such as cholecystitis, which may be acute or chronic. Rarely GBWT may be a feature of PVH, due to liver cirrhosis or heart failure. When a patient is suffering from cholecystitis or carcinoma of

gallbladder, the treatment of choice is cholecystectomy, but in the patients having GBWT due to liver cirrhosis is treated with conservative treatment, with propranolol for treatment of PVH[7-11].

CONCLUSION

The ultrasonography is very helpful for evaluation the gallbladder diseases. It is method of choice for evaluation of gallbladder wall thickness. On USG, The features of liver cirrhosis, increased portal vein diameter, ascites, splenomegaly associated with increased gallbladder wall thickness is suggestive of extrinsic gallbladder wall thickness and its treatment is conservative.

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