ORIGINAL ARTICLE

Hepatic Hydrothorax in Accordance with the Etiology of Cirrhosis in Patients admitted in Department of Medicine at Liaquat University of Jamshoro.

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ABSTRACT

Objectives: To determine the frequency of hepatic hydrothorax in accordance with the etiology of cirrhosis in patients admitted in department of medicine at Liaquat university hospital Jamshoro.

Methods: This cross sectional study was conducted in the department of medicine, Liaquat University Hospital, Jamshoro, during 9th December 2014 to 8th June 2015, on 222 diagnosed cases of cirrhosis of liver fulfilling the inclusion criteria. Abdominal scan and X-ray of the chest was performed in all cases for the presence of fluid in the pleural space. Fluid analysis was performed after aspirating fluid through a intercostal approach under ultrasound guidance. All other information like age, gender, Hepatitis B or C, duration of disease, Child Pugh class and locality was recorded in proforma. The data collected was analyzed statistically and results were tabulated.

Results: Hepatic hydrothorax in patients with liver cirrhosis was 6.3% (14/222), it was observed that the prevalence of cirrhosis 169(76.1%) was more pronounced among Hepatitis C patients, patients with statistically significant difference of hepatic hydrothorax in cirrhotic patients (p value < 0.0001).Hepatitis C virus was found the most common etiological agent responsible for cirrhosis and hepatic hydrothorax.

Conclusion: Hepatic hydrothorax is a rare complication of cirrhosis. Hepatitis C virus was the commonest association responsible for cirrhosis and hepatic hydrothorax.

Key Words: Hepatic hydrothorax, Cirrhosis, Hepatitis C.

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INTRODUCTION:

Hepatic hydrothorax is an important but one of the difficult-to-manage complication of cirrhosis[1]. Hepatic hydrothorax means to have a transudative pleural effusion in patients of liver disease in the absence of a primary cardio-pulmonary and renal cause. Even though the pathogenesis of Hepatic hydrothorax is not properly known, it is believed that ascitic fluid translocations occurring through congenital diaphragmatic defects in to the pleural cavity are the cause of Hepatic hydrothorax.[2] These defects are usually smaller than 1 cm in size and occur in the right hemi-diaphragm. The low-Pressure pleural space is filled with ascitic fluid by the rupturing of the pleuro-peritoneal membrane when intra-peritoneal pressure increases due to accumulation of ascites[3]. Studies conducted to show the pleural fluid intra-peritoneal-injected radiotracer substance in such patients support the appearance of hepatic hydrothorax[1].

Hepatic hydrothorax develops on the right side in the majority of cases (85%), whereas it occurs on the left in just 13% with the remaining 2% occurring on both sides[4-6].Research has shown that in cirrhotic patients, 10% of chest X-rays present pleural effusion[6], while hepatic hydrothorax patients who have been hospitalized, this number ranges from 10-20%.[7]

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The presence of ascites was also detected in most of the cases. The peritoneal cavity capacitance in cirrhotic patients allows toleration of a large amount of ascitic fluid in the patient, however, modest amounts of pleural fluid can lead to chest pain and dyspnea and other severe respiratory problems.

Even though clinical symptoms and radiological findings have been found to improve in around 72.7% of patients having refractory hepatic hydrothorax by the use of pleurodesis, the routine application for such procedures for these patients is hindered by the high morbidity and mortality rates associated with these procedures[8]. Studies throughout the world reveal an incidence of hepatic hydrothorax 4-6%[9] amongst compensated cirrhosis which increases to 10% for patients having decompensated cirrhosis. Some studies even suggest a higher percentage of incidences that is 12% being observed[10]. In a study conducted by Memon MS etal[2]the prevalence of pleural effusion in cirrhotic patients was 5.5% (7/128). It was concluded that Hepatitis C (4/7) was the most common etiological agent responsible for cirrhosis-related hepatic hydrothorax[2].

The rationale of the study is that on robust search no recent data of the last five years on this topic is available locally as well as internationally. Therefore the current study is designed to determine the current magnitude of hepatic hydrothorax in patients having cirrhosis and categorized according to the etiology of cirrhosis. Furthermore hepatic hydrothorax is a significant risk factor or cause for the mortality of these patients so early detection of hepatic hydrothorax will increase the survival of cirrhotic patients in our population and strategies could be developed to screen such patients and prophylactic measures could be taken to minimize complications.

METHODS:

This cross sectional study was carried out in the department of Medicine, Liaquat University Hospital, Jamshoro, on 222 diagnosed cases of cirrhosis of liver, after approval of institutional ethical committee, from 9th December 2014 to 8th June 2015 (six months). The sampling technique was non-probability purposive diagnosed cases of cirrhosis of liver of either gender aged between 25-50 years with Child Pugh class A to C, having duration of disease more than 6 months were included in the study. Patients with pleural effusion containing protein count more than 2.5gm/dl, or cases having any co-morbidity like cardiac, renal and respiratory diseases leading to fluid accumulation were excluded from the study.

The purpose, procedure and risk of procedure were explained before patients were asked to give an informed consent. All patients were subjected to abdominal scan and x-ray of the chest for the presence of fluid in the pleural space. Fluid analysis was performed after obtaining fluid through aintercostal approach under ultrasound guidance. Pleural fluid with protein content less than 2.5gm/dl was labeled as transudative effusion. Amount of aspirate was measured in ml. Hepatic hydrothorax was labeled as per operational definition. All other information like age, gender, Hepatitis B or C, duration of disease, Child Pugh class and locality was recorded in proforma.

The data was collected on pre-designed questionnaire and was analyzed using the Statistical Packages for social science. Mean and standard deviation computed for numerical variables. Effect modifiers were controlled by stratification. P-value less than or equal to 0.05 was considered significant.

RESULTS:

The study involved 222 patients that were recruited based on the inclusion criteria. The mean age was 49.6±9.16 (25 to 50 years). Most of the patients i.e. 121(54.5%) were seen in the age group 41 to 50. Out of 222 cirrhotic patients, 14 (6.3%) were having hepatic hydrothorax among these cases the prevalence of hepatic hydrothorax 10(71.4%) was found in Hepatitis C related cirrhosis which was statistically significant ($p< 0.0001$).

DISCUSSION:

Hepatic hydrothorax (H.H) is a fairly less common complication of portal hypertension as it occurs only in 5-10% of cirrhotic patients. However, clinicians find it a challenging problem which might require a liver transplant. Furthermore, it is more common on the right side as compared to the left. This is due to larger right tendinous portion of the diaphragm, being more feasible defects on this side that allow the

Table-I: Comparison of Hepatic Hydrothorax Related Characteristics (n=22)

Parameter	Hepatic Hydrothorax	Without Effusion	Total	p value
	n = 14(6.3%)	n = 208(93.7%)		
Age (in groups):				
25 to 30 years	0	4(1.9%)	4(1.8%)	0.16
31 to 40 years	3(21.4%)	94(45.2%)	97(43.7%)	
41 to 50 years	11(78.6%)	110(52.9%)	121(54.5%)	
Gender:				
Male	11(78.6%)	156(75.0%)	167(75.2%)	0.99
Female	3(21.4%)	52(25.0%)	55(24.8%)	
Locality				
Rural	7(50.0%)	112(53.8%)	119(53.6%)	0.79
Urban	7(50.0%)	96(46.2%)	103(46.4%)	
Child Pugh class				
A	1(7.1%)	20(9.6%)	21(9.5%)	0.93
B	9(64.3%)	125(60.1%)	134(60.4%)	
C	4(28.6%)	63(30.3%)	67(30.2%)	
Viral hepatitis				
B	4(28.6%)	49(23.6%)	53(23.9%)	<0.0001*
C	10(71.4%)	159(76.4%)	169(76.1%)	
Duration of disease				
< 5 years	2(14.3%)	41(19.7%)	43(19.4%)	0.61
> 5 years	12(85.7%)	167(80.3%)	179(80.6%)	

passage of peritoneal fluid into the pleural cavity assisted by negative intra-thorasic pressure in inspiration[9].

Literature also indicates to clinically apparent ascites being reported by nearly all H.H patients. Nevertheless, it can also present itself without obvious ascites which renders treatment Even more difficult and no agreement is present for its management. One of the significant causes of morbidity and mortality in Pakistan are complications associated with liver dysfunction. No significant information is available regarding hepatic hydrothorax and its most common etiology. It has been shown in studies around the world that the prevalence of hepatic hydrothorax was 5-10%[10]. In our study majority (75.2%) of patients were male, which was in consistent with other researches[11].We detect 14 (6.3%) cases of hepatic hydrothorax from a total of 222 patients, which confirms the results of reported data[12]. More over our all patients had right sided pleural effusion whereas throughout the world right pleural effusion is prevalent in 85% of patients[13].

This negligible dissimilarity be related to the small sample size as only 14 cases of hydrothorax were observed in cirrhotic patients in the six months of this study. Like Kuiper et al[14], hepatits C virus was found the most common etiological agent in our study.

CONCLUSION:

Hepatic hydrothorax is a rare complication of cirrhosis. Hepatitis C virus was the most common etiological agent responsible for cirrhosis and hepatic hydrothorax.

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