

ORIGINAL ARTICLE

Frequency of H.Pylori in Liver Cirrhosis Patients with Overt Hepatic Encephalopathy: A Cross-Sectional Study DesignZABIHULLAH¹, SHAISTA ALAM², AURANGZAIB KHAN³, MUNAZA KHATTAK⁴, ZABIHULLAH⁵, SHABIR AHMED ORAKZAI⁶, SIYAB AHMED⁷¹Gastroenterology ,Ayub Teaching Hospital Abbotabad²Associate Professor Pathology pak international Medical College Peshawar³Associate Professor Pathology Swat Medical College⁴Associate Professor Physiology Peshawar medical College⁵Assistant Professor, Gastroenterology ,Ayub Teaching Hospital Abbotabad⁶Associate Professor Pathology Swat Medical College⁷Associate Professor Pathology Swat Medical College

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ABSTRACT**Objective:** The study aim is to evaluate the frequency of H. pylori in Liver cirrhosis patients with overt HE.**Place and duration of study:** This Study is conducted in the department of Pathology, Peshawar Institute of Medical Sciences (PIMS) Peshawar and The duration of study is from 1st April, 2022 till 30th September, 2022.**Material and Method:** Cross sectional study design having sample size of 140 individuals suffering from H.pylori infections also having a history of hepatic insufficiency. Non-probability sampling technique is used, Patients having age greater than 30 years of any sex but having an history of hepatic cirrhosis for the last 5-6 months, ultrasounds for overt Hepatic encephalopathy are included in this study design. Sample participants having different age strata, disease duration and child's pugh classification are expressed in means and standard deviation with the help of SPSS.**Results:** Patients having helicobacter pylori infection in hepatic cirrhosis with overt hepatic encephalopathy are 44(31.4%) and 96 (68.4%) patients have not suffering from any simultaneous infection. There are 65(46.4%) males and 75(53.6%) females, The mean duration of disease in our study is 4.89+ 1.5 years. Stratification with duration of disease in years is shown in table 1, having significant result with p-value of 0.000. Stratified findings of CP is found to be insignificant with H.Pylori infection(p-value=0.500).**Practical Implications:** According to this study, H pylori infection should be promptly assessed in all patients with liver cirrhosis. The patients' chances of developing hepatic encephalopathy and bleeding chances as a result of the H pylori infection. It may be possible to lessen the severity of consequences such as bleeding from esophageal varices, portal hypertensive gastropathy, and hepatic encephalopathy with the early identification and subsequent eradication of H pylori infection.**Conclusion:** The conclusive remarks of this study shows the prevalence of less frequency of Helicobacter pylori infections in Liver cirrhosis in the patients of Pakistan. But, among all of them Helicobacter Pylori causes prolongation in duration of liver cirrhosis. This study also highlights that as aged patients with liver cirrhosis having more cases of having helicobacter pylori infection.**Keywords:** Hepatic Encephalopathy, Child's Pugh Classification, Helicobacter Pylori infection, Liver insufficiency**INTRODUCTION**

Hepatic insufficiency causes notable disabilities around the globe. The most familiar hepatic disorder that affects the liver most is the liver cirrhosis. Liver cirrhosis is the scarring (fibrosis) of the liver caused by long-term liver damage, damage of liver linings and formation of Nodules¹. The scar tissue prevents the liver working properly. Cirrhosis is sometimes called end-stage liver disease because it happens after other stages of damage from conditions that affect the liver, such as hepatitis². In the US, Liver cirrhosis causes increasing mortality rate, it may be due to increase in alcohol consumptions and the formation of alcoholic cirrhosis. Although Hepatitis C is the causative reason for the development of Liver cirrhosis in growing countries like Pakistan³. One of the study highlights that approximately 1 crore of population has now been affected with Hepatitis C virus in Pakistan, and all of them having risk of developing Hepatic cirrhosis and its underlying complications with hazardous consequences⁴.

Although infections with helicobacter pylori is considered to be 50% in the overall world population but is the most common in third world countries having low social class^{5,6}. All the researchers are eager to identify the role of H.pylori infections in the development of hepatic disorders including hepatic cirrhosis. It has been observed that in almost 30-70 % of patients of hepatic cirrhosis^{7,8}, H.pylori is one of the infectious agent for hepatic encephalopathy. Hepatic encephalopathy is the condition in which nervous system become affected due to severe liver complications, it may be a temporary state, it is classified on the basis of west heaven criteria (WHC) into the five types of grades, grade 1 is mild state considered as covert Hepatic encephalopathy while grade 2-4 are considered as overt hepatic encephalopathy⁹. The sign and symptoms of hepatic encephalopathy are sleep

apnea, mental illness, inability to maintain postures, involuntary controls, personality changes and mental confusion. These symptoms can be indicative but are not the characteristics symptoms of Overt Hepatic encephalopathy¹⁰.

Complicated states are developed with low prediction in patients with hepatic cirrhosis. Child's pugh classification system identified the severity and predict the presence of Hepatic cirrhosis and classified into three categories that is A, B and C, in which C is considered to be the most severe state¹¹. Pakistan is lying in a cirrhotic state as per the WHO as the occurrence of hepatic cirrhosis is very high after the Hepatitis B and C infections¹². However Local studies conducted in this matter is rare, This study highlights the presence of Hepatic pylori infection in patients of Liver cirrhosis with overt Hepatic encephalopathy in local researches, defining the issues in our community and provide path to access future investigations.

MATERIAL AND METHODS

This Study is conducted in the department of Pathology, Peshawar Institute of Medical Sciences (PIMS) Peshawar and The duration of study is from 1st April, 2022 till 30th September, 2022.

It is a cross sectional study design having sample size of 140 individuals suffering from H.pylori infections also having a history of hepatic insufficiency. The sampling technique we have used in this study is the non-probability sampling. Patients having age greater than 30 years of any sex but having an history of hepatic cirrhosis for the last 5-6 months, ultrasounds for overt Hepatic encephalopathy are included in this study design.

Patients having any history of Diabetes mellitus type II, thyroid issues and having pregnancy, cardiac issues, GI complications, secondary peritonitis, MI, Severe Renal

disorders,hepatocellular carcinoma, H.Pylori suppression therapy history are excluded int his study design.Informed approval from all the sample population has been received before proceed to further investigation for study.

The investigator has taken a stool sample is sterile way from all the study participants after taking a complete history. Samples are collected and taken to laboratory for stool antigen test of Helicobacter pylori infection. Data measurements has been taken with the help of SPSS Statistical analyzer tool,

Sample participants having different age strata, disease duration and child's pugh classification are expressed in means and standard deviation with the help of SPSS, also categorical data that is gender, H.pylori infection and child's pugh classification highlights with frequency and percentages.The chi-square test is applied on different strata and p-value of < 0.05 is considered as significant.

RESULT

Patients having helicobacter pylori infection in hepatic cirrhosis with overt hepatic encephalopathy are 44(31.4%) and 96 (68.4%) patients have not suffering from any simultaneous infection. According to age ise strata, patients lies in the age group of 31-40 years having H.Pylori positive infection are 22(31.42%), 22(59.45%) patients lies in the age groups of 41-50 years and none of the patients observe ith H.pylori positive infection in an age group of 51-60 years. Age- wise strata is found to be significant with p-value of 0.001 as shown in table 1.

There are 65(46.4%) males and 75(53.6%) females we are observe while calculating the data management.In gender based stratification for helicobacter pylori infection showing 21 males and 23 female patients having p-value which is insignificant that is 0.50.

The mean duration of disease in our study is 4.89+ 1.5 years. Stratification with duration of disease in years in shown in table 1, having significant result with p-value of 0.000.

The Child-Pugh scoring system (also known as the Child-Pugh-Turcotte score) was designed to predict mortality in cirrhosis patients. A total Child-Turcotte-Pugh score of 5 to 6 is considered Child-Pugh class A (well-compensated disease), 7 to 9 is class B (significant functional compromise), and 10 to 15 is class C (decompensated disease).Doctors use someone's CPT score to determine whether they have class A, B, or C cirrhosis. Class A cirrhosis is mild and has the longest life expectancy. Class B cirrhosis is more moderate, while class C cirrhosis is severe.Startified findings of CP is found to be insignificant with H.Pylori infection(p-value=0.500)

Table 1: Dissimination of H.pylori along with different age groups, disease duration, and severity.

Variables		Total patients (n=140)	H.Pylori Present	H.Pylori Absent	P. value
Age in years	31-40 years	70(59.4)	22(31.2)	48(64)	0.001
	41-50 years	37(26.2)	22(61)	15(41)	
	51-60 years	33(24.5)	--	33(102)	
Disease Duration	1-2 years	54(40.2)	15(26.2)	40(28.3)	0.001
	3-4 years	42(31.2)	8(18.2)	35(83.2)	
	5-6 years	30(21.2)	21(77)	8(26)	
	7-8 years	14(9.8)	-	13(103)	
Child's-Pugh Classification	A	30(21.6)	10(33.2)	20(67.5)	0.500
	B	45(32.4)	17(37.8)	27(63.2)	
	C	65(48.4)	18(21.8)	48(73.8)	

DISCUSSION

According to this study we have seen frequency of helicobacter pylori infection specifically in patients with liver cirrhosis with hepatic encephalopathy. As many studies previously indicates the interrelation between helicobacter pylori infection with liver cirrhosis, and the cause remains unknown in several studies^{13,14}.

Naturally ammonia and other chemical substances detoxifies in liver but in patients having cirrhosis and liver issues detoxification process is not smooth and leads to bypass ammonia rich blood in systemic circulation.once the ammonia crosses the blood brain barrier it will cause brain edema and producing symptoms of hepatic encephalopathy¹⁵⁻¹⁷. Ammonia production inside the body occurs in the result of urea and protein metabolism, glutamine deamination inside the gut and building up nitrogenous products from diet. According to various researches it is find out that helicobacter pylori provides adds in ammonia production and therefore responsible for causing hepatic encephalopathy in individuals.

In this study the frequency of H.Pylori infection in cirrhotic patients having hepatic inadequacy is found to be 31.4%. while in other study conducted in pakistan showing the percentage of 68%. Similarly, Mahendra et al.²³ , Shrimali et al.¹³, and Maheshwari et al²⁴ reported the frequency of H.pylori infection with hepatic cirrhosis and HE are 56.25%, 78%, and 71%, respectively.

Deviation of results in different studies is may be due to the usage of different techniques of testing we are using for the detection of Helicobacter pylori bacteria i.e serlogical and urea breath testing. In this study we have used H.pylori stool test for the detection of its antigen. Stool test is considered to be the routinely used test for H.pylori detection while breath test is found to be more accurate in between all non-invasive techniques¹⁸. Although all the detective techniques have different sensitivities depends on various factor.

Many studies identifies the demolition of H.pylori effects on Hepatic encephalopathy. Amer et al.²⁵, Razik et al.²⁶, and Elmataway el al.²⁷ in their studies identifies that removal therapy of H.Pylori infection is positively linked with the improvement in symptoms of Hepatic encephalopathy and reduce ammonia extent. On the other hand one of the study concluded no improvement in HE symptoms after treatment of H.Pylori infection. These deviations in conclusions imparts the need of carrying out the large multicenter studies for conclusive and authentic results.

As per the age factor it is considered that hepatic insufficiency and H.pylori infections occurs most commonly in aged people ^{19,20}. In our study significant association is observe in between these two as per the p-value(0.001). Many studies indicates the presence of H.Pylori antibodies are independently and positively associated with hepatic cirrhosis, showing the part of Helicobacter pylori infection in disease development. It is considered to say that H.Pylori causes the progression of hepatic cirrhosis in older age patients is more than in younger age groups, which is probable as Helicobacter pylori species is imparted the development of other age-related disorders including muscles disorders, respiratory and metabolic disorders and CVD²¹.

The child's Pugh classification is the frequently used method to determine the intensity and ultimately predicts the hepatic insufficiency. Ou study does not provide significant association child's pugh classification and Helicobacter pylori infection while many studies used this classification system to determine the association between disease intensity and infections of Helicobacter pylori. While one of the study given the same feedback as of our study i.e Mohamed et al. in his study showing the negative association of H.pylori infection with the progression of hepatic insufficiency which provides solidity in our results²².

The results of our study is the impressive addition in local studies of medical literatures but we have a few limitstion in this study for example we have taken thos petients as a sample who are suffering from overt hepatic encephalopathy thus this result is not considered to be evident for grades of patients second, we have not conclude all the different causes of cirrhosis having risk of H.pylori species so e need to get more consideration of other studies to detect the different causes of hepatic cirrhosis and to detect the effect of H.pylori suppression in hepatic encephalopathy.this will not only directs us to determine the disease development and also contributes to limits the

consequences of positive impacts on morbidity and mortality ratios of hepatic disorders in Pakistan.

CONCLUSION

The conclusive remarks of this study shows the prevalence of less frequency of *Helicobacter pylori* infections in Liver cirrhosis in the patients of Pakistan. But, among all of them *Helicobacter Pylori* causes prolongation in duration of liver cirrhosis. This study also highlights that as aged patients with liver cirrhosis having more cases of having *Helicobacter pylori* infection. Further this study exhibit insignificance results between child's pugh classification and *H.pylori* infections, highlighting that overt hepatic encephalopathy can also be contributed to other factors besides *Helicobacter pylori* infection.

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