

## ***Helicobacter pylori* Infection in Cirrhotic Patients with Upper Gastrointestinal Bleeding**

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**Abstract:** This study focused on the *Helicobacter pylori* infection in cirrhotic patients with upper gastrointestinal bleeding and was conducted on one hundred fifty (150) established cirrhotic patients admitted in department of Medicine at Liaquat university hospital and a private hospital, Hyderabad, Pakistan from December 2006 to May 2007 presented with upper gastrointestinal bleeding. The subjects were then screened for *Helicobacter pylori* infection by serology and whole data was recorded in pre-design proforma and analyzed in SPSS version 10.00. Out of 150 patients 84 patients were positive for *H. pylori* rapid urease test, 73% male and 41% females were positive for *H. pylori*, 70% patients with HbsAg and 45% patients with Anti HCV were positive for *H. pylori*. In Child-Pugh score 48.8% were in class A, 58% in class B and 59.6% in class C patients were *H. pylori* positive. The results of our study showed that the frequency of *H. pylori* infection in cirrhotic patients with upper GI bleeding was only 56%. Male sex, advanced age and HbsAg and altered level of consciousness are important factors associated with *H. pylori* infection in cirrhotics.

**Key words:** Liver Cirrhosis • GI Bleeding • *H. Pylori* • Viral Hepatitis B and Hepatitis C

### **INTRODUCTION**

Liver cirrhosis is an important cause of morbidity and mortality worldwide, it is the 12<sup>th</sup> most common cause of death in United States [1]. It is one of the most frequent cause of hospitalization in Pakistan that cost a major burden on health system because of its grave complications i.e. upper G.I bleed, hepatic encephalopathy and infection etc [2]. In Pakistan, chronic infection by hepatitis B and hepatitis C virus is the most common cause of liver cirrhosis [3, 4], while in Western countries most common cause of liver cirrhosis is alcohol abuse [5, 6]. Upper G.I bleeding is the most frequent cause of hospitalization that is not only life threatening for the patient but also requires both emergency care and long hospital stay. The most frequent bleeding lesion in these cases is found out to be esophageal varices and the second most lesions found to be peptic ulcer. Most of the cirrhotic patients are immunodeficient and all the host systems are compromised, e.g. the acute phase response, macrophage, neutrophils and lymphocyte function [7]. So these patients are more prone to infections and it is seen that there is association between infections and the

cirrhosis related complications such as hepatic encephalopathy, variceal bleeding and peptic ulcer [8]. It is well known that peptic ulcer disease (PUD) is encountered more frequently in patients with liver cirrhosis compared to non-cirrhotic patients [9] and in these patients *Helicobacter pylori* infection has a strong association with peptic ulcer disease. Its role in pathogenesis and aggravation of cirrhosis related complication has been evaluated by many studies in different parts of world.

The patients with liver cirrhosis are frequently subject to a number of disorders of gastric mucosa and peptic lesions of gastroduodenal mucosa. The factors responsible for that are portal hypertensive gastropathy, use of multiple types of analgesics and infections due to low immunity i.e. *H. pylori* infection. The studies show that the prevalence of peptic ulcer is higher in cirrhotic patients than in control population and the risk is increased by the presence of *H. pylori* infection [10].

The cirrhosis of liver and *H. pylori* infection are two common diseases in our population and reducing the incidence of complications in cirrhotic subjects is an important step in current gastroenterology practice.

Early diagnosis and effective prevention of complications and its contributing factors will help in reducing the mortality and morbidity in these patients. So considering the role of *H. pylori* infection in cirrhosis related complications, this study was conducted at a tertiary care hospital, Hyderabad that focused on the frequency of *H. pylori* infection in cirrhotic patients with upper GI bleeding.

## MATERIAL AND METHODS

This study was carried out in department of Medicine, Liaquat university hospital, Hyderabad from December, 2006 to May 2007. Total 150 patients with upper G.I bleeding who were established cases of liver cirrhosis were included in the study and further evaluated for *Helicobacter pylori* infection. The non-probability purposive sampling technique was used. The patients included in this study were above the age of 12 years, of either gender with established liver cirrhosis related hepatitis B and C positive and admitted with history of acute upper G.I bleeding. The exclusion criteria were the patients who had received specific *H. pylori* eradication therapy in the past, patients who had previous history of endoscopic evidence or known cases of acid peptic disease and the non cooperative subjects who refused to participate in the study. One hundred fifty cirrhotic patients selected from those who were admitted with upper gastrointestinal (GI) bleeding through emergency department. All such patients were managed accordingly and the clinical evaluation of liver cirrhosis was done on the basis of detailed history, general and relevant physical examination based on chronic liver disease stigmata (jaundice, spider nevia, fetor hepaticus, palmer erythema, leuconychia, dupuytren's contractures, gynaecomastia, capus medusae, ascites, splenomegaly and peripheral oedema etc) and investigations, which included hematology, biochemistry, anti HCV and HbsAg, liver function tests (LFT), ultrasonography and biopsy / histopathology (if needed). A detailed history was taken from all patients and relevant symptoms i.e. 1) hematemesis, 2) melena, 3) altered consciousness, 4) epigastric of abdominal pain, 5) abdominal distension and 6) fever were recorded on pre-designed proforma. The severity of liver cirrhosis was assessed through Child-Pugh score system [11]. After excluding contraindications and taking a written consent, the subjects were screened for *Helicobacter pylori* infection by serology. The data was analyzed in statistical packages for social science (SPSS-10) and the frequency

and percentage were computed for *Helicobacter pylori* infection in liver cirrhosis and also for categorical variables like age groups, gender, etiology and clinical presentation. The mean, standard deviation were computed for age and the chi square test was also applied on categorical variables at 95% CI (age, gender and clinical presentation) for the assessment of statistical difference and  $P=0.05$  was considered level of significant.

## RESULTS

A total of 150 patients were included in the study who presented with upper gastrointestinal bleeding. The mean age of the patients was  $44.9 \pm 13.1$  years (95% CI; 42.8 to 47.0). Out of 150 patients, there were 109 (73%) males and 41 (27%) were females, with 2.7: 1 male to female ratio. In this study, the positive rate for *H. pylori* infection was found in 84 (56%) patients, the rate of *H. pylori* infection in different age groups and gender as shown in Table 1 and 2, while the clinical presentations of the patients are shown in Table 3. The hematemesis was commonest clinical presentation that was found 86.7%

Table 1: Age Distribution in Relation to *Helicobacter pylori* Infection

Helicobacter Pylori (n=150)			
Age Groups	Positive n=84	Negative n=66	Total
< 30 Years	05(38.5%)	8(61.5%)	13
31-40 Years	27(61.4%)	17(38.6%)	54
41-50 Years	20(50.0%)	20(50.0%)	40
51-60 Years	14(51.9%)	13(48.1%)	27
> 60 Years	18(69.2%)	8(30.8%)	26

Row wise percentages were computed. Chi-Square Value= 4.56 df=4;  $p=0.313$

Table 2: Gender Distribution in Relation to *Helicobacter Pylori* Infection

Helicobacter Pylori (n = 150)			
Gender	Positive n=84	Negative n=66	Total
Male	65(59.6%)	44(40.4%)	109
Female	19(46.3%)	22(53.7%)	37

Row wise percentage were compute Chi-Square Value= 2.14, df=1;  $p=0.144$

Table 3: Comparison of Clinical Presentation with *H. pylori* Infection

Helicobacter Pylori			
Clinical Presentation	Positive n=84	Negative n=66	Total
Hemetemesis	71(54.6%)	59(45.4%)	130
Altered Consciousness	65(61.3%)*	41(38.7%)	106
Epigastric Pain	34(45.3%)	41(54.7%)	75
Melena	52(57.8%)	38(42.2%)	90
Burning Sensation	26(57.8%)	19(42.2%)	45
Abdominal Pain	40(54.8%)	33(45.2%)	73

Row wise percentages were computed. \*Significant  $p = 0.01$

(130/150) patients followed by altered consciousness 70.7% (106/150) patients, epigastric pain 50% (75/150) patients, melena was 60% (90/150) patients, burning sensation 30% (45/150) and abdominal pain was found in 24.7% (37/150) patients. Helicobacter pylori infection significantly high with clinical presentation of altered consciousness (chi-square; df=1,  $p < 0.01$ ). Out of 150 patients 37 were positive for HBsAg in which *H. pylori* infection was found in 26 (70.3%) patients. Eighty six patients were anti HCV positive in which *H. pylori* infection were found in 36 (45.0%) patients. Sixteen patients were found to be both HBsAg and anti HCV positive in which *H. pylori* infection were found in only 10 (62.5%) patients. Seventeen cases were undetermined in which the *H. pylori* infection was found in only 12 (70.6%) patients. In Child-Pugh score 48.8% were in class A, 58% in class B and 59.6% in class C patients were *H. pylori* positive.

## DISCUSSION

Our beloved country has tremendous load of liver cirrhosis with various complications [2] of liver cirrhosis, such as hepatic encephalopathy, infections and upper G.I bleed [12]. From those complication upper G.I bleeding is one of the frequent and life threatening complications in cirrhotic patients and most frequent lesions responsible for that are oesophageal varices and peptic ulcer disease. The Helicobacter pylori is a motile gram-negative, curved or spiral shape bacillus causing peptic ulcer disease has been studied in cirrhotic patients for its related complications [13-16].

The frequency of *H. pylori* infection in our study is 56% in cirrhotic patients with upper G.I bleeding that was consist with study of Lo GH *et al.* [17]. Regarding the data for frequency of *H. pylori* in cirrhotic patients ranging from 35.1% to 70.6% [17-19] and results from various studies had different investigational parameters for the diagnosis for *H. pylori* infection along with the complications. Our study highlighted the gender based Helicobacter pylori infections in the cirrhotic patients; we found the male cirrhotic patients with upper GI bleed were at higher risk to acquire infection as compared to their female counter part patients. In our study we found male to female ratio of 2.7:1 for *H. pylori* infectivity. This gender based disparity has been seen in other studies as well [20, 21]. So we can conclude that male counter part have higher gastric acid secretory capacity as compared to female of same age and height, also cigarette smoking is additional risk factor for male gender.

In our study it was observed that the frequency of *H. pylori* infection is raised with age and the highest number of cases was recorded in patients who were in 3<sup>rd</sup> and 6<sup>th</sup> decade of age. The current study also found frequency of *H. pylori* in relation to various clinical presentations as it significantly associated with altered level of consciousness due to infection within stomach is known to produce copious amount of ammonia due to its strong urease activity, several times greater than that of urease positive enterobacteria [22, 23]. Furthermore, it has been assumed that environmental poor sanitation, unhygienic conditions, over crowding and lower socio-economic status have role in altered level of consciousness in such patients, that is consistent with the study by Sethar *et al.* [15].

Many international studies have shown that the association of *H. pylori* infection with viral infections i.e. hepatitis B and C [15, 18] The present study also identified such hypothesis, i.e. predominance of hepatitis C as compared to hepatitis B viral infection. Our findings are also consistence to two different studies conducted at Punjab and NWFP provinces of Pakistan by Younis BD *et al.*<sup>24</sup> and Farooqui *et al* [25] respectively whereas similar finding is also reported in other parts of world [26].

## CONCLUSION

The frequency of *H. pylori* in cirrhotic patients was found to be 56%. The Helicobacter pylori infection was significant with altered level of consciousness. The advancing age, male gender and viral hepatitis (B and C) / cirrhosis are important factors associated with *H. pylori* infections.

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