

# Helicobacter Pylori-Role in Decompensation of Patient with HCV-Positive Chronic Liver Disease

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**Background:** *H. Pylori* is prevalent in the developing world and is implicated in the pathogenesis of acid peptic disease and liver disorders. As patient with CLD may present with symptoms of acid peptic disease, a study was conducted to see if there is any correlation between *H. Pylori* and liver disorders.

**Methods:** It was a prospective cross-sectional study of 60 patients, anti-HCV positive, who presented to Medical Unit-III of Services Hospital, Lahore from March to August 2005. They were divided into groups as patients with compensated and de-compensated liver disease. All of them were tested for *H. Pylori* antibodies by immunoassay.

**Results:** Five patients (16.6%) of the compensated group were *H. Pylori* positive whereas 16 patients (53.3%) in the decompensated group were positive.

**Conclusion:** There is a possible association between *Helicobacter Pylori* and progression of chronic liver disease.

**Key Words:** *Helicobacter Pylori*, Chronic Liver Disease, Hepatitis C Virus.

## Introduction

Throughout the world including Pakistan, chronic viral hepatitis due to hepatitis C virus is the principal cause of chronic liver disease and cirrhosis. Progression of the disease is variable and is governed by multiple factors.<sup>1</sup> Though there are many factors known, still many remains to be identified. Incidence rate of progression of disease, its decompensation and risk of carcinoma vary widely on a world wide. This suggests that environmental factors such as infectious microorganisms, carcinogens, or nutrition play a role in pathogenesis. We proposed that bacterial co-infection with *H. Pylori* in hepatitis C virus (HCV) is another important factor in the development of cirrhosis and its decompensation.<sup>2</sup>

*H. Pylori* is a spiral shaped Gram negative disease producing bacterium. It is found in gastric antrum and in areas of gastric metaplasia in duodenum.<sup>3</sup> The exact mode of transmission is unclear, but evidences suggest faeco-oral mode of transmission. Helicobacter is well recognized cause of duodenal and gastric ulcer and is known to be a precursor of gastric carcinoma, however the possible role of *H. Pylori* in human liver disease and its progression and risk of hepatocellular carcinoma still needs to be evaluated.

We observed that decompensation of chronic liver disease is very frequent in our patients when compared with rest of world, so we strongly believe presence of some different factor either genetic or environmental involved in progression of this disease in our area. Since there is high prevalence of *H. Pylori* in our part of world, we postulated that it is one of

cause of de-compensation of chronic liver disease.

In the present study we intended to explore this possible role of *H. Pylori*.

## Patients and Methods

This study was conducted in Medical Unit-III of Services Hospital, Lahore. Data was collected over six month period from March to August 2005. We included 60 patients with chronic Hepatitis C in our study who presented in our department during the study period, 30 patients had compensated cirrhosis and 30 had de-compensated liver disease. The analysis was limited to HCV positive patients only. Thus patients with chronic liver disease due to other causes were excluded from study.

De-compensated patients were further graded as Child-Pugh'S A, B and C. *Helicobacter Pylori* was then tested in all patients by Rapid Chromatographic Immunoassay. This detects antibodies to *H. Pylori* in serum, which correlates strongly with histological confirmed *H. Pylori* infection.

The over all accuracy rate of this assay is 93.2% with sensitivity and specificity of 95.9% and 75.9% respectively.<sup>3</sup>

## Results

In this study, the age of the patients ranged from 30 to 60 years. There were 16 males and 14 females in the compensated group, while in de-compensated group 17 males and 13 females were included. In the de-compensated group, 7 patients belonged to Child class A, 8 to Child class B and 15 to Child class C.

**Table 1:** Distribution of patients in various categories.

	Compensated		Decompensated		
	Male	Female	Male	Female	
No.	16	14	17	13	
Child's score	-	-	A= 7	B= 8	C= 15

**Table 1:** Prevalence of *H. Pylori* in choric liver disease.

	Compensated	Decompensated		
No. (%)	5 (16.6 %)	16 (53.3 %)		
Child's score	-	A= 3 (18.75%)	B= 3 (18.75%)	C= 10 (62.5%)

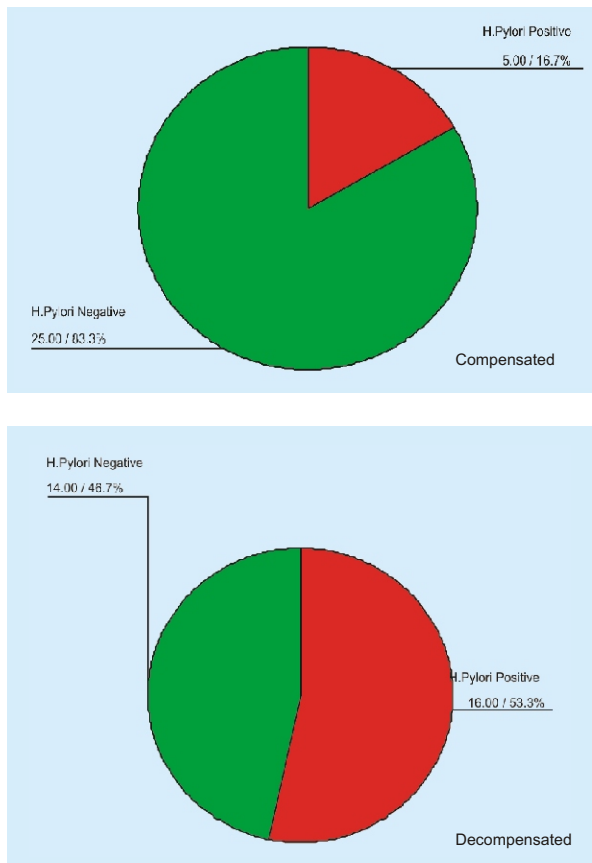
It was seen that only 5 (16.6%) of 30 patients with compensated liver disease were *H. Pylori* positive, while in the de-compensated group 16 (53.3%) patients out of 30 were *H. Pylori* positive. Out of these 16 patients 3 (18.75%) patients belonged to Child class A, 3 (18.75%) to Child class B and 10 (62.5%) to Child class C.

### Discussion

This study revealed that *Helicobacter Pylori* has an association with decompensation of disease. It is likely that difference in progression of hepatitis C may be due to co-infection with *Helicobacter Pylori*.

Chronic hepatitis is an inflammatory disease and is characterized by increased levels of pro-inflammatory cytokines such as interleukins 1 & 6 (IL-1, IL-6), tumor necrosis factor (TNF) and also by the presence of lympho-mono cellular infiltrate and lymphoid follicle formation.<sup>4</sup> Viruses, such as HCV, are only capable of limited inflammation, due to shedding IL-1 receptor in circulation, thereby limiting the possibility of IL-1 binding to cellular receptors.<sup>5</sup> *Helicobacters*, on the other hand, are strong inducers of the inflammatory cascade,<sup>6</sup> infection with them could lead to the accumulation of extraordinary number of lymphocytes and polymorphonuclear cells in the infected tissue. IL-1 gene cluster polymorphisms, thought to enhance IL-1b production, confer an increased risk inflammation, accelerated hepatic damage and cancer in patients infected with *H pylori*.<sup>7</sup>

From an epidemiological aspect, several studies have evidenced a high seroprevalence of *H pylori* among cirrhotic subjects,<sup>8</sup> but these data have not been ubiquitarily confirmed.<sup>9</sup> Part of these differences might be explained by geographical and clinical differences in the population studied and the study-design.<sup>10</sup> Experimentally, Ward *et al.* have fulfilled Koch's postulates as far as the association of *H. hepaticus* with chronic active hepatitis and Hepato Cellular carcinoma in mice was concerned.<sup>11</sup> Whether *Helicobacter* spp. could act as a cofactor in the progression towards cirrhosis and carcinogenesis in humans with viral hepatitis, is still under review.<sup>10</sup>



**Figure 1:** Pravalence of *H.Pylori* in compensated and decompensated cirrhosis

The possibility that *Helicobacter* spp. could infect the biliary tract and the liver of humans has been reported by several studies in different settings. Fox *et al* have shown the presence of *Helicobacter* spp. in the bile of Chileans with chronic cholecystitis. Avenaud and coworkers have demonstrated the presence of genomic sequences of *Helicobacter* spp. in the liver of 8 patients with HCC without primary diagnosis of cirrhosis. A further analysis by sequencing revealed that these species were *H. pylori* and *Helicobacter felis*.<sup>12</sup>

Our study demonstrate the finding that the seroprevalence of *H. pylori* in decompensated cirrhotic subjects is much more frequent than in compensated cirrhosis due to HCV, and raises the possibility that the prognosis for HCV carriers may be improved by treatment aimed at lowering the occurrence of *Helicobacter*-related disease. Since it is

potentially treatable cause, its identification can improve our management strategy of these patients.

We demonstrated the presence of *H. Pylori* in blood by Rapid Chromatographic Immunoassay in our patients and assumed that it is responsible for hepatotoxicity. However we intend to carry out another study in future by demonstrating *H. Pylori* DNA on PCR in liver biopsy specimens.

## Conclusion

There is possible association between Helicobacter Pylori and decompensated liver cirrhosis due to HCV. The presence of these bacteria could lead to progression of structural changes in liver.

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