

Association of Helicobacter Pylori infection with Liver cirrhosis among Patients Presenting in a Tertiary Care Hospital of Lahore, Pakistan

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Abstract

Objective: To determine the association of H. pylori infection with liver cirrhosis among patients presenting in a tertiary care hospital of Lahore, Pakistan.

Material and Methods: This case control study was conducted at Medicine wards, Mayo Hospital, Lahore for six months. 130 patients including 65 cases of liver cirrhosis (ultrasonography proven) and 65 healthy volunteers as controls were taken through non-probability consecutive sampling technique. A stool sample for Helicobacter Pylori antigen detection was taken from both cases and controls following standard sterile collection procedure. Samples were then submitted to the pathology laboratory. H. pylori antigen results were noted in a predesigned proforma. Data was analyzed using SPSS 24.0. Then the association of helicobacter pylori with liver cirrhosis was recorded by calculating taking odds ratio and taking it >1 as statistically significant.

Results: The minimum age recorded in our study was 20 years and maximum age noted was 70 years. Mean age + standard deviation were 44.32 ± 13.72 years. We had 66 (50.8%) male and 64 (49.2%) female patients. Out of 65 cases, helicobacter pylori infection was found in 48 (73.85%) while in 65 controls, helicobacter pylori infection was found in 29 (44.62%) patients. Presence of helicobacter pylori was significantly associated with liver cirrhosis as odds ratio = 3.51 and p-value = 0.001.

Conclusion: Helicobacter pylori infection was significantly associated with liver cirrhosis. Hence early diagnosis and treatment may decrease the complications.

Key words: Helicobacter Pylori Infection, Liver Cirrhosis, Association, Stool antigen

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Introduction

Helicobacter pylori are a rod shaped gram negative motile bacteria formally known as campylobacter pyloridis. It colonizes prepyloric gastric mucosa being catalase, oxidase, and urease positive vital for its colonization and survival.¹ It results in variety of gastric problems ranging from gastritis to lymphoma and adeno-

carcinoma.² Liver Cirrhosis is an irreversible disease as a result of liver fibrosis. Patients can end up in portal hypertensive gastropathy, hepatic encephalopathy, upper gastrointestinal bleed, hepatocellular carcinoma, spontaneous bacterial peritonitis, hepatorenal and hepatopulmonary syndromes and their life expectancy is markedly reduced.³ Globally 4.4 billion population is affected with H. pylori-infection with male predominance.⁴ It is estimated to be around 90% in developing and 40% in developed countries respectively. Major causes are poor health and hygiene and low socioeconomic status.⁵⁻⁷ Africa has the highest prevalence of 70.1% whereas Switzerland lowest prevalence of 18.9%. Turkey has the highest prevalence of 77.2% in Western Asia whereas in Southern Asia, Pakistan and India has prevalence of 63.5% and Pakistan 81-90% respectively.⁴

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H pylori infection or reinfection is diagnosed by a variety of tests like fecal antigen test, urea breath test, or upper GI endoscopy.⁸⁻⁹ The H. Pylori infection and liver cirrhosis have come under discussion in the literature but its association is poorly understood¹⁰ and it still remains a matter of debate.¹¹ In one study it is postulated that H. pylori infection results in gastric and generalized inflammatory reaction as a consequence of increased proinflammatory cytokines like interleukin 1,2,4,6,8,10 and 17, INF- α and- β .¹² According to the WHO it may influence other organs resulting in liver dysfunction, ending in cirrhosis.¹¹ Similarly liver pathology in patients infected with hepatitis B and C viruses, and Non-B and C liver injury have confirmed H. pylori genome in the hepatocytes.¹³ Another study demonstrated that H. pylori infection interferes steps of lipid absorption that may decrease high-density lipoprotein resulting in hepatocyte steatosis, and fibrosis.¹⁴ However no strong direct association of H. Pylori with liver cirrhosis has been so far postulated in literature.¹⁵ Therefore we carried out this study to see H. pylori association with liver cirrhosis.

Material and Methods

This case control study was conducted at Medicine department, Mayo Hospital, Lahore for six months. After institutional review board meeting, 130 patients (65 in each case and control group) were included by non-probability consecutive sampling technique. The 130 sample was estimated with 80% power of study, 5% level of significance taking helicobacter pylori infection in 70.2% of cirrhotic and 47.5% of non-cirrhotic patients.¹⁶ Cases of aged 20-70 years with either gender (30 males and 35 females) with liver cirrhosis proven on ultrasonography. Similarly healthy adults of both genders (36 males and 29 females) aged 20-70 years with no evidence of liver cirrhosis on ultrasonography were taken as controls. Patients with prior gastric surgery, peptic ulcer on upper GI endoscopy, acute variceal bleed within last 15 days, recent antibiotics intake for H. pylori infection, previous or current primary or secondary hepatic malignancy as determined by history and medical records and patients not willing to participate in the study were excluded. Coarse nodular echo texture of liver on ultrasonography was taken as liver cirrhosis. Information regarding all the study variables was recorded in a structured proforma. A stool sample was taken from both cases and controls following standard sterile collection procedure. Samples were then submitted to the pathology laboratory for detection of H pylori antigen. The results were collected next day by the researcher himself.

Results were also noted in the proforma and confidentiality of the data was ensured. H. pylori infection was managed (as per standard protocol). Data was analyzed with SPSS version 24.0. Quantitative variable like age, antigen value were summarized as mean and standard deviation. Qualitative variables like helicobacter pylori infection and gender were taken as frequency tables and percentages. The association was seen by calculating Odds ratio taking >1 as statistically significant. Stratified for age and gender was also done and chi-square test was applied taking p-value < 0.05 as significant.

Results

The minimum age recorded in our study was 20 years and maximum age noted was 70 years. Mean age + standard deviation were 44.32±13.72 years. We had 66 (50.8%) male and 64(49.2%) female patients. There were 72(55.4%) respondents with smoking > 5 pack years 58(44.6%) respondents with smoking < 5 pack years. Out of 65 cases, H. pylori infection was noted in 48(73.85%) while in 65 controls, it was only seen in 29(44.62%). We noted significant association of H. Pylori with liver cirrhosis as odds ratio was > 1 (OR = 3.51)

Table 1: Descriptive Statistics.

	Minimum	Maximum	Mean	Std. Deviation
Age	20	70	44.32	13.72
Duration	27	34	29.96	2.22

Table 2: Presence of H Pylori in both study groups.

Presence of H Pylori	Frequency	Percentage
Yes	77	59.2 %
No	53	40.8 %
Total	130	100.0

Table 3: Comparison of Presence of H Pylori in cases and controls

Study Group	Presence of H Pylori		Total	P-value	Odd Ratio
	Yes	No			
Cases	48	17	65	0.001	3.51
Controls	29	36	65		
Total	77	53	130		

and p-value was 0.001.

Discussion

In our study, it was seen that H. Pylori infection was associated with liver cirrhosis. This has been supported

by a number of studies. In a 106 patients cohort study of hepatitis C patients there were 57 males with the age range 20-78 years and mean age, 52.9 years. Only 47(44.3%) patients had liver cirrhosis. H. Pylori infection was seen in 70.2% cirrhotic and 47.5% non-cirrhotic patients. In univariate as well as multivariate analyses, H. pylori infection (P=0.019, P=0.037 respectively; OR=2.42; 95% CI=1.06-5.53) was present and there was association with liver cirrhosis.¹⁶ In a previous meta-analysis of 6135 cases, H. pylori infection and etiology were studied. It was present in 52.26% cases. Presence of H. pylori infection was different between cirrhotic and non-cirrhotic patients [(OR)=2.05, P<0.0001]. It was greatest in patients of primary biliary cirrhosis (OR=1.75, P=0.147) followed by viral cirrhosis (OR=2.66, P<0.0001) and alcohol cirrhosis (OR=0.77, P<0.0001).¹⁷ On the other hand Joanna and colleagues concluded that helicobacter pylori infection was more common in patients with viral cirrhosis followed by alcoholic or primary biliary cirrhosis.¹⁸ Similarly Singh MP et. al in their study concluded same results.¹⁹ Xu G and colleagues came to know that H. pylori infection was more common in non-alcoholic fatty liver disease.²⁰ On the other hand Ahmed et.al. Concluded that it was less common among liver cirrhotic patients.²¹ Mohamed et al. concluded that it was associated with viral cirrhosis and is an important cause of acid peptic disease among patients of liver cirrhosis.²² Being single centered with relatively small sample size and no duodenal biopsy on endoscopy were the major limitations to our study.

Conclusion

Helicobacter pylori infection is significantly associated with liver cirrhosis as evident by odds ratio > 1 (3.51) and p-value = 0.001. Hence early diagnosis and treatment may decrease the complications.

Conflict of interest

None

Funding source

None

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