

Helicobacter Pylori Infection With Cholelithiasis

Shahida Parveen Afridi,^{1*} Naveed Ali Khan,¹ Abdul Khalique,¹ Fizzah Khalid¹

ABSTRACT

Objective To find out the association of *Helicobacter pylori* infection with cholelithiasis.

Study design Cross sectional study.

Place & Duration of study Dow International University Hospital Ojha Campus, Dow University of Health Sciences Karachi, from January 2016 to December 2018.

Methodology Patients with symptomatic gall stones were included. Ultrasound abdomen performed in all the patients to confirm the presence of gall stones. Blood sample was used to detect the *H. pylori* antibody and stool for *H. pylori* antigen to confirm the presence or absence of *H. pylori* infection.

Results A total 187 patients were included. There were 31 (16.5%) male and 156 (83.42%) female patients with mean age of 41.31 ± 11.47 year. *Helicobacter pylori* antibody was positive in 120 (64.17%) patients with *p* value 0.02 and stool antigen tests were positive in 65 (34.75%) patients with *p* value 0.03. *Helicobacter pylori* antibody and stool antigen, both tests were negative in 12 (6.41%) patients. Histopathology finding revealed chronic cholecystitis in 155 (82.88%) patients and chronic cholecystitis with cholesterolosis in 32 (17.11%) patients.

Conclusion Strong association of *Helicobacter pylori* infection was found with cholelithiasis.

Key words *H. pylori*, Cholelithiasis, Acid peptic disease, Cholecystectomy.

INTRODUCTION:

Gallbladder stone is a common condition in surgical practice. It may be diagnosed as an incidental finding on ultrasound abdomen performed for other reason or in patients with symptomatic gall stone, cholecystitis or in patients with complications like, empyema gall bladder, mucocele, choledocholithiasis, cholangitis and pancreatitis.¹ *Helicobacter pylori* (*H. pylori*) was discovered by Marshall and Warren in 1983, who found strong association of this organism

with gastritis and peptic ulcer disease.² *Helicobacter pylori* infection is common and reported throughout the world. In developed countries it is observed in 40-50% with gallstones while 80-90% in developing regions.³ Different studies were conducted to find out the correlation between *Helicobacter pylori* presence and gallbladder stones.^{4,5}

Helicobacter pylori infection can cause different acid peptic diseases like chronic gastritis, gastric and duodenal ulcers,⁶ and malignant conditions like gastric and pancreatic adenocarcinoma, lymphoma of gastric mucosa-related lymphoid tissue.⁷ The objective of this study was to find out the association of *Helicobacter pylori* infection with cholelithiasis and save the patients from symptoms after cholecystectomy due to *Helicobacter pylori* infection.

METHODOLOGY:

This cross sectional study was conducted at

¹ Department of General Surgery DUHS, DIMC Karachi.

Correspondence:

Dr. Shahida Parveen Afridi^{1*}
Department of General Surgery
Dow University of Health Sciences
DIMC Karachi
E mail: surgeonshahida@gmail.com

Dow University Hospital Ojha Campus, Dow University of Health Sciences Karachi, from January 2016 to December 2018. Patients with symptomatic gall stones with complaint of pain in upper abdomen or right hypochondrium radiating to the right shoulder with vomiting and dyspepsia, were included. Patients of cholelithiasis with choledocholithiasis and acute pancreatitis due to gallstones were excluded. Ultrasound abdomen was done to confirm the presence of gallstones. Analysis of H. pylori antibody in the blood and H. pylori antigen from stool was done to confirm the presence or absence of H. pylori infection. All patients underwent laparoscopic cholecystectomy.

All procedures were attempted on day care basis. In difficult cases conversion to open cholecystectomy was done. Treatment for H. pylori infection was given to patients with positive H. pylori stool antigen. Amoxicillin, clarithromycin along with protein pump inhibitors (PPI) were advised for a period of two weeks and continuation with PPI only for a period of four weeks more.

Data was collected on a form designed for this study. SPSS statistical package for social sciences version 21.0 was used to analyze the data. Numerical variable Mean + standard deviation (SD) and range were calculated. Frequency and percentages were calculated for categorical variable. For P value the level of significance was considered 0.05 which statistical test ????? was performed.

RESULTS:

A total 187 patients were included. There were 31(16.5%) male and 156 (83.42%) female patients. Age varied from 20 year to 60 year with mean age of 41.31+11.47 year. Many (n=81 - 43.31%) patients presented with right upper quadrant pain (RHC). In 106 (56.68%) patients pain was in RHC and epigastrium while pain radiated to back and shoulder in 145 (77.54%) cases. Nausea, vomiting and GERD were noted in 80 (42.78%), 48 (25.66%) and 76 (40.64%) patients respectively.

Co-morbid condition the hypertension and diabetes mellitus, were observed in 31(16.5%) patients each. Ultrasound showed single stone in 58 (31%) patients and multiple stones in 129 (68.9%) cases. Mean hemoglobin was 12.62+1.44 g/dL, TLC 9.08+2.72x10⁹/L and alkaline phosphatase 91.97+49.24 IU/L. Helicobacter pylori antibody was positive in 120 (64.17%) patients with p value 0.02 and Stool antigen tests were positive in 65 (34.75%) patients with p value 0.03. Stool antigen tests were both negative in 12 (6.41%) patients. Laparoscopic cholecystectomy performed in 177 (94.65%) patients and ten patients 5.34% were converted to open cholecystectomy (table I). Histopathology finding revealed chronic cholecystitis in 155(82.88%) patients and chronic cholecystitis with cholesterosis in 32 (17.11%) patients.

DISCUSSION:

Bacterial infection is considered an important factor

Table I: Frequency of H Pylori Infection With Cholelithiasis

Variable	Number (n)	Percentage (%)
Gender		
Male	31	16.5
Female	156	83.42
Helicobacter pylori Test		
Helicobacter pylori Antibody - Present	110	58.8
Helicobacter pylori Stool antigen – Present	65	34.7
Helicobacter pylori Antibody - Absent Stool Antigen - Absent	12	6.4
Surgical Procedure		
Laparoscopic Cholecystectomy	177	94.65
Open Cholecystectomy	10	5.34
Histopathology Report		
Chronic Cholecystitis	155	82.8
Cholesterosis	32	17.1

in the development of cholesterol gallstone formation.⁸ Hepatobiliary system is also affected by Helicobacter species as shown in different studies.⁹ Many species of Helicobacter can affect the stomach, intestine, liver and biliary tree.^{10,11} Many studies conducted using different techniques for detecting Helicobacter pylori infection like staining, western blot, PCR, immunohistochemistry, serology and histology.^{12, 13}

In literature common risk factors for gallbladder include female gender and age.¹⁴ Same has been reported in many studies where increased age and female gender were reported as more prone to develop the gallbladder stone.^{15,16} Our study also reported higher frequency of gallstones in female patients with advanced age.¹⁶ Furthermore the risk of gallstone increases with the presence of Helicobacter pylori in the bile.¹⁷

Patients of gallstones present with pain hypochondrium which is also associated with epigastric pain, that may radiate to back and right shoulder. In another study it was reported that more than 91% patients present with pain in upper abdomen.¹⁸

Several mechanisms explain the association of H. pylori infection with gallstones. H. pylori is a urea splitting organism that produce ammonia, which is the most common cause of chronic inflammation and stomach cancer.¹⁹ Helicobacter pylori are gram-negative microaerophilic spiral bacteria, highly mobile due to multiple flagella.²⁰ Different studies showed the association of H. pylori and chronic cholecystitis based on different diagnostic modalities like culture of gallbladder tissues, PCR, ELISA, EIA using H. pylori-specific antigens or antibodies.²¹ Stool for H. pylori antigen is the simple and noninvasive test used most commonly to detect the H. pylori antigen in our study.²² A study reported the presence of H pylori antigen in the stool in 40% of patients with cholelithiasis.²³

CONCLUSIONS:

A strong association of Helicobacter pylori infection with cholelithiasis was noted. Treatment of H pylori infection is necessary to save the patients from post cholecystectomy symptoms.

REFERENCES:

1. Guraya SY, Ahmad AA, El-Ageery SM, Hemeg HA, Ozbak HA, Yousef K, et al. The correlation of Helicobacter Pylori with the development of cholelithiasis and cholecystitis: the results of a

prospective clinical study in Saudi Arabia. *Eur Rev Med Pharmacol Sci.* 2015;19:3873-80.

2. Marshall BJ, Warren JR. Unidentified curved bacilli in the stomach of patients with gastritis and peptic ulceration. *Lancet.* 1984; 1(8390):1311-5.

3. Devrajani BR, Shah SZA, Soomro AA, Devrajani T. Type 2 diabetes mellitus: A risk factor for Helicobacter pylori infection: A hospital based case-control study. *Int J Diabetes Dev Ctries.* 2010; 30: 22-26.

4. Kountouras J, Tsiaousi E, Trigonis S, Polyzos SA, Katsinelos P, Zavos C, et al. Comment on "The correlation of Helicobacter pylori with the development of cholelithiasis and cholecystitis: the results of a prospective clinical study in Saudi Arabia". *Eur Rev Med Pharmacol Sci.* 2016;20:3-4.

5. Fikry AA, Kassem AA, Shahin D, Shabana HA, Mostafa S. Helicobacter pylori infection in patients with chronic calculus cholecystitis a cross-sectional study. *J Surg.* 2014;2:58-62.

6. Attaallah W, Yener N, Ugurlu MU, Manukyan M, Asmaz E, Aktan AO. Gallstones and concomitant gastric Helicobacter pylori infection. *Gastroenterol Res Pract.* 2013;2013:643109.. doi: 10.1155/2013/643109

7. Rabelo-Goncalves EM, Roesler BM, Zeitune JM. Extragastric manifestations of Helicobacter pylori infection: Possible role of bacterium in liver and pancreas diseases. *World J Hepatol.* 2015;7:2968-79.

8. Tsuchiya Y, Mishra K, Kapoor VK, Vishwakarma R, Behari A, Ikoma T, et al. Plasma Helicobacter pylori antibody titers and Helicobacter pylori Infection positivity rates in patients with gallbladder cancer or cholelithiasis: a hospital-based case-control study. *Asian Pac J Cancer Prev.* 2018;19:1911-5.

9. Chaudhary PK, Goyal S, Mahajan NC, Kansal S, Sinha P. Incidence of presence of H. pylori in cases of cholecystitis and cholelithiasis in a rural medical college & hospital.

- J Drug Del Therap. 2015;5:5-8.
10. Lee JW, Lee DH, Lee JI, Jeong S, Kwon KS, Kim HG, et al. Identification of Helicobacter pylori in gallstone, bile, and other hepatobiliary tissues of patients with cholecystitis. *Gut Liver*. 2010;4:60-7.
 11. Cen L, Pan J, Zhou B. Helicobacter Pylori infection of the gallbladder and the risk of chronic cholecystitis and cholelithiasis: A systematic review and meta-analysis. *Helicobacter*. 2018; 23:e12457. <https://doi.org/10.1111/hel.12457>.
 12. Dar MY, Ali S, Raina AH, Raina MA, Shah OJ, Shah MA et al. Association of Helicobacter pylori with hepatobiliary stone disease, a prospective case control study. *Indian J Gastroenterol*. 2016;35:343-6.
 13. Motie M, Rezapanah A, Abbasi H, Memar B, Arianpoor A. The Relationship between Cholecystitis and Presence of Helicobacter pylori in the Gallbladder. *Zahedan J Res Med Sci*. 2017;19:25-30.
 14. Wang YK, Kuo FC, Liu CJ, Wu MC, Shih HY, Wang SS, et al. Diagnosis of Helicobacter pylori infection: Current options and developments. *World J Gastroenterol*. 2015;21:11221-35.
 15. Bohr UR, Kuester D, Meyer F, Wex T, Stillert M, Csepregi A, et al. Low prevalence of Helicobacter aceae in gall-stone disease and gall-bladder carcinoma in the German population. *Clin Microbiol Infect*. 2007;13:525-31.
 16. Apostolopoulos P, Vafiadis-Zouboulis I, Tzivras M, Kourtessas D, Katsilambros N, Archimandritis A. Helicobacter pylori H pylori infection in Greece: the changing prevalence during a ten-year period and its antigenic profile. *BMC Gastroenterol*. 2002;2:11-5.
 17. Yakoob J, Khan MR, Abbas Z, Jafri W, Azmi R, Ahmad Z, et al. Helicobacter pylori: association with gall bladder disorders in Pakistan. *Br J Biomed Sci*. 2011;68:59-64.
 18. Siddiqui FG, Memon AA, Abro AH, Sasoli NA, Ahmad L. Routine histopathology of gallbladder after elective cholecystectomy for gallstones: waste of resources or a justified act? *BMC Surg*. 2013;13:26.
 19. Chmiela M, Karwowska Z, Gonciarz W, Allushi B, Staczek P. Host pathogen interactions in Helicobacter pylori related gastric cancer. *World J Gastroenterol*. 2017;23:1521-40.
 20. Testerman TL, Morris J. Beyond the stomach: an updated view of Helicobacter pylori pathogenesis, diagnosis, and treatment. *World J Gastroenterol*. 2014; 20:12781-808.
 21. Abdulnabi HM. Gallbladder colonization by Helicobacter pylori in patients with symptomatic gall stone disease. *Int J Current Microbiol Applied Sci*. 2013;2:179-87.
 22. Safarnezhad Tameshkel F, Karbalaie Niya MH, Kheyri Z, Azizi D, Roozafzai F, Khorrami S. The evaluation of diagnostic and predictive values of Helicobacter pylori stool antigen test in Iranian patients with dyspepsia. *Iran J Pathol*. 2018;13:38-44.
 23. Hassan EH, Gerges SS, Ahmed R, Mostafa ZM, Hassan A, Abd Al-Hamid H, et al. Detection of Helicobacter antigen in stool samples and its relation to H. pylori positive cholecystitis in Egyptian patients with chronic calculus cholecystitis. *J Egyptian Soc Parasitol*. 2015;240 (2496):1-8.

Received for publication: 10-07-2019

Accepted after revision: 30-09-2019

Author's Contributions:

Shahida Parveen Afridi: Conception of idea, manuscript writing.

Naveed Ali khan: Data collection and analysis

Abdul Khalique: Treatment of study subjects.

Fizzah Khalid : Data collection

Conflict of Interest:

The authors declare that they have no conflict of interest.

Source of Funding: None

How to cite this article:

Afridi SP, Khan NA, Khalique A, Khalid F. Helicobacter pylori infection with cholelithiasis. *J Surg Pakistan*. 2019;24(3):140-43. Doi:10.21699/jsp.24.3.8.