

PREVELANCE OF CHOLELTHIASIS IN PATIENTS WITH H. PYLORI ASSOCIATED  
GASTRITIS

**Khurram Baqai<sup>1</sup>, Nadia Shahid<sup>2</sup>, Fizza Saher<sup>3</sup>, Yasir Murtaza<sup>4</sup>, Dr. Mir Arsalan Ali<sup>5</sup>, Dr,  
Sarah Saba Yasin<sup>6</sup>**

1. Assistant Professor, Department of Gastroenterology, Ziauddin University, Karachi
2. Assistant Professor, Department of General Surgery, Ziauddin University, Karachi
3. Assistant Professor, Department of Oral biology, Ziauddin University, Karachi
4. Assistant Professor, Department of Urology, Ziauddin University, Karachi
5. Assistant Professor, Department of General Surgery, Ziauddin University, Karachi
6. House officer, Department of General Surgery, Ziauddin University, Karachi

**Corresponding Author**

**Fizza Saher<sup>3</sup>**

Assistant Professor, Department of Oral biology, Ziauddin University, Karachi

## Abstract

### Background

Abdominal pain is one of the most common symptoms associated with gall stones. Another common condition which causes similar symptoms is H. pylori associated chronic active gastritis. The purpose of this study is to identify the affiliation of H. pylori in our region with formation of gall stones.

### Methods

A retrospective cross-sectional study was conducted at the Ziauddin University Hospital, Clifton Campus, Karachi from 01<sup>st</sup> July 2020 to June 30<sup>th</sup> 2021.

Open Epi online software was used to determine the sample size of 80 with 95% confidence interval. Statistical Program for Social Sciences (SPSS) version 20 was used to analyze the data.

### Results

A total of 80 patients who were positive for H. Pylori by stool antigen, Urea Breath test or Histopathology were included. Subjects included male 52/80 (65%) and Female 28/80 (35%). Male to female ratio was 1.857:1. Mean age of patients who detected with H. Pylori was  $46.51 \pm 12.51$ . Gall stones were diagnosed in 20/80 (25%) of patients out of which males were 10/52 (19.23%) and females were 10/28 (35.71%). The percentage-wise male to female ratio who had gall stones were 0.53:1

### Conclusion

**Keywords:** H. Pylori, Cholelithiasis, Gastritis

## **INTRODUCTION**

Abdominal pain is one of the most common symptom associated with gall stones<sup>1</sup>. Other than abdominal pain patients with gall stones also do experience nausea, anorexia, and vomiting<sup>1</sup>. Complications associated with gall stones are cholecystitis, gall bladder perforation, obstructive jaundice, gall stone pancreatitis but another condition which is devastating is gall bladder carcinoma<sup>2</sup>. Therefore, early detection and management of cholelithiasis is crucial. Another common condition which causes similar symptoms is H.pylori associated chronic active gastritis<sup>3</sup>. H.pylori once infects the stomach, it disrupts the gastric mucosa, causes alterations in gastric hormones and along with gastritis may lead to development of peptic ulcers, gastric perforation and occasionally associated with more hazardous condition that is gastric carcinoma<sup>4,5</sup>. Therefore it is required to diagnose and eliminate H.pylori early to prevent gastric carcinogenesis and other H.pylori related complications.

The clinical features of both the conditions are most of the time vague and non-specific, the diagnosis of H.pylori gastritis and gall stones require laboratory and radiological investigations respectively. Ultrasound of abdomen has remained the best initial screening modality to diagnose gall stones<sup>1</sup>, while for the diagnosis of H.pylori, stool antigen test, Urea breath test and culture of H.pylori in gastric biopsies has a sensitivity of 94%,96%, 97% and specificity of 97%,93%,100% respectively<sup>6</sup>.

As most of the times symptoms and signs are overlapping, it is routine for most of the physicians to work up for both of these condition simultaneously that is ultrasound of abdomen to detect gall stones and urea breath test or stool antigen test to diagnose H.pylori associated gastritis.

Recent data suggests an association between development of gall stones and infection with H.pylori<sup>7</sup>. Further to this, studies found that patients with H.pylori associated gastritis are more prone to develop gall stones and ultimately gall stones related complications including gall bladder carcinoma.<sup>8</sup>

On the basis of data by those researchers it was suggested that early diagnosis and eradication of H.pylori may decrease the risks of developing gall stones in future. It makes the detection of H.pylori as early as possible so as to minimize the problems related to H.pylori itself, development of gall stones related and post-cholecystectomy complications. Patchy and limited data in this

regards is available in our region. The purpose of this study is to identify the affiliation of H.pylori in our region with formation of gall stones. Therefore, in future we may be able to decline the probability of gall stones and its related complications<sup>9</sup>.

## Methodology

A retrospective cross-sectional study was conducted at the Ziauddin University Hospital, Clifton Campus, Karachi from 01<sup>st</sup> July 2020 to June 30<sup>th</sup> 2021.

Open Epi online software was used to determine the sample size of 80 with 95% confidence interval.

## Sample Size for Frequency in a Population

Population size(for finite population correction factor or fpc)( $N$ ): 1000000  
 Hypothesized % frequency of outcome factor in the population ( $p$ ):5.5% +/-5  
 Confidence limits as % of 100(absolute +/- %)( $d$ ): 5%  
 Design effect (for cluster surveys- $DEFF$ ): 1

### Sample Size( $n$ ) for Various Confidence Levels

Confidence	Level(%)	Sample Size
95%		80
80%		35
90%		57
97%		98
99%		138
99.9%		226
99.99%		315

### Equation

Sample size  $n = [DEFF * Np(1-p)] / [(d^2 / Z^2_{1-\alpha/2} * (N-1) + p*(1-p)]$

All those patients above 18years of age who presented to Ziauddin OPD with abdominal pain and evaluated for H. pylori and gall stones, confirmed diagnosis of H. pylori and also had gall stones were enrolled in the study. While the patients whose data was incomplete or were diagnosed H.

pylori on the basis of antibodies, who were already treated for H. pylori in past and or had history of cholecystectomy were excluded. Ethical approval was waived off as this is a retrospective review of medical data. The data was stored in password protected computer which could only be decoded by the PI and Co-PI. Data was entered in the SPSS version 20.

## RESULTS

Patients from out and inpatient departments who had symptoms related to upper gastrointestinal disorder and had H. pylori testing and also had ultrasound of abdomen were analyzed. A total of 80 patients who were positive for H. Pylori by stool antigen, Urea Breath test or Histopathology were included. Subjects included males 52/80 (65%) and females 28/80 (35% ) **Table 1** . Male to female ratio was 1.857:1. Mean age of patients who had with H. pylori gastritis was  $46.51 \pm 12.51$ . Gall stones were diagnosed in 20/80 (25%) of patients **Table 2**, out of which males were 10/52 (19.23%) and females were 10/28 (35.71%). The percentage-wise male to female ratio who had gall stones was 0.53:1 as shown in **Figure 1**.

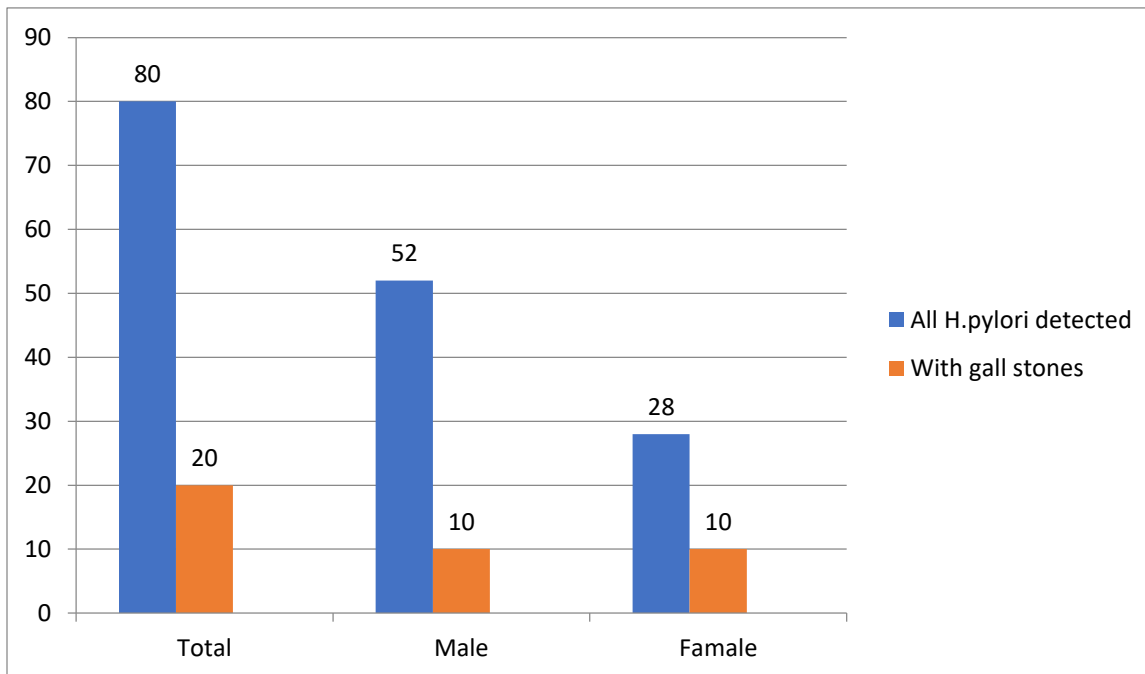
**TABLE: 1**

Gender		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	52	65.0	65.0	65.0
	Female	28	35.0	35.0	100.0
	Total	80	100.0	100.0	

**TABLE: 2** Frequency of Gall stones in *H. pylori* positive patients

Gall.stones		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Present	20	25.0	25.0	25.0
	Absent	60	75.0	75.0	100.0
	Total	80	100.0	100.0	

**FIGURE: 1** Gender wise Pattern of Gall stones in *H.pylori* positive patients.



**Discussion**

In this study, prevalence of cholelithiasis in patients with *H. Pylori* associated gastritis was determined within our region. We evaluated patients diagnosed with cholelithiasis on ultrasound abdomen and *H. Pylori* on urea breathe test, stool antigen test and

histopathology on inpatient and outpatient basis. Our findings show that 25 % of the patients were afflicted by gall stones. Therefore, we determined that there is a strong association between H.Pylori Gastritis and Cholelithiasis within our region. Our study also shows that there was a greater percentage of females who developed cholelithiasis than in males (Table 1). This can be an important finding of our study prompting better measures to be taken in dealing with females affected by H.Pylori gastritis. Female gender is a risk factor for the development of Cholelithiasis which may also explain our results. H.Pylori may enter into the bile via the Sphincter Of Oddi from the duodenum or via the portal circulation and lymphatic pathways (1,2). It is then able to produce reactive oxygen and reactive nitrogen species that may lead to free radicle reactions and oxidative stress (3,4). There is also production of large amounts of inflammatory markers and vasoactive substances like IL1, IL6 and TNF-alpha which are implicated in the pathogenesis of Cholelithiasis (5). From what we can determine with our results, if there is early detection of H.Pylori infection in patients and they receive prompt treatment the risk of developing H.Pylori associated Cholelithiasis should decrease significantly.

### **Conclusion**

H. Pylori infections has a positive association with cholelithiasis and if eradicated, may lead to prevention of gallstones.

## References

1. Cariati A., Puglisi R., Zaffarano R., Accarpio F. T., Cetta F. Helicobacter pylori and the risk of benign and malignant biliary tract disease. *Cancer*. 2003;98(3):656–657. doi: 10.1002/cncr.11549.
2. Helaly G. F., El-Ghazzawi E. F., Kazem A. H., Dowidar N. L., Anwar M. M., Attia N. M. Detection of Helicobacter pylori infection in Egyptian patients with chronic calculous cholecystitis. *British Journal of Biomedical Science*. 2014;71(1):13–18. doi: 10.1080/09674845.2014.11669957.
3. Zhou D., Guan W.-B., Wang J.-D., Zhang Y., Gong W., Quan Z.-W. A comparative study of clinicopathological features between chronic cholecystitis patients with and without Helicobacter pylori infection in gallbladder mucosa. *PLoS One*. 2013;8(7) doi: 10.1371/journal.pone.0070265
4. Sipos P., Krisztina H., Blázovics A., Fehér J. Cholecystitis, gallstones and free radical reactions in human gallbladder. *Medical Science Monitor*. 2001;7(1):84–88
5. Kasprzak A., Szmyt A., Malkowski A., et al. Analysis of immunohistochemical expression of proinflammatory cytokines (IL-1 $\alpha$ , IL-6, and TNF- $\alpha$ ) in gallbladder mucosa: comparative study in acute and chronic calculous cholecystitis. *Folia Morphologica (Warsz)* 2015;74(1):65–72. doi: 10.5603/fm.2015.0011
6. Herrera-Pariente, C., Montori, S., Llach, J., Bofill, A., Albeniz, E. and Moreira, L., 2021. Biomarkers for Gastric Cancer Screening and Early Diagnosis. *Biomedicines*, 9(10), p.1448.
7. Wang, L., Chen, J., Jiang, W., Cen, L., Pan, J., Yu, C., Li, Y., Chen, W., Chen, C. and Shen, Z., 2021. The relationship between Helicobacter pylori infection of the gallbladder and chronic cholecystitis and cholelithiasis: a systematic review and meta-analysis. *Canadian Journal of Gastroenterology and Hepatology*, 2021.



8. Higashizono, K., Nakatani, E., Hawke, P., Fujimoto, S. and Oba, N., 2022. Risk factors for gallstone disease onset in Japan: findings from the Shizuoka Study, a population-based cohort study. *medRxiv*.
  
9. Mishra, K., Behari, A., Shukla, P., Tsuchiya, Y., Endoh, K., Asai, T., Ikoma, T., Nakamura, K. and Kapoor, V.K., 2021. Risk factors for gallbladder cancer development in northern India: A gallstones-matched, case-control study. *Indian Journal of Medical Research*, 154(5), pp.699-706.