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A STUDY DETERMINING THE ASSOCIATION OF HELICOBACTER PYLORI AND CHOLELITHIASIS

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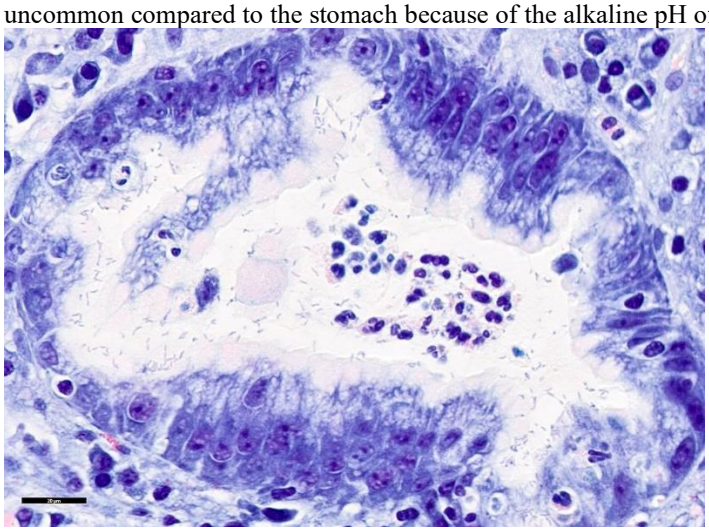
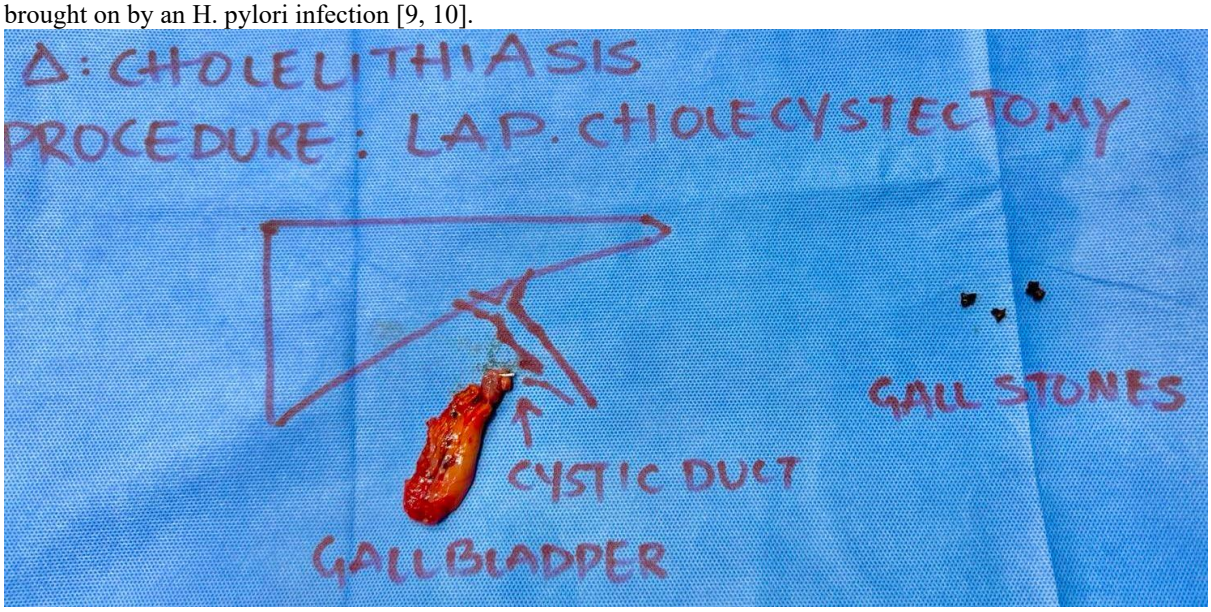
Abstract
Cholelithiasis, characterized by the formation of gallstones within the gallbladder or bile ducts, is a common gastrointestinal disorder affecting millions worldwide. Although the connection among the H. pylori and gallstones have been studied before, no conclusion has been reached. Additionally, in the patients gallbladder mucosa along with gallstones has been found by H.pylori. Patients whose diagnosis of cholelithiasis was confirmed by imaging methods were included in our study. Endoscopy was performed in patients diagnosed with cholelithiasis and histopathological data of gastric mucosa biopsies were followed. In the research, the connection between cholelithiasis and Helicobacter pylori was investigated. Most patients (26%) were aged between 20-29 years with a minority (2%) being less than 20 years old. Among the total population, biopsy-proven positive for 11 (22%) people by H. pylori infection. When it was difference in gallstone diagnosis is compared between the positive and negative group of H-pylori, the significance with p value indicates the difference. Our results show in a small number of patients that cholelithiasis have been linked with H.pylori. However, the research could not accept the results. Future research is recommended to do mechanism of H pylori infection associated with gallbladder disease such as cholelithiasis.

INTRODUCTION

Gram-negative and microaerophilic, Helicobacter pylori inhabits the stomach and is transmitted between individuals via the fecal-oral route. The organism persists in a healthy host in a balance that can occasionally be disrupted, the factors that can contribute the development of stomach cancer and peptic ulcers. [1] There is a hypothesis suggesting that H. pylori could potentially be responsible for gallbladder disease, as it has been discovered in the biliary tree of a small group of people. The mechanism by which the bacteria reaches the gallbladder remains uncertain. It may travel straight from the stomach to the gallbladder or via the portal blood circulation. Since H. pylori thrives in the acidic environment of gastric juice, colonisation of the gallbladder is uncommon compared to the stomach because of the alkaline pH of bile. [1]



Various tests exist to verify the existence of H.pylori in the stomach. Among these are rapid unrease testing, cultured gastric biopsy tests, histologically detectable as well as urea breath tests positive outcomes.Detection of presence of H.pylori genetic material in tissue were employed by Molecular tests. The detection of IgM antibodies and H. pylori-specific IgG in blood indicates the presence of H. pylori infection. Tests that detect bile and H.pylori in the gallbladder have similar results. [1] Helicobacter pylori is associated with many diseases, including of non-Hodgkin gastric lymphoma, gastritis , duodenal ulcer, and gastric adenocarcinoma. [2–5]. H. pylori ability is to manufacture the urease enzyme, which aids in alkalinization by converting urea into ammonia, is among several traits that enable challenging acidic conditions of stomach by detecting the bacteria. [6] There is currently insufficient information to determine whether gallbladder H. pylori infection and biliary tract disorders are related. Increasing evidence supports the connection between H. pylori and gallbladder disorders such as, choledocholithiasis, cholecystitis, cholelithiasis, gallbladder polyps, and biliary tract malignancy in recent years [7-9]. Biliary cancer has also been linked in other studies to persistent gallbladder inflammation brought on by an H. pylori infection [9, 10].



However, some research indicates that gallbladder disorders and H. pylori infection are unrelated [11, 12]. Additionally, it has been found that people with gallstone illnesses have a higher risk of dying overall. Thus, it is essential to research the gallbladder disorders contribution by H.pylori and malignancies of the biliary tract, especially given the high incidence of gallstones. Different populations have different incidences of Helicobacter infection in the digestive system, which may indicate epidemiological variations in the organism's geographic distribution. It affects over 50% of people worldwide and 80% of people in India [13-15]. Worldwide, cholelithiasis and chronic cholecystitis are quite common conditions. Geographical factors, particularly ethnicity, are significant in determining the frequency of gallstone disorders. The West prevalence rating, range from 4% to 74%, exceeds that in the East. [16]

The primary aim of this study was to examine the association between H. pylori infection and cholelithiasis. To investigate the incidence of Helicobacter pylori-associated cholelithiasis and whether the development of cholelithiasis is investigated with Helicobacter pylori infection.

MATERIALS AND METHODS

This research was examined at Saveetha Medical College and Hospital, located in Chennai, India. It was retrospective hospital-based study conducted over a period of 12 months period from March 2023 to March 2024. The research focused on patients in the in-patient department of gastroenterology. In this research a total of 50 patients participated . The research obtained ethical approval from the ethics review board. and participants gave informed consent after careful discussion. Studies have shown that individuals are included in the diagnosis of gallstone disease. Participants were required to meet certain age and health criteria, including being between the ages of 18 and 75, having upper abdominal pain for at least six months, and providing informed consent for follow-up evaluation. Acute abdominal discomfort, immunocompromised people, alcoholics, and patients on nonsteroidal anti-inflammatory drugs were all deemed ineligible. We kept track of demographic factors. Endoscopies were performed on cholelithiasis.

Statistical analysis:
Data was validated, inputted into Microsoft Excel. Statistical analysis done by using SPSS Software, Chi square tests, paired t-test were used to determine relationship between Cholecystectomy and post operative serum lipid profile values. The results of measurements on categorical (qualitative data) were shown as percentages and proportions (%). Using the chi-square test, a comparison of qualitative variables was examined. When comparing quantitative variables between groups, the independent student t test was used to assess the data based on distribution. A statistically significant level of significance was determined to be a p value of <0.05.

RESULTS

Table 1: Patients Demographic data (Gender and age)

	Demographic data	**Number of patients N=50**
Gender	Male	29 (58%)
	Female	21 (42%)
Age	>20 years	1 (2%)
	20-29 years	13 (26%)
	30-39 years	10 (20%)
	40-49 years	11 (22%)
	50-59 years	10 (20%)
	>60 years	5 (10%)

Figure 1: Confirmed cholelithiasis patients

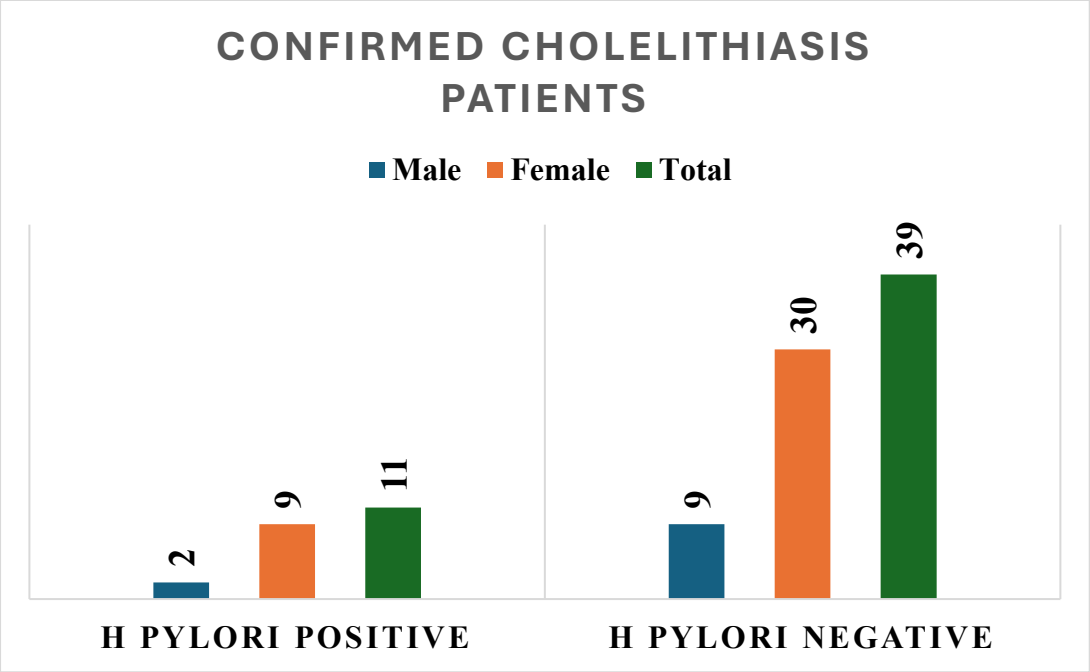


Table 2: Association between H pylori infection and cholelithiasis

Group	H. pylori positive	H. pylori negative	T value	P value
Cholelithiasis	11(22%)	39(78%)	0.000	<0.0001

The link between Helicobacter pylori and cholelithiasis was explored in this research. The demographic characteristics of the participants represented in Table 1. Out of 50 total,39 female patients and 11 male patients were participated. Our study's primary finding is that the incidence is higher in males than females. Our sample population consists of one male and three female members. We next looked at how cholelithiasis caused by H pylori correlates with age. There were six different age groups. Our data shows that 26% of patients were in the 20-to 29-year-old age bracket, with 2% falling into the younger age bracket. According to the data, 22% of the patients were aged 40-49, 20% were aged 50-59, and 30% were aged 30-39. Over 60% of the patients were in their 60s and older. Helicobacter pylori linked cholelithiasis is more common in younger individuals compared to older adults, suggesting a lower risk in adolescents. Upon confirming the Helicobacter pylori in a biopsy presence, we proceeded with the diagnostic process. We split the entire population in half after the lab results came in. Figure 1 displays that out of the entire population, 11 individuals, or 22%, tested positive for H. pylori infection through biopsy. It should be noted that nine of the eleven patients (81.8%) were women. Out of the 39 individuals whose H. pylori infection tests came back negative, 30 (or 76.9%) were female. In this investigation, cholelithiasis was found in 22% of participants. Further research did not identify a statistically notable correlation between the development of cholelithiasis and H. pylori infection when comparing the two patient groups. When diagnosing cholelithiasis, Table 2 compares the groups who test positive for H. pylori and those that test negative. A statistically significant difference was indicated by the p-value. This finding demonstrates

that the gall bladder is impacted by an H. pylori infection. Cholelithiasis is related with H pylori, according to our preliminary study data.

DISCUSSION

Many reseraches that have shown that Helicobacter pylori, specifically Helicobacter pylori, is thought to help with cholesterol production because it is found in bile ,gallstones and gallbladder tissue excreted from the gallbladder. [19] However, research to date has failed to link H. pylori infection to gallstone disease. The objective of this study is to investigate the potential relationship between cholelithiasis and H. pylori infection.
Our study incidence female male ratio is 1:3, which is more incidence in male than female. Similar results showed in Virendra S. et al., [18] study the incidence was higher in men than in women, with a 3.5:1 male to female ratio. Another investigation by Vijaya et al. [23] discovered a 3:1 male to female ratio. There is no statistical significance result shown between age and cholelithiasis. In contrast according to Bulajic et al. [24], as people aged, there was a consistent rise in the likelihood of finding H. pylori in their bile.
In the current study patients who were 20–29 years old made up 26% of the total patient population. The findings are consistent with prior studies that have reported similar age ranges (21–30 years): Virendra S. et al., [18] and MDU Islam, SHZ Rahman et al., [17].
Gender and cholelithiasis did not show a statistically significant relationship in our research. There was no statistical significance correlation between H. pylori and gender was found in a separate investigation by Mohammed Raza et al. [25].
In contrast to North America, Western Europe, and Australia, H. pylori is more prevalent in South America, Africa, and Asia, according to previous studies [20]. This finding might be related to infection of H.pylori in the gallbladder. Our study found significant differences between cholelithiasis patients who tests negative H. pylori and who tested positive H. pylori.The another research conducted by Bostano Aylu et al., Helicobacter type was not found in 30 controls and 47 patients with cholelithiasis. [21]. In contrast, Mishra et al. [22] found that 40% of gallstone patients and 44% of gallbladder cancer patients had blood tests that tested positive for gallstones. In this study, cholelithiasis was detected in 22% of the participants. 18% of cholelithiasis patients were included in Virendar et al.'s study. [18]. Attaallah W et al. [26] found that 37% of gallstone symptoms were associated with H. pylori. Additionally, according to Takahashi et al., 6.08% of people diagnosed with H. pylori also have gallstones. [27]. More research is needed to clarify H. Helicobacter pylori infection can cause gallstone disease, and many studies have shown a link. Our findings shows that there is no evidence of a link between risk of cholelithiasis and H.pylori. Although H. pylori occurs in some cholecystectomy patients, this suggests that it may not be the cause of gallstone disease in the general population. In order to determine the exact cause of gallbladder illnesses such cholelithiasis and the mechanism linked to H pylori infection, further research is needed. Overall, it was challenging to draw any firm conclusions from our study.

CONCLUSION

Helicobacter pylori and cholelithiasis were the focuses of this fifty-patient investigation.
After reviewing the available evidence, this paper concludes that cholelithiasis and Helicobacter pylori infection may be related. This retrospective analysis does not support causality, even though our results point to a correlation. Patients with cholelithiasis have been reported to have a prevalence of upper gastrointestinal diseases; therefore, addressing the related pathology of H. pylori infection improves the patient's ability to recover without symptoms following surgery. The results of this study have several clinical implications, such as the identification of high-risk patient groupings, the creation of focused therapy methods, and the possible significance of Helicobacter pylori eradication in cholelithiasis care. Additionally, this study paves the way for further research in initiating prophylactic H. pylori therapy in patients with suspected gall stone disease, which could be fundamental in the satisfactory outcome of patient care.

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