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Original Research Article

Prevalence of *Helicobacter pylori* infection in dyspeptic patients undergoing upper gastrointestinal endoscopy in a tertiary-care teaching hospital

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ABSTRACT

Background: *Helicobacter pylori* infection is widely prevalent in the world especially in the developing countries. The common clinical presentation of this disease includes peptic and duodenal ulcer. A major post-infection complication of this disease is gastric carcinoma. The scope of this study was to determine the prevalence of active *H. pylori* infection in the local population by retrospective review of patient records, which can give a better picture of the current situation and estimate the at-risk population of gastric carcinoma. Objective of the study was to determine the prevalence of *H. pylori* infection in biopsy specimens obtained from upper gastrointestinal endoscopy performed in dyspeptic patients in a tertiary-care hospital.
Methods: The study was performed as a retrospective review of biopsy reports of 262 dyspeptic patients with previously unknown *H. pylori* status who underwent upper gastrointestinal endoscopy during the months of January 2018 to May 2018. Biopsy obtained from stomach was evaluated for the presence of *H. pylori* infection by Rapid Urease Test (RUT) or histopathological examination.
Results: The prevalence of *H. pylori* infection in dyspeptic patients obtained from the above study was 44.7% and was found to be more common in males compared to females.
Conclusions: *H. pylori* is a risk factor for gastric carcinoma. Determining the prevalence with early identification of active infections results in better treatment and post infection monitoring for malignancy.

Keywords: Dyspepsia, *Helicobacter pylori*, Prevalence, Rapid urease test, Upper gastrointestinal endoscopy

INTRODUCTION

Helicobacter pylori is a gram-negative, microaerophilic bacterium usually found in the stomach. The bacterium is transmitted by feco-oral route and is associated with peptic ulcer, duodenal ulcer and gastric carcinoma. *H. pylori* infection is widely prevalent in the world especially in the developing countries. Approximately half of the world population is known to be infected with this bacterium.[1] Infected patients are usually asymptomatic, but clinical manifestations can range from acute gastritis and abdominal pain to chronic gastritis and dyspepsia. A major post-infection complication of this disease is gastric carcinoma. Laboratory diagnosis of *H. pylori* can be done by invasive methods such as upper gastrointestinal endoscopy with biopsy and rapid urease test. Non-invasive methods of testing are less sensitive and include blood antibody test, *H. pylori* stool antigen

test and carbon urea breath test. The scope of this study is to determine the prevalence of active *H. pylori* infection in the local population, which can give a better picture of the current situation and estimate the at-risk population of gastric carcinoma.

Aim of the study was to determine the prevalence of *H. pylori* infection in biopsy specimens obtained from upper gastrointestinal endoscopy performed in dyspeptic patients in a tertiary-care hospital.

METHODS

The study was performed as a cross-sectional, hospital-based retrospective review of 262 patient records for a period of 5 months (January 2018 to May 2018) at Sri Ramachandra Institute of Higher Education and Research (SRIHER), Porur, Chennai, India. The criterion for inclusion was dyspeptic patients whose *Helicobacter pylori* status was unknown at the time of study. There were no exclusion criteria for the study population. The parameters of this study included the results obtained from biopsy taken in upper gastrointestinal endoscopy through two testing modalities, rapid urease test (RUT) and histopathological examination of biopsy specimens. The required sample size was calculated based on the formula $n= Za^2pq/l^2$. Recorded patient data was analysed using the JASP 0.8.6 statistical package, developed by the University of Amsterdam, The Netherlands. Individuals in the participant population were considered positive for the infection if they tested positive through either of the two testing modalities.

RESULTS

This study was performed with the aim of calculating the prevalence of *Helicobacter pylori* infection among dyspeptic patients who underwent upper gastrointestinal endoscopy. The parameters of the study were the rapid urease test (RUT) results and histopathological examination of the biopsy obtained from the endoscopic procedure.

The study included 262 individuals of which 139 were males and 123 were females, comprising 53% and 47% of the study population respectively. The study population were divided into 3 age groups - 18 to 35 years, 36 to 50 years and above 50 years. The age group of 18-35 years reported the highest frequency of dyspeptic patients who underwent upper gastrointestinal endoscopy while the age group of above 50 years reported the lowest frequency of dyspeptic individuals who underwent upper gastrointestinal endoscopy (Figure 1).

Rapid urease test (RUT) was performed on 222 out of 262 individuals. Out of the 222 individuals, 91 tested positive for *H. pylori* infection and 131 tested negative for *H. pylori* infection (Figure 2). Histopathological examination of the biopsy was performed in 42 out of 262 individuals. Out of the 42 individuals, 26 tested Positive for *H. pylori* and 16 tested negatives for *H. pylori* (Figure 2).

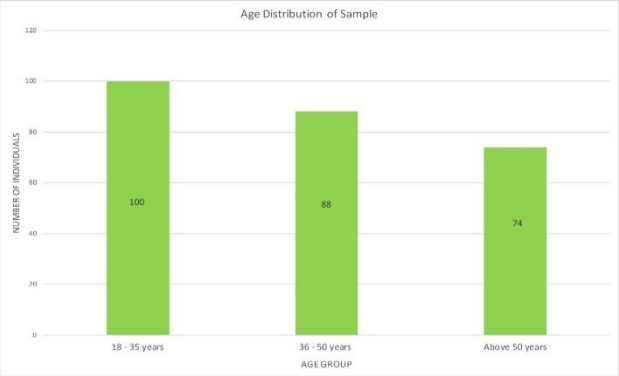

Figure 1: Age distribution of the study population.

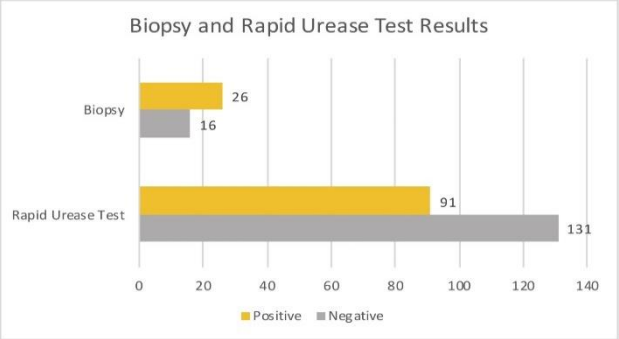

Figure 2: The number of samples positive and negative for *Helicobacter pylori* in the study population by both testing modalities.

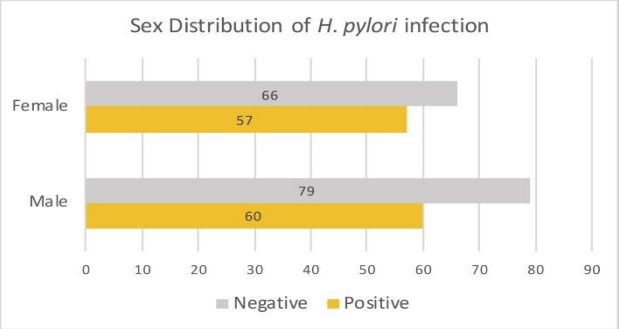

Figure 3: The sex distribution of samples positive and negative for *H. pylori* in the study population.

Positivity of *H. pylori* infection was considered based on results obtained from rapid urease test and histopathological examination of biopsy. A patient was considered positive for *H. pylori* infection if either of these test results were positive. Considering the sample consisting of 262 patients, 117 tested positive for *H. pylori* infection while 145 tested negative for *H. pylori* infection by either of the testing modalities. Among the 117 patients tested positive for *H. pylori*, there were 60 males and 57 females (Figure 3).

The age group of 18 to 35 years had the highest prevalence with 46 patients positive for *H. pylori* infection (Figure 4). The prevalence of *H. pylori* infection among dyspeptic patients was calculated to be 44.7% (Figure 5).

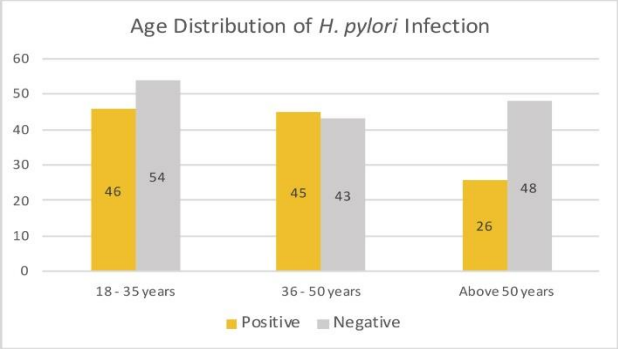

Figure 4: The age distribution of samples positive and negative for *H. pylori* in the study population.

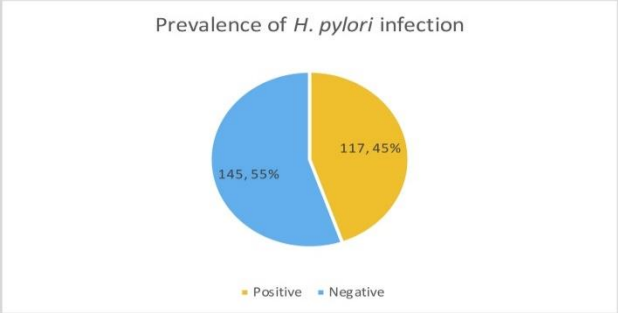

Figure 5: The prevalence of *H. pylori* infection in the study population.

DISCUSSION

This study determined the prevalence of *H. pylori* infection in dyspeptic patients who underwent upper gastrointestinal endoscopy to be 44.7% using two testing modalities, RUT and histopathological examination of biopsy. The infection was found to be more prevalent in males and in the age group of 18 to 35 years.

The results obtained from this study gave a quantitative descriptive analysis of the active cases of infection in the local population. The prevalence obtained from this study was found to be in accordance with similar studies performed in the region.[2,3] In comparison to similar studies performed in other regions of the world, it was found that prevalence of *H. pylori* infection in the local population was lesser than West Indies, whereas it was greater than estimates obtained in Poland.[4,5]

The prevalence obtained is an estimate of the population at risk of developing post – infection complications such as gastric carcinoma. The prevalence of *H. pylori* infection in non-cardia gastric carcinoma from another study was found to be 6.2% and the attributable fraction was 89.0%.[6]

Limitations

This study was performed retrospectively, hence a prospective randomized controlled trial is the best way forward. The study could have given a broader perspective if there had been a proportionate number of biopsy reports as compared to RUT results.

CONCLUSION

The wide prevalence of *H. pylori* infection in the general population necessitates a quantitative estimation of the magnitude of the problem, which this study has determined. The RUT was useful as a quick screening tool to determine if the patients were infected. Prompt treatment and post-infection monitoring of active cases can lead to reduced incidence of complications such as gastric carcinoma.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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