

A Prospective Study on Prevalence of *Helicobacter pylori* in Our Endoscopic Centre

Chawngthu Vanlalhlua¹, Rachel Lalramlawmi²

¹Associate Professor, Department of General Surgery, ²Medical Officer and Endoscopist, Department of General Surgery, Zoram Medical College, Falkawn, Mizoram, N.E., India

Corresponding author: Dr Chawngthu Vanlalhlua, M.S, FAIS, FMAS, EFIAGES, Associate Professor, Department of General Surgery, Zoram Medical College, Falkawn, Mizoram, N.E., India

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A B S T R A C T

Introduction: Abdominal pain is one of the most common symptoms in patients referred for Upper Gastrointestinal (UGI) Endoscopy examination in our centre. *Helicobacter pylori* is a gram-negative, helically shaped, microaerophilic bacterium usually found in the stomach, and is associated with peptic ulcer disease and gastric malignancy. The aim of this study was to find out the prevalence of *H. pylori* among our patients.

Material and Methods: This study comprised of 5910 patients referred from various departments to our Endoscopy centre, who had undergone UGI Endoscopy during the period of 2 years at Zoram Medical College starting from November 2017 to October 2019. All patients referred for Endoscopy were included. Age ranges from 8 years to 92 years old. UGI Endoscopy was performed by Endoscopist/Surgeons in all subjects as a primary diagnostic investigation and interpretation of the findings as observed by a single observer was noted. Rapid Urease test was done in almost all the cases.

Results: *Helicobacter pylori* infection was found in 24.95% of total cases. It is found that majority of patients with Duodenitis (78.67%) and Ulcers of stomach (77.11%) were found to be positive for *H. pylori* thereby underlying its significance in their etiology. In cases of reflux esophagitis alone, only 12 cases out of 1062 (1.21%) were found positive. 31 cases of 218 normal endoscopic study shows *Helicobacter pylori* test positive.

Conclusion: We conclude that Investigation for *H. pylori* should be considered for all patients undergoing endoscopy especially those who have gastric or duodenal lesions and other chronic medical problems as its association with these conditions are higher.

Keywords: Endoscopy, *Helicobacter pylori*, Erosions/Erythema, Ulcers, Varices.

INTRODUCTION

Helicobacter pylori (i.e. *H. pylori*), previously known as *Campylobacter*, is a gram-negative, helically shaped, microaerophilic bacterium usually found in the stomach.¹ Its helical shape (from which the genus name, *helicobacter*, derives) is thought to have evolved in order to penetrate the mucoid lining of the stomach and thereby establish infection.² The bacterium was first identified in 1982 by Australian doctors Barry Marshall and Robin Warren, who found that it was present in a person with chronic gastritis and gastric ulcers, conditions not previously believed to have a microbial cause.^{3,4,5}

H. pylori has also been linked to the development of duodenal ulcers, polyp, i.e benign growth, in the small intestine, large intestine, and rectum, and malignancies of the stomach's secretory glands (termed stomach adenocarcinoma)⁶, of the mucosa-associated lymphoid tissue in the stomach, esophagus, colon, rectum, or tissues around the eye (termed extranodal marginal zone B-cell lymphoma of the cited organ^{7,8,9} and of lymphoid tissue in the stomach (termed

diffuse large B-cell lymphoma).¹⁰

Patients with pain upper abdomen constitute majority of patients referred for UGI Endoscopy. Although a detailed history and physical examination may help to arrive at diagnosis, most of the times it is difficult to do so considering the complexity of the abdominal anatomy. Routine investigations only have a subordinate role and results of Ultrasonography are limited by intestinal gas.¹¹ Within the invention of fiberoptic glasses flexible endoscopy, upper GI endoscopy has become a safe, reliable and office procedure. With further advancements in narrow band imaging and chromoendoscopy, precision of biopsy techniques and diagnosis has been significantly increased.¹² Discovery of role of *Helicobacter pylori* in the pathogenesis of gastric and duodenal ulcers was a breakthrough in the treatment of these lesions. Since then a variety of invasive and non-invasive tests are available to diagnose *H. pylori* infection.¹³

Endoscopy is a sensitive diagnostic test for peptic ulcers. Endoscopy was more sensitive (92%vs 54%) and more specific (100%vs 91%) than radiographic examination.¹⁴ The main role of Endoscopy in patients with uncomplicated peptic

ulcer diseases is to confirm the diagnosis, identify lesions too small to be detected by radiographic examination and to rule out malignancy by performing endoscopic biopsy.¹⁵ Detection of *H. pylori* infection using a simple Urease test kit of gastric mucosa by Endoscopy biopsy forcep became popular and easily available. This study aimed to find out the prevalence of H.P infection among patients in our Endoscopy centre.

MATERIAL AND METHODS

This prospective observational study was conducted in the department of Surgery Endoscopy centre, State Referral Hospital of Zoram Medical College, Falkawn, and LRM Hospital, Aizawl, Mizoram during the periods of two years starting from November 2017 to October 2019. All patients of both sexes referred for UGI Endoscopy totaling 5910 consecutive cases were included; their age ranges from 8years to 92 years old. Before taking up the study, approval for carrying out the research work was obtained from the Hospital Ethical Committee. Informed Consent was taken for each case. Endoscopy biopsy was taken for rapid urease testing.

Age group	No. patients	Percentage
< 20 yrs	532	9%
21-30	1300	22%
31 -40	1418	24%
41 -50	1123	19%
51 -60	709	12%
61 -70	473	8%
71 -80	296	5%
>80 yrs	59	1%
Total	5910	100%

Table-1: Age group distribution.

Sex Distribution	No. of Patients	Percentage
Male	3220	54.48%
Female	2690	45.52%
Total	5910	100%

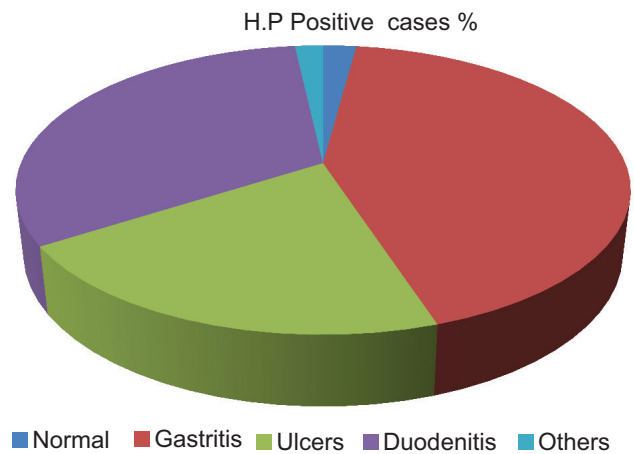
Table-2: Sex distribution

H. pylori test was done using RUT (Rapid Urease Test) DRY test. The test kit was stored at room temperature and should not be freeze. A small mucosal tissue was taken from gastric Antrum near pyloric orifice using Endoscopy biopsy forcep. The standard biopsy size is 2-3mm diameter. Test kit label was peeled back and tissue was introduced in the exposed yellow media and one drop of distilled sterile water was added. After covering sticker as before, the color change from yellow to pink or red was noted as positive for *H. pylori*. Reading was done within 2 to 10 minutes (intervals time 4 hours) by observing color change from yellow to pink or red. The other endoscopic findings were also noted, recorded and reported.

RESULTS

This study includes all patients referred to our Endoscopy centre of varying ages ranging from 8yrs to 92yrs of age with the maximum number in the age groups of 31-40 yrs of age as shown in the table I. We had 3 cases of below 11 years old- 8yrs, 9yrs, and 10 yrs each and two 2 cases of more than 90yrs old - 91yrs and 92 years each. This study comprised of 54.48% male and 45.52% females (table-2).

It is found from the table III and graph-1 that majority of patients with Duodenitis (78.67%) and Ulcers of upper GI tract (77.11%) were found to be positive for *H. pylori* thereby underlying its significance in their etiology. In cases of reflux



Graph-1: HP positivity in different Endoscopic findings

Endoscopy Findings	No Cases and its Percentage	No of HP Positive and %	% of HP positive
Gastro-Esophageal Reflux Esophagitis (Erosions/erythema)	1062 (17.96%)	12 (1.12%)	0.81%
Erosive or Erythematous Gastritis (Fundal/Antral/Body)	3485 (58.96%)	632 (18.13%)	42.84%
Erosive/Erythematous Duodenitis	605 (10.23%)	476 (78.67%)	32.27%
Ulcers/Growths/Polyps etc (Stomach/Duodenum) from where Biopsy taken	402 (6.80%)	310 (77.11%)	21.01%
Esophageal Varices of various grades	138 (2.33%)	14 (10.14%)	0.95%
Normal study	218 (3.69)	31 (14.22%)	2.10%
Total	5910	1475 (24.95%)	100%

Table-2: Endoscopy findings and H.P positive cases.

esophagitis alone, only 12 cases out of 1062 (1.21%) were found positive. Most of the cases were tested for *Helicobacter pylori* except in few cases of Esophageal Varices for fear of bleeding due to mucosal tear, out of 138 cases of Esophageal Varices, 14 cases (10.14%) were found to be *H. pylori* positive and in 218 normal study cases, 31 cases (14.22%) were found to be *H. pylori* positive.

DISCUSSION

Our study showed the overall prevalence of *H. pylori* is 24.95% in all the cases referred for Upper GI endoscopy for various reasons in our centre. At least half the world's population is infected by the bacterium, making it the most widespread infection in the world. Actual infection rates vary from nation to nation; the developing world has much higher infection rates than the west (Western Europe, North America, Australasia), where rates are estimated to be around 25%.¹⁶ This may correspond to our findings as all the cases are not tested due to certain reasons like Varices, portal hypertension and normal endoscopic findings.

It is found from the table III that majority of patients with Duodenitis (78.67%) and Ulcers of upper GI tract (77.11%) were found to be positive for *H. pylori* thereby underlying its significance in their etiology. This finding corresponds to the study by Arunabha et al¹⁷ where more than 80% of patients with gastric/duodenal lesions were infected with *Helicobacter pylori*.

The prevalence of HP infection is high, ranging from 20.6% to 73% in haemodialysis patients.¹⁸ Another study shows H.P was detected in 62.5% of the patients with gastroduodenal lesions and it is the single most factor for dyspepsia in uremic patients.¹⁹ The possible explanations for higher prevalence are presence of urease enzyme and impaired immune system function. Urease constitutes 10% of total protein and is highly substrate dependent.²⁰ Urease splits urea into ammonia and bicarbonate. Ammonia by promoting alkaline environment facilitates the survival and growth in acidic medium. HP makes use of ammonia for amino acid synthesis and ammonia by cytotoxic effect on gastric epithelial cell promotes virulence of bacteria. There are alternative routes via amidase for ammonia production.²¹ Bicarbonate antagonizes the bactericidal effect of peroxynitrite, a nitric oxide metabolite.²² The other explanations are impaired gastric blood supply, sluggish gastric motility, hypo and hyperchlorhydria²³ and immune dysfunction.²⁴

There are studies showing lower prevalence of HP in Chronic Kidney Disease patients^{25,26}, main reason being implicated are the bactericidal effect of commonly used antibiotics and their higher concentration in renal failure. This has a negative impact in the survival of *Helicobacter pylori*.²⁷ In another study²⁸, endoscopic findings were abnormal in 63% patients with chronic kidney disease showing Antral gastritis in 42% and Duodenitis in 24% which is in concordance with our findings.

CONCLUSION

The prevalence of *H. pylori* infection in our centre is about one fourth of the total Endoscopy cases. We concluded that investigating *Helicobacter pylori* should be considered

for all patients undergoing Endoscopy especially those who have gastric or duodenal lesions and other chronic medical problems as its association with these conditions are higher. UGI Endoscopy may be advised to all patients with complaints of persistent pain in upper abdomen because of its precision and relatively safe technique and it also provides diagnosing the pathology, *H. pylori* infection and its possible therapeutic interventions.

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