

TO STUDY ANTRAL GASTRIC MUCOSA HISTOLOGY IN HELICOBACTER-RELATED GASTRITIS

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Abstract

Background and Objectives: It is a bacterial infection that infects the stomach antrum of half of the world's population. Infection with *Helicobacter pylori* (*H. pylori*) has been linked to acute and chronic gastritis, non-ulcer dyspepsia, peptic ulcers, gastric adenocarcinoma, and gastric MALT related lymphomas.

Material and Methods: This research was suggested and carried out at the Surabhi Institute of Medical Sciences, Siddipet, Siddipet-Husnabad, Mundrai, Telangana. Between Study period March 2023 to June 2023, patients presented to the outpatient department of the Department of Medical Gastroenterology at Surabhi Institute of Medical Sciences, Siddipet, Siddipet-Husnabad, Mundrai, Telangana. A total of 50 cases with symptoms of acid peptic illness and GERD were studied.

Results: The current study included 50 patients who presented with symptoms of acid peptic disease to a medical gastroenterology outpatient clinic and a private gastroenterology clinic. The endoscopic investigation was limited to 50 instances, and biopsies were obtained from them as needed for the study.

Conclusion: We conclude that a thorough clinical examination and history, followed by endoscopic evaluation and procedures to detect the presence of the *H. pylori* bacterium, is required in the evaluation of cases with acid peptic illness symptoms. The use of a mixture of unique stains boosts the sensitivity of the organism's detection.

Keywords: Histomorphological, gastric antral mucosa, helicobacter, gastritis

INTRODUCTION

Numerous reports of spiral organism isolation from human stomachs and the potential function of these organisms in human gastric sickness date back to the 20th century. It was the result of J. Robin Warren and Barry J. Marshall's labor over a long period of time in Perth, Australia. The discovery of *H. pylori* ushered in a plethora of new information on the pathology of the gastroduodenum and its consequences for the treatment of peptic ulcer disease [1, 2].

Half of all people have this bacterial infection living in the antrum of their stomachs. Gastric adenocarcinoma and gastric MALT-associated lymphomas, as well as acute and chronic

gastritis, non-ulcer dyspepsia, peptic ulcers, and *H. pylori* infection, have all been linked to *H. pylori* infection. *H. pylori* colonization of the stomach is associated with persistent active gastritis. Healing of gastric inflammatory lesion and reversal of precursor lesions that lead to cancer, like gastric atrophy and intestinal metaplasia, can be achieved with early detection and eradication of *H. pylori* infection [3].

Geographical, morphological, and etiological details are prioritized in the Sydney approach for gastritis categorization. In 1994, the Houston Gastritis Workshop updated this classification system. According to the revised Sydney approach, the density, inflammation, activity, atrophy, and intestinal metaplasia of *H. pylori* were scored. Treatment for peptic ulcer disease is based on the results of an endoscopic biopsy, which can detect *H. pylori*. Since the primary goal of these studies is to ascertain the presence or absence of the organisms and gastritis, histopathology has become the gold standard for detection. Regular H&E sections can detect epithelial alterations in *H. pylori*-colonized stomach mucosa, serving as a signal of the existence of *H. pylori* [4, 5].

The detection of *H. pylori* is now standard practice in antral biopsies due to the widespread acceptance of effective targeted treatment for *H. pylori*-associated gastroduodenal diseases. The purpose of this research was to examine the range of histopathologic changes in *H. pylori*-colonized gastric mucosa as seen by light microscopy in patients who sought treatment at an outpatient medical gastroenterology clinic. The purpose of this investigation was to examine the range of histological changes in gastric mucosa as seen by light microscopy in patients with active chronic gastritis [6, 7]. Light green stain will be used to detect the *H. pylori* organism, and its staining properties will be compared to those of Warthin – Starry Silver stain. The goals of this study are to (1) analyze the histomorphological alterations in the esophagus in the same cases and (2) connect the bacterial load with these changes.

MATERIALS AND METHODS

This research was suggested and carried out at the Surabhi Institute of Medical Sciences, Siddipet, Siddipet-Husnabad, Mundrai, Telangana. Between Study period March 2023 to June 2023, patients presented to the outpatient department of the Department of Medical Gastroenterology at Surabhi Institute of Medical Sciences, Siddipet, Siddipet-Husnabad, Mundrai, Telangana. A total of 50 cases with symptoms of acid peptic illness and GERD were studied.

Inclusion criteria

- Patients with gastritis

Exclusion criteria

- Includes acute gastritis, hemorrhage, and gastric cancer patients
- Esophageal cancer

RESULTS

Table 1: Age and gender of 50 gastritis patients

Age	Patient	Male patient	Female patient
11-20	5	3	2
21-30	10	8	4
31-40	13	6	0
41-50	5	2	8
51-60	6	3	2
61-70	6	4	4

>70	5	3	0
Total	50	29	21

29 of the 50 stomach biopsies investigated involved male patients, while the remaining 31% involved female patients, for a male-to-female ratio of 2.22:1. The ages of the 50 patients studied varied widely (Table 1). The highest numbers of cases of stomach lesions, twenty and twenty-six, were seen in the third and fourth decades.

Table 2: Clinical signs of gastritis in a patient

Sr. No.	Clinical symptoms	Number of patient with symptoms
1.	Nausea	38
2.	Vomiting	47
3.	Abdominal pain	49
4.	Heart burn	42

Nausea, vomiting, abdominal discomfort, and heartburn were the most common complaints from patients diagnosed with chronic gastritis. Most patients in our study came with multiple symptoms, the most prevalent of which was heartburn, followed by abdominal pain and nausea.

Table 3: Status of Helicobacter pylori in different age groups

Age	Patient	H. pylori positive	H. pylori negative
11-20	2	1	4
21-30	10	2	10
31-40	13	3	6
41-50	9	1	4
51-60	5	2	2
61-70	6	1	6
>70	5	4	4
Total	50	14	36

Patients in their forties and fifties had the highest H. pylori prevalence. The greatest incidence of H. pylori infection occurs in the fourth decade of life. Our positivity for H. pylori infection peaked in patients in their 40s. After that, the risk of getting H. pylori decreases as you become older.

Table 4: The location of different esophageal lesions

Sr. No.	Distribution of esophageal lesion	Number of cases
1.	Chronic reflux esophagitis	18
2.	Chronic non specific esophagitis	9
3.	Vascular ectopia	8
4.	Barrets esophagus	7
5.	Normal histology	4
	Total cases	46

Evaluation of the root cause of acid peptic illness and GERD included an examination of the esophagus's outward appearance via endoscopy. Lesions were biopsied when medically indicated. Forty-six of the fifty cases had esophageal biopsies taken. No significant pathological alterations were found in the esophagus in 4 of the cases. Chronic Reflux Esophagi and Chronic Non-Specific Esophagi (9 cases) were the most prevalent esophageal lesions in our patient series. After vascular ectasia of the esophagus, Barrett's esophagus was the next most common esophageal pathology, occurring in 8 of our cases.

DISCUSSION

Fifty patients who sought treatment for acid peptic illness at a Medical Gastroenterology outpatient clinic and a private Gastroenterology clinic were included in this study. Biopsies were obtained from all 50 instances in the endoscopic investigation, which is the minimum number required.

In our study, 64% of participants tested positive for H pylori. This agrees closely with the findings of Vijaya VA et al., who found a positivity of 61.4% in her series; who conducted a study on the Pakistani population, found a positivity of 62%; and Manes et al., who conducted a case control study in Italy, also found a positivity of 62%. However, Misra et al., in his series of cases examined for the prevalence of H. pylori in stomach antral biopsies, found a higher positivity of 71% [8-10].

Patients ranging in age from 11 to 84 were included in the analysis. The fourth decade had the most cases, with 30, followed by the third with 20. Similar results were found by Abbas et al. (mean age = 45) and (mean age = 43) in their respective studies [10]. When H pylori positivity is plotted against age, we see that the prevalence of positive status for this bacteria rises steadily over time. There is a 50% rate of optimism among those aged 21 to 30, a rise to 69% among those aged 31 to 40, and a surge to 77.7% among those aged 41 to 60. The percentage of those who test positive decreases slightly around the age of 60. These results are consistent with those of Vijaya VA, who found the highest positive rate (67.2%) among those between the ages of 31 and 40, followed by the lowest (63.8%) among those between the ages of 50 and 59. She also noted a decline in the percentage of those who were positive after the age of 60. The decline in optimism that we've seen corresponds closely with the findings of this study. While we did not find a similarly high percentage in individuals aged 20-29, she did detect a 69.3% increase in her study. Only 50% of the time were we able to draw a positive conclusion [8, 11, 12].

Our series closely matches the observations in the literature on the gender distribution of patients, with men outnumbering women. There were 69 males and 31 females that were diagnosed. The male-to-female proportion, or M: F. Niv et al. discovered a ratio of 1.6:1 in their series, therefore these results are consistent with their findings. H pylori positivity was observed in 63.7% of males and 64.5% of women, with a mean positive of 64.5% across the entire study population. The findings of Vijaya VA et al., [8], which reported a positive of 63.1% in the men and 56.5% in the women, are in agreement with this finding [13, 14].

Using the Modified Sydney grading system, we counted the number of antral biopsies with detectable inflammation and assigned each one a grade. The severity of the inflammation ranged from mild (27 instances), moderate (47 cases), to severe (15 occurrences). H pylori positive was found to be 33.3% in cases of mild inflammation, 87.23 % in situations of moderate inflammation, and 93.3 % in cases of severe inflammation [15, 16]. This agrees well with a study by Vijaya VA et al. loc. cit, which reported a positive of 57% in cases of mild inflammation, 88.4% in cases of moderate inflammation, and 100% in cases of severe inflammation. This explains why there is such a strong correlation between inflammation and H pylori positive. When compared to the previously mentioned study, we saw a lower percentage of positive cases with severe inflammation. In our study, mild inflammation was associated with a higher rate of positive. Greater density of organisms was also detected with higher grade of inflammation, which is an important finding of the current study. In moderate inflammation, inflammatory cells stayed near the surface of the mucosa, in the lamina propria, the pits, and the neck of the pyloric glands, but in severe inflammation, they penetrated deep into the muscularis mucosae [8, 17].

According to the Sydney activity score, there were 65 cases with active disease. Positive results for H pylori were found in 84.6% of these patients. In comparison, Charanjeet et al. [18] found a success rate of 90.4%, and Vijaya VA et al. [8] found a success rate of 91.4% (see citations in footnote). H. pylori's correlation with metabolic activity was statistically significant. In our series of biopsies, we found 22 incidences of intestinal metaplasia. H. pylori positive in this sample was 72.7%. The positive status (78.2%) is in line with the findings of Vijaya VA et al. [8]. This is in contrast to what Charanjeet et al. [18] saw in his series of 50 cases, where they discovered a modest 25% H. pylori positive. We discovered that H. pylori-positive samples had a considerably higher incidence of intestinal metaplasia. However, the organisms were observed in the neighboring stomach mucosa but not in the metaplastic epithelium [19, 20].

As an alternative to the more expensive and time-consuming Warthin Starry silver stain, or as an additional staining method for the detection, we advise using Light Green Carbol Fuchsin stain [21]. Chronic Reflux Esophagi is was the most prevalent esophageal lesion in our patient series, followed by Chronic Non Specific Esophagi is and others. Expansion of the basal zone and the elongation of the vascular papillae have both been linked to cases of chronic reflux esophagitis. This finding is consistent with that of Collins BJ et al., who found that patients with chronic reflux esophagi had this change and used it as a marker for the reflux condition. We discovered that balloon degeneration of the epithelial cells was a feature in 10 of the cases where epithelial cell damage was a factor. The existence of these balloon cells has been hypothesized to represent epithelial damage. Reflux disease is further indicated by the presence of intraepithelial Eosinophils. Researchers Tummala V et al. However, intraepithelial eosinophils were only detected in 6 of our patients [20-22].

Barrett's esophagus, the next most common esophageal pathology, was seen in 14 of our cases. Metaplastic epithelium often consisted of columnar cells that resembled stomach mucosal cells. We observed nonspecific inflammation in 4 cases and ulceration in 2 cases of Barrett's esophagus, but the inflammation was not severe. This is consistent with what Petras RE et al. found, namely that the ulcers and inflammation seen in Barrett's esophagus are not diagnostic markers. Chronic nonspecific esophagitis and vascular ectasia of esophagus were the additional histological alterations found in the esophagus [21-24].

CONCLUSION

There is strong evidence that Helicobacter pylori infection is the primary factor in the development of chronic gastritis and associated gastroduodenal illnesses like peptic ulcers, adenocarcinoma, and lymphoma. The esophagus was examined histomorphologically in 76 patients, and we discovered that chronic reflux esophagitis was the most prevalent histological change. Other common diagnoses were chronic nonspecific esophagitis, Barrett's esophagus, and vascular ectasia. Very few people had completely healthy esophaguses. Patients diagnosed with Barrett's esophagus undergo extensive monitoring. In conclusion, the evaluation of a case with symptoms of acid peptic disease now requires a complete clinical examination and history, followed by endoscopic evaluation and procedures to detect presence of the H pylori organism. Combining different types of unique stains improves the sensitivity of the detecting process.

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Conflict of Interest

None

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