



ISSN (P): 2617-7226  
ISSN (E): 2617-7234  
www.patholjournal.com  
2019; 2(2): 208-211  
Received: 08-05-2019  
Accepted: 11-06-2019

**Rashmi Monteiro**  
Senior Resident, Pathology  
Department, Pacific Medical  
College & Hospital, Udaipur,  
Rajasthan, India

**Shikha Sharma**  
Senior Resident, Pathology  
Department, NC Medical  
College & Hospital, Panipat,  
Haryana, India

**Balaji Ramraj**  
Associate Professor,  
Department of Community  
Medicine, SRM Medical College  
Hospital & Research Centre,  
Chennai, Tamil Nadu, India

**Corresponding Author:**  
**Balaji Ramraj**  
Associate Professor,  
Department of Community  
Medicine, SRM Medical College  
Hospital & Research Centre,  
Chennai, Tamil Nadu, India

## Helicobacter pylori associated gastritis: A histopathological study of gastric mucosal biopsies

**Rashmi Monteiro, Shikha Sharma and Balaji Ramraj**

**DOI:** <https://doi.org/10.33545/pathol.2019.v2.i2d.106>

### Abstract

**Background:** Helicobacter pylori (H. pylori) is one of the major cause of gastrointestinal diseases. It is classified as class-I carcinogen & thus Its important to study the histological changes in H. pylori gastritis.

**Aim:** To evaluate associated histological features and prevalence of H. pylori associated gastritis by histopathological method.

**Methods and Material:** Biopsies from 75 patients with various upper gastrointestinal symptoms were studied. Study period was from August 2016 to August 2018. Each biopsy was stained with Haematoxylin & Eosin (H&E) & Warthin Starry silver stain. The slides were examined for H. pylori & various histological features.

**Results:** H. pylori infection was high in the fourth decade with male predominance. 47/75 (62.6%) cases were H. pylori positive. Among H. pylori positive cases neutrophilia activity, mononuclear infiltrate, atrophy & intestinal metaplasia was seen in 93.6%, 100%, 14.9% & 2.2% cases respectively.

**Conclusion:** Histopathological evaluation is the gold standard for diagnosing H. pylori infection. Furthermore, large scale studies are required to evaluate H. pylori associated gastritis to prevent morbidity & mortality.

**Keywords:** Helicobacter pylori, histopathological, gastric mucosal biopsies

### Introduction

Upper gastrointestinal tract diseases are one of the commonest diseases encountered in medical and surgical practices worldwide. There are multiple definitive and suspected etiological entities and risk factors associated with gastroduodenal lesions amongst which Helicobacter pylori (H. pylori) infection is the commonest. The prevalence of H. pylori in United States is 35.6% and in India is 63.5% [1]. Exact mode of transmission of H. pylori infection is not known, but oral-oral, faecal-oral and direct contact modes are suspected to be the modes of transmission of H. pylori [2]. Helicobacter pylori was grouped as class-I carcinogen in Humans by World Health Organization (WHO) and The International Agency for research on Cancer in 1994 [3]. Therefore, today it is a major concern to diagnose H. pylori. In Haematoxylin and Eosin stain H. pylori is difficult to be identified with ease & requires special histochemical stains for its demonstration.

H. pylori plays an important role in causing gastric pathology and therefore this study was conducted to identify H. pylori and to note the histological features of gastritis associated with H. pylori, so as to prevent the mortality and morbidity associated with it.

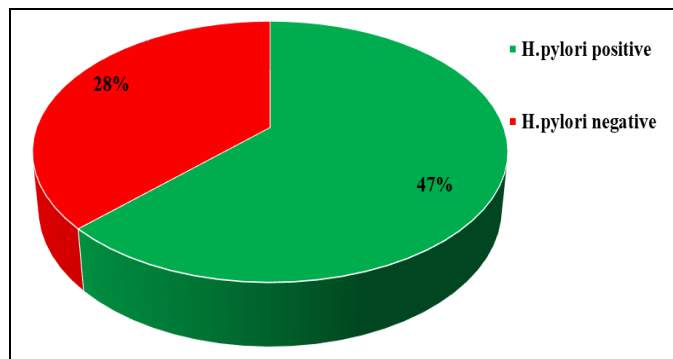
### Materials and Methods

This cross sectional study was conducted in the Department of Pathology in a 1200 bedded tertiary hospital, Chennai. This study was conducted with 75 samples. Upper endoscopic biopsies done for various upper gastrointestinal symptoms, received from August 2016 - August 2018 were included in the study. Biopsy materials were processed and sections of 5 micron thickness were cut. Sections of each case were stained with Hematoxylin & Eosin and Warthin Starry silver stain and were examined. The slides were examined by two pathologists. Microscopic features were studied on Hematoxylin & Eosin stained slides. Identification of H. pylori was done under oil immersion on Hematoxylin & Eosin and was confirmed by Warthin Starry silver stain.

**Results**

Presence and absence of *H. pylori* and morphological changes due to *H. pylori* gastritis were studied in 75 cases and the results were obtained.

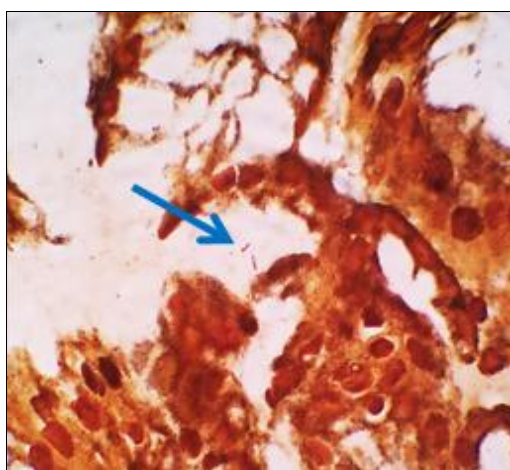
*H. pylori* was positive in 47/75 (62.6%) cases and 28/75 (37.4%) cases were negative for *H. pylori* by histopathological method.



**Fig 1:** Helicobacter pylori infection in 75 cases



**Fig 2:** Gastric mucosa showing mild *H. pylori* density, H&E x1000



**Fig 3:** Gastric mucosa with mild *H. pylori* density, Warthin Starry x1000

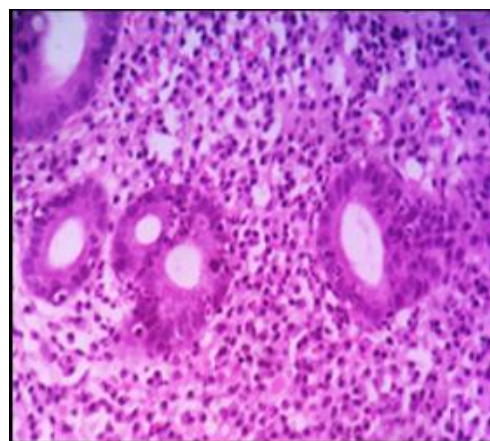
The most common age of incidence in the present study was 41 to 50 years with male predominance. The male to female ratio was 2.27:1.

Microscopic features associated with *H. pylori* gastritis were

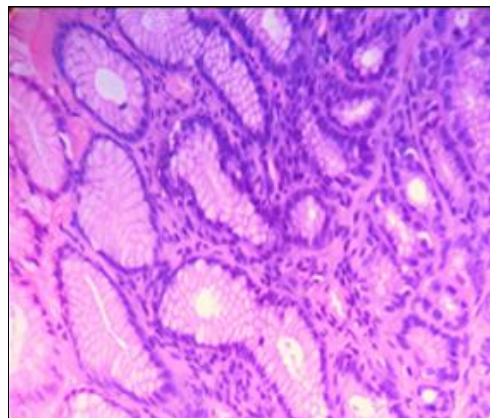
noted (Table 1). Out of 47 *H. pylori* positive cases 44 (93.6%) showed neutrophilic infiltration, 47 (100%) cases showed mononuclear infiltrate, 7 (14.9%) cases showed atrophy and 1 (2.2%) case showed intestinal metaplasia (Table 1).

**Table 1:** Association of various histological features with *H. pylori* positivity.

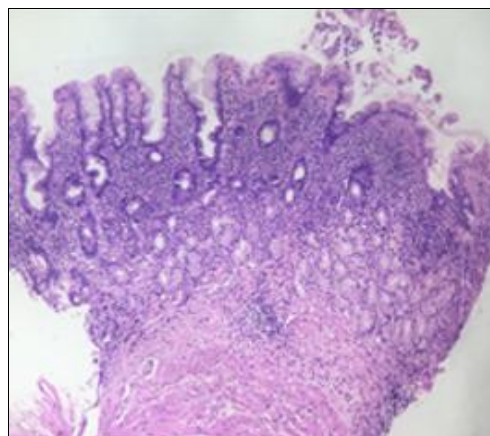
Histological feature	<i>H. pylori</i> positive cases with histological features
Neutrophilic infiltrate	44/47 (93.6%)
Mononuclear infiltrate	47/47 (100%)
Atrophy	07/47 (14.9%)
Intestinal metaplasia	01/47 (2.2%)



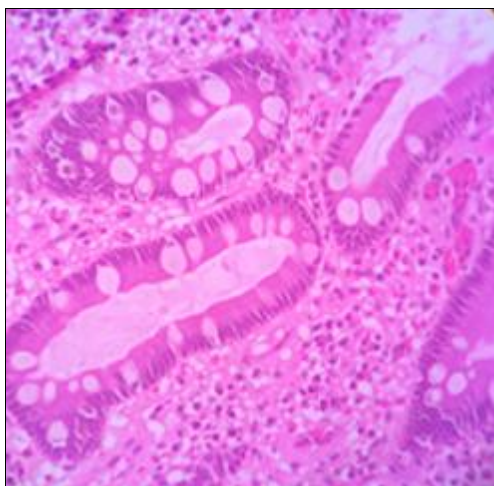
**Fig 4:** Neutrophilic infiltrate, H&E x400



**Fig 5:** Mononuclear infiltrate, H&E x400



**Fig 6:** Atrophy of glands, H&E x100



**Fig 7:** Intestinal metaplasia, H&E x400

### Discussion

In the present study *H.pylori* was detected in 47 (62.6%) cases of gastritis. This was similar to the prevalence stated by Maitra TN *et al.* [4] 66.9% and Yakub MY *et al.* [5] 62.5%. Akanda MR *et al.* [6] 45.6% and Dandin AS *et al.* [7] 48.0% reported a lower prevalence in their study.

In the current study, peak prevalence of *H. pylori* infection was in the age group between 41 to 50 years (4<sup>th</sup> decade), this was similar to the study done by Bozorgnia MA *et al.* [8] and Correa GS *et al.* [9]. Studies done by Mujawar P *et al.* [10] and Priyadarshini M *et al.* [11] showed peak incidence in lower decades.

We noted male predominance in *H.pylori* positive cases in the present study and this was in concordance with studies done by Mujawar *et al.* [10] and Palaniappan VM *et al.* [12]. Studies done by Basir HRG *et al.* [13] and Priyadarshini M *et al.* [11] showed female predominance of *H. pylori* infection.

In this study 93.6% cases positive for *H. pylori* infection showed neutrophilic activity. Similar findings were noted in study done by Palaniappan VM *et al.* [12], while studies done by Pity IS *et al.* [14] and Maharjan S *et al.* [15] showed a lower number of *H.pylori* positive cases associated with activity.

In the present study all 47/47 (100%) cases positive for *H.pylori* showed mononuclear infiltrate. This was similar to the results showed in Tanko MN *et al.* [16]. On the contrary, Pity IS *et al.* [14] and Maharjan S *et al.* [15] showed decreased number of *H. pylori* positive cases with mononuclear infiltrate.

We noted very few *H.pylori* positive cases associated with atrophy (14.9%). Similar results were noted in studies done by Tanko MN *et al.* [16] and Maharjan S *et al.* [15]. This may be explained due to decrease of mucus secretion in atrophic glands that provides an unsuitable environment for *H.pylori* colonization [16].

Among 47 *H. pylori* positive cases only 1 (2.2%) case showed intestinal metaplasia. Pity IS *et al.* [14] and Maharjan S *et al.* [15] showed increased number of cases infected with *H. pylori* showing intestinal metaplasia. This may be due to absence of *H. pylori* in alkaline media caused by intestinal metaplasia [14].

### Conclusion

We conclude that *H.pylori* infection is common in Chennai, India. Our study showed a high prevalence of 62.6% *H.pylori* associated gastritis in patients with upper

gastrointestinal symptoms undergoing endoscopic biopsy. Early and definitive diagnosis by detection of *H.pylori* on histopathology can help by initiating proper antibacterial therapy and therefore play a major role in patient recovery.

### References

- Hooi JK, Lai WY, Ng WK, Suen MM, Underwood FE, Tanyingoh D *et al.* Global prevalence of *Helicobacter pylori* infection: systematic review and metaanalysis. *Gastroenterology*. 2017; 153(2):420-9.
- Mnena EY, Ebele U, Emmanuel N. Risk Factors Associated with *Helicobacter Pylori* Infections in Makurdi Northcentral Nigeria. *J Infect Dis Ther*. 2017; 5(325):2332-0877.
- Kabamba ET, Tuan VP, Yamaoka Y. Genetic populations and virulence factors of *Helicobacter pylori*. *Infection, Genetics and Evolution*. 2018; 60:109-16.
- Maitra TN, Ghosh S. Gastritis and *Helicobacter (Camylobacter) Pylori*- Merely one more piece in the jigsaw puzzle or the final answer? *Indian J Pathol Microbiol*. 1991; 34(1):67-79.
- Yakoob MY, Hussainy AS. Chronic gastritis and *Helicobacter pylori*: A histopathological study of gastric mucosal biopsies. *Journal of the college of Physicians and Surgeons Pakistan*. 2010; 20(11):773-75.
- Akanda MR, Rahman AN. Comparative study of different methods for detection of *Helicobacter pylori* in gastric biopsies. *Dinajpur Med Col J*. 2011; 4(1):1-6.
- Dandin AS, Pawale J, Athanikar S. *Helicobacter pylori* associated gastritis. *J Clin Diagn Res*. 2012; 6(2):211-14.
- Bozorgnia MA, Kashfi SM, Ariana M, Ghalkhani F, Irvani S, Lashkari MH *et al.* Prevalence and correlation of chronic atrophic gastritis, intestinal metaplasia and other precancerous lesions of stomach in Iran: a historical cohort study. *Translational Gastrointestinal Cancer*. 2015; 4(6):413-22.
- Correa GS, Cardona AAF, Correa GT, Correa LLA, García GHI, Estrada MS. Prevalence of *Helicobacter pylori* and Histopathological Features in Gastric Biopsies from Patients with Dyspeptic Symptoms at a Referral Center in Medellin. *Revista Colombiana de Gastroenterologia*. 2016; 31(1):9-15.
- Mujawar P, Nikumbh DB, Suryawanshi KH, Pagare PS, Surana A. *Helicobacter pylori* associated gastritis in northern Maharashtra, India: a histopathological study of gastric mucosal biopsies. *Journal of clinical and diagnostic research: JCDR*. 2015; 9(6):EC04.
- Priyadarshini M, Sindu V. A comparative study between immunohistochemistry, hematoxylin & eosin and geimsa stain for *helicobacter pylori* detection in chronic gastritis. *International Journal of Pharma and Bio Sciences*. 2017; 8(1).
- Palaniappan VM, Venkatraman Janarthanam MD, Swaminathan KM. Histomorphological profile of Gastric antral mucosa in *Helicobacter* associated gastritis. *Int. J. Curr. Res. Med. Sci*. 2016; 2(4):22-8.
- Basir HRG, Ghobakhlou M, Akbari P, Dehghan A, Rabiei MAS. Correlation between the Intensity of *Helicobacter pylori* Colonization and Severity of Gastritis. *Gastroenterology Research and Practice*. 2017; 2017:1-5.

14. Pity IS, Baizeed AM. Identification of helicobacter pylori in gastric biopsies of Patients with chronic gastritis: histopathological and Immunohistochemical study. Duhok Med J. 2011; 5(1):69-77.
15. Maharjan S, Ranabhat S, Tiwari M, Bhandari A, Osti BP, Neopane P. Helicobacter Pylori Associated Chronic Gastritis and Application of Visual Analogue Scale for the Grading of the Histological Parameters in Nepal. Biomedical Journal of Scientific & Technical Research. 2017; 1(1).
16. Tanko MN, Manasseh AN, Echejoh GO, Mandong BM, Malu AO, Okeke EN *et al.* Relation between Helicobacter pylori, inflammatory (neutrophil) activity, chronic gastritis, gastric atrophy and intestinal metaplasia. Nigerian journal of clinical practice. 2008; 11(3):270-4.