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Original Research Article.

Prevalence of H. Pylori Infection in the Histopathological Spectrum of Gastric Lesions in Endoscopic Gastric Biopsies

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ABSTRACT

Background: Upper gastrointestinal disorders are commonly seen in routine clinical practice. Most common gastric problems include acute and chronic gastritis, peptic ulcer, benign and malignant tumours. The endoscopic examination of upper GI is not only important in diagnosing common upper GI disorders, but also in evaluating these disorders by studying histopathology of endoscopic gastric biopsies. Role of H. pylori has been established in various gastric lesions.

Materials and Methods: This is a prospective study done over a period of 4 years from January 2013 to December 2016 in Department of Pathology, Gian Sagar Medical College and Hospital, Banur. This study includes 80 patients who presented to Medicine out-patient department, with various gastric complaints and on whom endoscopic gastric biopsy was done. Tissue slides were stained with routine Hematoxylin & Eosin stain and Giemsa stain for H.Pylori. The spectrum of various gastric lesions were noted.

Results: In Our study, chronic gastritis was found to be the most common lesion (89%) followed by gastric ulcer (7.5%), gastric polyp and adenocarcinoma (3.75% each) and MALToma (1.25%). Prevalence of H. Pylori is 53.75% in all lesions. H.pylori positivity was seen in 92% biopsies of chronic gastritis with activity, 26.7% positivity in chronic gastritis without activity, 25% of acute gastritis, 60% patients of chronic gastritis with intestinal metaplasia and all 06 patients (100%) of gastric ulcer. Gastric polyp and gastric adenocarcinoma showed 33.3% positivity. However, no H. Pylori was seen in MALToma and in normal biopsies.

Conclusion: The present study revealed substantial prevalence of H. pylori positive patients in patients presenting to a tertiary care Hospital with a higher preponderance in males. Detection of H. Pylori in any population and its eradication in such patients may help in significant reduction in usage of acid suppression and morbidity resulting from H. Pylori related gastric lesions.

Keywords: Endoscopic Biopsy, Gastritis, H. Pylori.

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INTRODUCTION

Upper GI tract tract disorders are one of the most commonly encountered problems in clinical practice with a high degree of morbidity and mortality.[1] Endoscopic biopsy is a common and convenient procedure performed for accurate assessment of patients with gastric lesions.[2] A wide variety of gastric lesions ranging from gastritis to gastric ulcer and malignancies have been found to be strongly associated with H. pylori infection.[3] There are number of methods of detecting H. pylori, including the breath test, the urease test and culture, but the histological detection in a gastric biopsy is the commonest and among the most sensitive.[4] Hence we purport to study the histopathological findings in various endoscopic gastric biopsies and detect presence of H. pylori in them.

MATERIALS AND METHODS

This is a prospective study done over a period of 4 years from January 2013 to December 2016 in Department of Pathology, Gian Sagar Medical College and Hospital, Banur. This study includes 80 patients who presented to Medicine out-patient department, with various gastric complaints and on whom endoscopic gastric biopsy was performed. Majority of biopsies were taken from the gastric antrum. All biopsies were processed in the Department of Pathology. Blocks were prepared, cut and slides were stained with routine Hematoxylin & Eosin stain. A special stain (Giemsa stain) was performed to see H. Pylori. H&E slides and Giemsa stained slides were interpreted by at least 2 pathologists and findings were recorded. All the pertinent clinical

details were recorded on a performa including the name, age, sex, social history, medical history, history of previous medication etc.
The spectrum of various gastric lesions that were studied includes following entities and a careful search for H. Pylori was made on all biopsies. (Based on Sydney classification system)

1) Chronic non-specific gastritis with activity
2) Chronic non-specific gastritis without activity
3) Acute non-specific gastritis
4) Chronic gastritis with intestinal metaplasia and dysplasia
5) Gastric ulcer
6) Gastric polyp
7) Gastric adenocarcinoma
8) MALToma
9) No specific pathology

RESULTS

A total of 80 cases of endoscopic gastric mucosal biopsies were evaluated for histopathological diagnosis and presence of H. pylori. The age of the patients ranged from 18 years to 85 years. The highest incidence was seen in patients in the 4th and 6th decade of life (Table 1).
Males outnumbered the cases with 67.5% cases as compared to 32.5% of female patients, thus forming 2.1:1 of M:F ratio.(Table 2)
On histopathological examination of biopsies, various lesions were noted, the commonest being chronic gastritis without activity, seen in 37.5% patients, followed by chronic gastritis with activity in 31.25% patients. Acute gastritis was seen in 4 cases (5%) patients, chronic gastritis with intestinal metaplasia in 5 cases (6.25%) patients and gastric ulcer was seen in 6 cases (7.5%) patients. Three cases each of gastric polyp and gastric adenocarcinoma (3.75%) were noted and one case of MALToma was also diagnosed (1.25%). In three biopsies no morphological abnormalities was noted and were reported as no specific abnormality. (Table 3)
All the lesions were evaluated for presence of H. pylori infection by evaluating the Giemsa stained sections. H. Pylori was seen in 43 biopsies (53.75%) (Table 4).
Out of all biopsies that were positive for H. Pylori, 53.5 % were from male patients and 46.5% were from female patients.(Table 5)
Of the 25 biopsies diagnosed as chronic gastritis without activity, 23 patients' biopsies were positive for H. Pylori. However, chronic gastritis without activity showed only 26.7% positivity (08 patients out of 30). One out of 04 patients (25%) of acute gastritis, 03 out of 05 patients of chronic gastritis with intestinal metaplasia (60%), all 06 out of 6 patients (100%) of gastric ulcer were positive for H. Pylori. Gastric polyp and gastric adenocarcinoma showed 33.3% positivity (01 out of 03 patients). However, no H. Pylori was seen in MALToma and in normal biopsy specimen (Table 6).

Table 1: Age wise distribution of all patients (n= 80)

S.No.	Age (years)	No. of cases	Percentage(%)
1.	**11-20**	02	2.5
2.	**21-30**	07	8.75
3.	**31-40**	13	16.25
4.	**41-50**	22	27.5
5.	**51-60**	13	16.25
6.	**>60**	23	28.75

Table 2: Gender distribution of all patients (n=80)

Gender	No. of cases	Percentage(%)
Male	54	67.5
Female	26	32.5

Table 3: Spectrum of gastric lesions based on histopathological examination of gastric biopsies

S.No	Type of Lesion	No. of patients	Percentage(%)
1.	**Chronic nonspecific gastritis with activity**	25	31.25
2.	**Chronic nonspecific gastritis without activity**	30	37.50
3.	**Acute nonspecific gastritis**	04	05.0
4.	**Chronic gastritis with intestinal metaplasia and dysplasia**	05	6.25
5.	**Gastric ulcer**	06	7.50
6.	**Gastric Polyp**	03	3.75
7.	**Gastric adenocarcinoma**	03	3.75
8.	**Maltoma**	01	1.25
9.	**No Specific pathology**	03	3.75

Table 4: Percentage of H. pylori positive lesion (n=80)

H. Pylori status	No. of patients	Percentage(%)
Positive	43	53.75
Negative	37	46.25

Table 5: Gender wise distribution of H. Pylori positive cases (n=43)

Gender	No. of cases	Percentage(%)
Male	23	53.5
Female	20	46.5

Table 6: H. Pylori positivity in various gastric lesions

S.No	Histopathological diagnosis	No of patients	H.pylori positive biopsies	Percentage (%)
1.	**Chronic nonspecific gastritis with activity**	25	23	92
2.	**Chronic nonspecific gastritis without activity**	30	08	26.7
3.	**Acute nonspecific gastritis**	04	01	25
4.	**Chronic gastritis with intestinal metaplasia and dysplasia**	05	03	60
5.	**Gastric ulcer**	06	06	100
6.	**Gastric Polyp**	03	01	33.3
7.	**Gastric adenocarcinoma**	03	01	33.3
8.	**MALToma**	01	00	00
9.	**No Specific pathology**	03	00	00

DISCUSSION

In the present study conducted over a period of four years, a total of 80 patients were included who presented with upper Gastrointestinal tract symptoms and were evaluated by endoscopic gastric biopsies for histopathological changes and H. pylori positivity. Various types of lesions were noted. Maximum numbers of gastric lesions were seen in the 4th and 6th decade with a male preponderance as also noted by by Kadam et al, Godkhindi et al and Gulia et al.[5-7]

In our study, chronic gastritis was found to be the most common lesion (89%) followed by gastric ulcer (7.5%), gastric polyp and adenocarcinoma (3.75% each) and MALToma (1.25%). Normal gastric biopsy was seen in 3.75% patients, this may be due to improper sampling wherein site and depth may not be representative of the clinically suspicious lesion. The results are in comparison to other published studies in the literature.[8-11]

Infection with H. pylori is more common in developing countries where prevalence ranges from 70-90% in middle aged adults as compared to developed countries where it is 20-50%. Incidence of H. Pylori infection also increases with increasing age. In our study, prevalence of H. Pylori is 53.75% which is comparable to other studies with frequencies of 47%, 48%, 52% and 58% respectively.[3,9,12] Roshna et al have reported a comparatively higher prevalence of H. pylori infection as 68% positivity.[13] A higher prevalence may also be accounted by the fact that the study was conducted on symptomatic patients only. In our study, majority of H. Pylori positive biopsies were from patients in 4th and 6th decade of life. Similar results have been reported by Kumar et al.[10] Out of biopsies which were positive for H. pylori, 53.5% were males and 46.5% were females with an male to female ratio of 1.15:1. However, there is no apparent reason to explain this gender discrepancy that could arise out of greater exposure or increased susceptibility to infection than females. Sharma et al proposed a theory that frequent antimicrobial treatment for urogenital tract infections could lead to elimination of H. Pylori in females.[9]

H. pylori infection has been found to have strong association with the development of peptic ulcer, chronic active gastritis, chronic persistent gastritis, atrophic gastritis and gastric neoplasia including gastric adenocarcinoma and gastric mucosa associated lymphoid tissue lymphoma.[14]

In our study, H. pylori was seen in 34/60 (56.67%) cases of chronic gastritis, which is comparable to figures of 56.67% and 62.5% reported by two other studies.[9,15] In our study, there was high incidence of H. pylori with activity of gastric inflammation, showing 92% positivity (23 out of 25 patients were positive for H. pylori in biopsy). However, out of 30 patients who were diagnosed to have chronic gastritis without activity, only 08 showed presence of H pylori, which could be explained on the basis of response of neutrophils and H. pylori to antibiotic therapy as following antibiotic treatment, there is rapid reduction in neutrophilic infiltrate in the mucosa. However, disappearance of lymphoid cells takes a few months after therapy.

Two malignancies are associated with H. pylori infection - gastric carcinoma and lymphoma of the mucosa-associated lymphoid tissue. Cross-sectional studies reveal infection rates between 50% and 100% in people with adenocarcinoma.[16] MALTomas are associated with H. pylori in 90% of cases.[17] We noted 33.3 % positivity in cases of adenocarcinoma similar to results of Prabhu et al.[18] who observed H. pylori in 38% cases of gastric carcinoma and Sharma et al who noted 40% positivity.[9] However, no H. Pylori was seen in MALToma. The reason for low positivity or negativity could be sampling error or prior antibiotic therapy.

Variable results have been reported in different studies regarding H. Pylori positivity in gastric ulcers, ranging from 50% to 84% of gastric ulcer showing positivity for H. pylori.[1,14,16,19,20] In our study H. pylori was detected in all the six biopsies of gastric ulcer (100% positivity). A lower incidence reported by those studies may be accounted by intake of acid suppressant drugs and/or antibiotics which are known to suppress the organism.

Haematoxylin and Eosin (H&E) stain is routinely performed for the evaluation of upper G.I. biopsies. However, sensitivity of the H&E stain for H. Pylori detection is low, probably due to lack of contrast between the bacteria and the surrounding tissues. Giemsa stain is the best stain for the detection of H. pylori due to its low cost,

short hands on time required for staining and very high sensitivity (97%) and specificity (90%).[21]

Histology of endoscopically taken biopsy has a very high sensitivity and specificity of 96% and 98.8% respectively for diagnosing H. pylori.[22] There are certain limitations however which may be inadequate superficial biopsy samples, patchy distribution of bacteria, handling and processing artefacts.[23]

CONCLUSION

Endoscopy of patients with gastric symptoms allows visual inspection as well as biopsy from affected site of stomach. This when followed by histopathological examination along with search for H. Pylori helps in detecting various patterns in the spectrum of gastric lesions so as to make an early diagnosis of inflammatory lesions, intestinal metaplasia, dysplasia and invasive cancer. H. Pylori appear to be closely associated with acute and chronic gastritis and its eradication in these conditions is desirable. Routine assessment of individuals presenting with various complaints especially gastric should be done for H. Pylori status so as to reduce suffering of patients in terms of morbidity and high cost of symptomatic treatment. Histopathological examination and special stain for detecting H. Pylori (Giemsa stain) significantly improves diagnosis in such cases, thus proves to be an important diagnostic tool.

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