

ORIGINAL RESEARCH

Histomorphological changes in gastric biopsies of dyspeptic patients – A cross sectional study

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ABSTRACT

Background: Dyspeptic symptoms are the most common presenting complaints of patients attending Gastroenterology OPD. Histomorphological features seen in gastric biopsies include H.Pylori associated chronic and atrophic gastritis, gastric ulcer, gastric atrophy, intestinal metaplasia and gastric carcinoma. Early detection of these histomorphological features helps the physician to plan further treatment and prevent its complications. **Objective:** To study various histomorphological changes and their prevalence in gastric biopsy specimens taken from dyspeptic patients aged more than 18 years with visual endoscopic changes. **Materials and methods:** A cross sectional study conducted in Dr SMCSI medical college hospital, which included gastric biopsy specimens from dyspeptic patients, aged more than 18 years with visual endoscopic changes. H&E stained sections were examined for the associated histomorphological changes. **Results:** Majority of the cases (43.3%) showed chronic gastritis. 35.3% of the cases showed H.Pylori positivity. H.Pylori was seen in 47.9% of chronic gastritis, 66% of gastric carcinoma, 50% of gastric polyps, 16.7% of cases with intestinal metaplasia and 71.4% of cases with atrophy. **Conclusion:** Helicobacter pylori infection is associated with chronic gastritis, gastric ulcer, gastric atrophy, intestinal metaplasia, adenocarcinoma and gastric MALT lymphoma. Early detection of these histological features and eradication of Helicobacter pylori not only improve the symptoms but also help to prevent complications associated with H.pylori infection

Key words: Chronic gastritis, H.pylori, Intestinal metaplasia

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INTRODUCTION

Dyspeptic symptoms are the most common presenting complaints of patients attending Gastroenterology OPD. One of the commonest indication for gastric biopsy is to identify the presence of Helicobacter pylori.

H.pylori infection, is very common worldwide and is higher in developing countries than developed countries. The association of H.pylori infection has been established firmly with peptic ulcer, chronic active & persistent gastritis, atrophic gastritis, intestinal metaplasia, gastric adenocarcinoma and gastric MALT lymphoma. Early diagnosis and eradication of H.pylori can improve symptoms and help to prevent complications. H.pylori infection occurring in early life leads to a 4-8 fold increased risk of developing precancerous lesions. More than 80% of the MALT lymphomas are associated with chronic gastritis and

H.pylori infection and about 50% of gastric lymphomas will be eliminated with antibiotic treatment for H.pylori¹.

Chronic gastritis is characterized by infiltration with chronic inflammatory cells such as lymphocytes & plasma cells, variable degree of activity (polymorphonuclear infiltrate) and in other cases, glandular atrophy. A number of attempts have been made to classify chronic gastritis, but the discovery of Helicobacter pylori by Warren & Marshall in 1983 changed the understanding of what causes the majority of cases with chronic gastritis. This led to a new concept of classification, the Sydney system.^{2,3} Regular intake of drugs like NSAIDs or aspirin, smoking, alcohol consumption are other risk factors. Other rare causes of gastritis are infection with CMV, Herpes simplex, parasites or fungi.

Upper abdominal pain/discomfort, nausea, vomiting, bloating, post prandial fullness, belching, early satiety are the main presenting complaints of patients with chronic gastritis.

Intestinal metaplasia can be either complete or incomplete. Complete intestinal metaplasia or Type I is characterized by goblet cells scattered among mucin secreting columnar cells. Incomplete intestinal metaplasia include type II (sialomucin secreting cells& presence of Paneth cells) and type III (sulfomucin secreting cells &absence of Paneth cells). Epidemiological & histological studies have provided evidence of association between intestinal metaplasia and intestinal type of gastric carcinoma.^{4,5} Patients with incomplete intestinal metaplasia have higher risk of gastric cancer compared to complete intestinal metaplasia⁵.

Other histomorphological features seen in gastric biopsies include gastric ulcer, gastric atrophy and gastric carcinoma. Early detection of these histomorphological features helps the physician to plan further treatment and thus can prevent its complications.

MATERIALS AND METHODS

A cross sectional study conducted in our department, which included gastric biopsy specimens from dyspeptic patients, aged more than 18 years with visual endoscopic changes. A sample size of 150 was selected, information was collected from patients posted for endoscopic biopsy in Gastroenterology Department, using a questionnaire. The cases were taken prospectively. Biopsies were taken in Gastroenterology department and specimens were received in pathology department in 10% formalin. H&E stained sections were examined for the histomorphological changes.

RESULTS

Out of 150 cases 71 cases were chronic gastritis (43.3%), fourteen were gastric polyps (9.3%) (Refer figure 3), three were gastric ulcer (2%), three were adenocarcinoma (2%) (Refer figure 4) and fifty nine cases were normal (39.3%). Out of 150 cases 53 cases showed Helicobacter pylori positivity (35.3%)(Refer figure 1&2), (Refer Table 1).

Table 1: Distribution of biopsy findings in dyspeptic patients

Diagnosis	Frequency	Percentage
Chronic gastritis	71	47.3%
Gastric polyp	14	9.3%
Gastric ulcer	3	2%
Adenocarcinoma	3	2%
Normal	59	39.3%
Total	150	100%

Out of seventy one cases of chronic gastritis 34 showed H.pylori positivity (47.9%). In three cases of adenocarcinoma 2 cases showed H.pylori (66.6%) and in fourteen cases of gastric polyp 7 showed H.pylori positivity (50%).Out of seventy one cases of chronic gastritis 18 cases showed intestinal metaplasia (25.3%) and 7 cases showed gastric atrophy (9.9%). Three cases of intestinal metaplasia (16.7%) and five of gastric atrophy (71.4%) showed H.pylori positivity.

gastric ulcer, atrophic gastritis, gastric adenomas, intestinal metaplasia, gastric polyps, adenocarcinoma and gastric lymphomas.

In this study 150 patients with dyspepsia were evaluated for histopathological changes in gastric biopsies and their relation with H.pylori infection. Male to female ratio in this study was 1.31:1. Peak incidence of dyspepsia was between 60 to 69 years, with 33 cases (22%). Sirula M et al reported that gastritis tend to increase with increasing age⁶.(Refer Table 2)

DISCUSSION

Helicobacter pylori has been associated with various disease conditions that includes chronic gastritis,

Table 2: Age distribution of biopsy findings in dyspeptic patients

Age in years	Diagnosis					Total
	Adeno Carcinoma	Chronic gastritis	Gastric polyp	Gastric ulcer	Normal	
< 30	0	1	0	0	3	4
30 - 39	0	19	3	0	8	30
40 - 49	1	11	4	1	15	32
50 - 59	0	13	4	1	11	29
60 - 69	2	16	0	1	14	33
70+	0	11	3	0	8	22
Total (%)	3 (2%)	71 (47.3%)	14 (9.3%)	3 (2%)	59 (39.3%)	150 (100%)

In our study the incidence of H.pylori is maximum (22.6%) and males showed a higher prevalence of between 30 to 39 and 40 to 49 with 12 cases each H.pylori as compared to females.

Of the 71 cases of chronic gastritis 34 cases (47.7%) were positive for H.pylori. various studies showed H.pylori positivity in the same range like our study.

In 1984, Marshall and Warren showed in their study that among 20 cases of chronic gastritis 12 were positive for H.pylori (60.4%)⁷. Our study showed lesser positivity due to the fact that many biopsies may not have taken from correct site. In our study out of 59 cases of normal histology 10 cases showed H.pylori positivity.

Kalebi A et al, in their study on chronic gastritis showed H.pylori infection in antrum with neutrophilic infiltration in 91% cases.⁸ The inflammatory infiltrate in H.pylori associated gastritis is mononuclear cells and neutrophils. In severe cases intraepithelial

neutrophil may be seen in surface epithelium and in gastric pits as micro abscess.

In our study occurrence of H.pylori in active gastritis is slightly lower than in the above study. This is because in our cases biopsies were taken from body and fundus in addition to antrum. Also none of our cases with active gastritis showed micro abscess.

Out of 150 biopsies 18 cases (12%) were positive for intestinal metaplasia. This is in concordance with other studies.

Out of 3 cases of adenocarcinoma 2 cases (66.6%) showed H.pylori positivity. Studies have shown that 60 to 80 % of gastric cancer are related to long term H.pylori infection.(Refer Table3)

Table 3: H. Pylori and different gastric lesions

	Diagnosis					Total
	Adeno Carcinoma	Chronic gastritis	Gastric polyp	Gastric ulcer	Normal	
Total No of cases	3	71	14	3	59	150
H. Pylori Positive	2	34	7	0	10	53
% of positivity	66.7	47.9	50.0	0.0	16.9	35.3

Although histopathology is the gold standard for detection of H.pylori, it depends on the site, number of biopsies, size of the biopsy, the stains used, expertise in staining and visualizing the organism. Antrum is considered as the best site for detecting H.pylori. There is evidence that infection with H.pylori causes chronic gastritis, which invariably involve gastric antrum.⁹

In our study biopsies were taken mainly from antrum. Out of 53 cases of H.pylori positivity 35 cases (66%) were from antrum.

The modified Giemsa staining gives a distinctive shape and uniform staining of H.pylori making their identification easy. Modified Giemsa is described by Gray et al in 1986 and has been favored by many researchers because of its easiness to perform and availability in most laboratories¹⁰.

Modified Giemsa is cheap and easily applicable stain that can be performed with in 15 to 20 minutes. The results are reliable and very sensitive and specific. In our study demonstration of H.pylori was done using Giemsa stain.

CONCLUSION

The present study was done on one hundred and fifty patients with complaints of dyspepsia. Both Haematoxylin- Eosin and Giemsa stain were done on all biopsies and a histological diagnosis was made along with incidence of Helicobacter pylori positivity in all these patients.

Helicobacter pylori infection is associated with chronic gastritis, gastric ulcer, gastric atrophy, intestinal metaplasia and adenocarcinoma. Early detection of these histological features and eradication of Helicobacter pylori infection not only improve the

symptoms but also help to prevent complications associated with H.pylori infection.

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