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Original Article

Histopathological Changes in Stomach Wall at Sites Other than the Ulcer Site in Peptic Ulcer Disease and its Association with *Helicobacter pylori*

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Abstract

Introduction: A peptic ulcer (PU) is a break in the lining of the gastrointestinal tract, extending through to the muscular layer (muscularis mucosae) of the bowel wall. It is an endoscopic diagnosis. While they may technically appear anywhere in the gastrointestinal tract, they are most often located on the lesser curvature of the proximal stomach or the first part of the duodenum.

Aim: This study aims to study the changes in stomach wall at sites other than the ulcer site in PU disease and to correlate the association of stomach wall changes with *Helicobacter pylori* infection.

Materials and Methods: In this study, patients with duodenal ulcers diagnosed in endoscopy were included in the study. During an endoscopy, the stomach wall is examined and any changes in the stomach wall are noted. Endoscopically and biopsy from two areas in the stomach are taken from antrum and body and sent to histopathological examination. Rapid urease test to confirm the presence of *H. pylori* was done.

Results: Sixty patients were included, 67% of patients were male, 82% of patients were positive in rapid urease test, 84% antrum was affected, and 50% in the body of the stomach was affected. The overall incidence of chronic atrophic gastritis is nearly 84.1% when compared to other types of lesions.

Conclusion: Gastric antrum was the most common site for *H. pylori* than the body of the stomach. The presence of *H. pylori* in the stomach wall is associated with active on chronic gastritis.

Key words: Chronic duodenal ulcer, Endoscopic findings, *Helicobacter pylori*, Histopathological pattern

INTRODUCTION

Peptic ulcer (PU) disease (PUD) is a common ailment in patients suffering from symptoms of dyspepsia. PUs occur in the stomach (gastric) and the first portion of the small intestine (duodenal). Most PUs are associated with abdominal discomfort 45–60 min after meals or during the night described as gnawing, burning, cramp like, aching, or heartburn. Eating or antacids usually give great relief. In the elderly, the presentation may be subtle and atypical compared with younger patients, leading to a delay in diagnosis.[1-4] Duodenal ulcers nearly constitute one-third of all cases of PUD. It is characterized by a defined defect in the mucosa which extends into muscular propria as well. Duodenal ulcers occur most often in the first part of the duodenum or in the pre-pyloric region of the stomach (antrum). Gastric ulcers are most frequently seen on the lesser curve of the stomach at the junction of the body and antrum (angularis). Acute stress ulcers involve the body of the stomach and are often multifocal and transient. Histologically, the ulcer is a break in the mucosa with loss of epithelial cells, exposure of the basement membrane, and involvement of the muscularis mucosae.[5-7] Ulcers develop due to an imbalance between the normal protective attributes to the stomach and the potentially damaging secretions in the lumen of the stomach. This imbalance may be caused by a number of factors, the principal one being colonization by *Helicobacter pylori*. *H. pylori* infection and hyperchlorhydria can induce stomach and duodenum. It has

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to be documented whether *H. pylori* produces any change in the stomach wall other than the ulcer site. Infection by *H. pylori* can occur in the gastric mucosal surface as well as mucosa in the proximal duodenum. Recent studies plan to eradicate *H. pylori* in an attempt to heal PUD have given promising results and prove a clear correlation between *H. pylori* infection and PUDs.[8,9]

Aim

This study aims to study the changes in stomach wall at sites other than the ulcer site in PUD and to correlate the association of stomach wall changes with *H. pylori* infection.

MATERIALS AND METHODS

This prospective observational study was conducted in the Department of General Surgery at Government Stanley Medical College and Hospital at Chennai. The study involves the patients who present to the department of general surgery with symptoms of dyspepsia subjecting to endoscopy. Among these patients who are subjected to endoscopy, those who are having duodenal ulcers are taken into study. Exclusion criteria: Patients with carcinoma stomach, gastric polyps, and alcoholic gastritis were excluded from the study. After documentation of history, clinical examination involves general physical examination is done. During an endoscopy, the stomach wall is examined and any changes in the stomach wall are noted. Endoscopically and biopsy from two areas in the stomach are taken from antrum and body and sent to histopathological examination. During the histopathological examination, the specimen is subjected to rapid urease test to confirm the presence of *H. pylori*. The histopathological changes are noted and the lesions are recorded. Based on this study, we analyze the incidence of different types of lesions such as chronic atrophic gastritis and superficial pangastritis in these patients other than the site of PUD and their association with *H. pylori*.

RESULTS

Of the 60 patients under study 67% were male, 49 patients were found to be positive for *H. pylori* using rapid urease test positive in the antral biopsy [Figures 1 and 2]. Twenty patients were found to have been *H. pylori* positive in the specimen with a biopsy from the body of the stomach. The histopathological findings on these were usually atrophic gastritis, superficial pangastritis, and intestinal metaplasia. About 84% antrum was affected and 50% in the body of the stomach was affected [Figure 3]. In antrum, the most common histopathological change was chronic atrophic gastritis nearly 80% and the remaining showed that 18.5% of patients have superficial gastritis including the mucosa and submucosa. Nearly 1.5% of patients showed the features of intestinal metaplasia. Moreover, patients were mainly males nearly 80% and females were 20% affected due to *H. pylori*. The old individuals are mostly affected than the younger population. The prevalence rate of *H. pylori* infection in the colonization of the stomach wall in the antrum was nearly 92% and the body showed colonization in 46% of cases. The histological findings in that

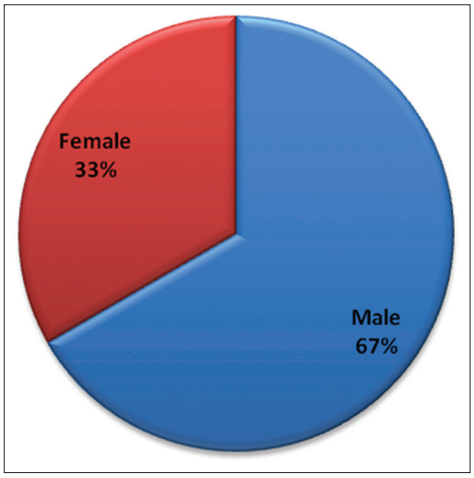

Figure 1: Distribution of gender

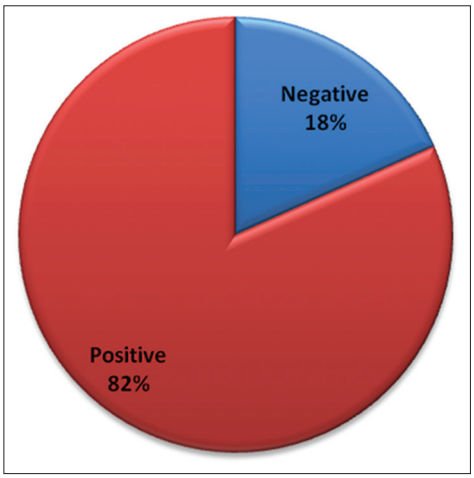

Figure 2: Distribution of rapid urease result

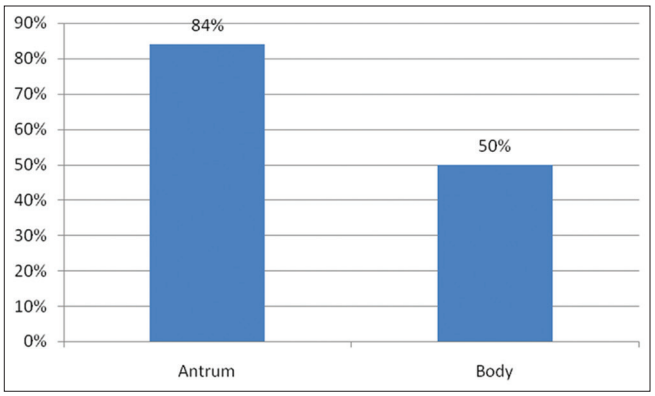

Figure 3: Distribution of the most common area to be affected

study were, chronic gastritis of antrum was 93% and fundus was affected in 66% of cases. The overall incidence percentage of chronic atrophic gastritis in that study was 82% and the percentage of cases in our study is 84%.

DISCUSSION

PUD is a source of significant morbidity and mortality worldwide. Sequelae may range from abdominal pain and gastrointestinal bleeding to gastric outlet obstruction and perforation. Higher PUD incidence has been found to be associated with male sex, smoking, and chronic medical conditions.[10,7] PUD has also been found to be associated with increasing age.[11] The majority of PUD cases are now known to be associated with *H. pylori* infection or the use of nonsteroidal anti-inflammatory drugs (NSAIDs) or both.[12] *H. pylori* is a Gram-negative bacterium that colonizes the gastric mucosa, progressing to gastritis and potentially PUD and gastric cancer.[8,13] *H. pylori* affect a large segment of the population; however, only a small subset will develop clinical disease.[13] NSAID use, including aspirin, is common and leads to an increased risk of gastrointestinal adverse events, including PUD. The relative risk of developing a symptomatic ulcer is 4.0 for non-aspirin NSAID users and 2.9 for patients taking aspirin.[14]

Collins *et al.* (Belfast, Northern Ireland-1988) studied the mucosal changes and their relationship to H. pylori infection in gastric antral and body biopsies in 20 patients with duodenal ulcer (DU; n=20). According to him, the prevalence rates for H. pylori were 94% for antral and 8% for body biopsies. In the antrum and body, the mononuclear cell count was significantly higher in lamina propria in H. pylori-positive cases showing active inflammation.[15]

CONCLUSION

The prevalence of *H. pylori* infection is more common in the antrum than the body of the stomach. The most common histopathological change in the stomach wall produced by *H. pylori* is chronic gastritis which is of atrophic type. Men are usually affected than women by *H. pylori* and the elder population has a higher incidence than the younger population.

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