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RESEARCH ARTICLE

PATHOGENESIS OF H. PYLORI INFECTION

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ABSTRACT

Background: The aim of this study is to find out association of H.Pylori and acid peptic disease in patients with symptoms of Dyspepsia. **Materials and Methods:** 100 patients presenting with the symptoms of dyspepsia who underwent upper GI Endoscopy in department of surgery and those referred pathology department for histopathology. **Results:** Majority of patients were male and age group between 20 to 39 years i.e 47%. On endoscopy majority of the findings were gastritis 35% patients, followed by duodenitis 22% pts, esophagitis 19% patients, gastric ulcer in 5% pts, duodenal ulcer in 4% pts and 2% pts had gastric cancer. 13% patients has normal on endoscopic findings. The highest positivity of RUT was seen in pts of Gastritis 91.42% and duodenitis 81.81%, followed by esophagitis 68.42%. The positivity of RUT in gastric ulcer and duodenal ulcer was 80 % and 75 % respectively. Pts with normal mucosa having 69.23% RUT positive. culture was positive in 17 pts. H. Pylori was isolated from 7% pts of gastritis, 4% pts in duodenitis, 1% from gastric ulcer, 2% from duodenal ulcer and 3% patients with normal scopy findings. **Conclusion:** H.Pylori is now widely recognized as the most common cause of primary or unexplained gastritis in patients present with the symptoms of Dyspepsia and RUT is accurate for the diagnosis of H. pylori infection.

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INTRODUCTION

Discovery of H.Pylori infection in patients with peptic ulcer disease has completely transformed the approach to the disease. Curved and spiral organisms have been observed in the stomachs of human and other mammals for more than a century. Investigations of gastric bacteria in man had been hampered by the false assumption that the bacteria were the same as those in animals and would therefore be acid-tolerant inhabitants of the fundus. Spiral organisms were first described in the dog by Rappin in 1881(Rappin, 1948). Later in 1906 Krienitz found spiral bacteria in gastric contents of patients with ulcerative carcinoma (Krienitz, 1906). In 1940, Freedburg and Barren studied 35 partial gastrectomy specimens and found Spirochaetes in 37% after a long search. They concluded that the bacteria colonized the tissue near benign or malignant ulcers as nonpathogenic opportunists (Freedburg, 1940). A careful ultrastructural study of gastritis in 1979 by Fung et al included an illustration of curved bacteria, which abutted directly on to the plasmalemma of mucosal lining cells, but were never seen within the cell and thus were thought to be clinically important (Fung, 1979). Since 1980 curved and spiral campylobacter like bacteria had been observed by Warren in endoscopic biopsies from patients with gastritis and peptic ulceration at the Royal Perth Hospital in Western Australia; the bacteria stained well by Warthin-Starry stain (Marshall, 1983).

Its firm implication in the aetiopathogenesis of peptic ulcer disease marked the major milestone in understanding the aetiology of peptic ulcer. The presence of H pylori can be detected by various invasive and non invasive tests. Rapid urease test, histology, cytology, culture and polymerase chain reaction are based on biopsy samples and need endoscopy. Non invasive tests include serology and urea breath tests. The aim of this study is to find out association of H.Pylori and acid peptic disease in patients with symptoms of Dyspepsia.

MATERIALS AND METHODS

In this study 100 patients presenting with the symptoms of dyspepsia who underwent upper GI Endoscopy in department of surgery and those referred pathology department for histopathology from 2015 to 2018 All patients underwent upper GI Endoscopy ,of stomach and duodenum . Three antral biopsies were taken from within 5 cms of the pylorus which were subjected to Rapid urease test, Smear examination and Culture.

RESULTS

100 pts attending Gastroenterology OPD of Hospital for symptoms of dyspepsia. In our study majority of patients were age group between 20 to 39 years i.e 47% patients, followed by age group between 40 to 59 i.e 29% patients and in age group between 60 to 79%, 16 patients.

Table 1. Age distribution of patients

| Age Group | No. of patients | Percentage |
|-----------|-----------------|------------|
| <19 | 6 | 6% |
| 20-39 | 47 | 47% |
| 40-59 | 29 | 29% |
| 60-79 | 16 | 16% |
| >80 | 2 | 2% |
| TOTAL | 100 | 100% |

Table 2. Sex distribution of patients

| SEX | No. of patients | Percentage |
|--------|-----------------|------------|
| Male | 61 | 61% |
| Female | 39 | 39% |
| TOTAL | 100 | 100 % |

Table 3. Distribution of patients according to endoscopic findings

| Endoscopic finding | No. of patients | Percentage |
|-----------------------|-----------------|------------|
| Gastritis | 35 | 35% |
| Duodenitis | 22 | 22% |
| Gastric ulcer | 5 | 5% |
| Duodenal ulcer | 4 | 4% |
| Esophagitis | 19 | 19% |
| Gastric cancer | 2 | 2% |
| Normal Scopy findings | 13 | 13% |
| TOTAL | 100 | 100 % |

Table No 4. Results of Rapid Urease Test

| Endoscopic finding | No. of patients | RUT Positive | Percentage |
|-----------------------|-----------------|--------------|------------|
| Gastritis | 35 | 32 | 91.42% |
| Duodenitis | 22 | 18 | 81.81% |
| Gastric ulcer | 5 | 4 | 80% |
| Duodenal ulcer | 4 | 3 | 75% |
| Esophagitis | 19 | 13 | 68.42% |
| Gastric cancer | 2 | 0 | 0% |
| Normal Scopy findings | 13 | 9 | 69.23% |
| Total | 100 | 79 | 79% |

Table 5. Results of microscopy findings

| Endoscopic finding | No. of patients | Smear Positive | Percentage |
|-----------------------|-----------------|----------------|------------|
| Gastritis | 35 | 22 | 62.85% |
| Duodenitis | 22 | 13 | 59.05% |
| Gastric ulcer | 5 | 2 | 40% |
| Duodenal ulcer | 4 | 3 | 75% |
| Esophagitis | 19 | 7 | 36.84% |
| Gastric cancer | 2 | 0 | 0% |
| Normal Scopy findings | 13 | 4 | 30.76% |
| TOTAL | 100 | 51 | 82% |

Table 6. Results of culture

| Endoscopic finding | No. of patients | Culture Positive | Percentage |
|-----------------------|-----------------|------------------|------------|
| Gastritis | 35 | 7 | 20% |
| Duodenitis | 22 | 4 | 18.18% |
| Gastric ulcer | 5 | 1 | 20% |
| Duodenal ulcer | 4 | 2 | 50% |
| Esophagitis | 19 | 0 | 0% |
| Gastric cancer | 2 | 0 | 0% |
| Normal Scopy findings | 13 | 3 | 23.07% |
| TOTAL | 100 | 17 | 17% |

In our study majority of the patients were male i.e 61% males followed by females 39% patients. In our study, on endoscopy majority of the findings were gastritis 35% patients, followed by duodenitis 22% pts, esophagitis 19% patients, gastric ulcer in 5% pts, duodenal ulcer in 4% pts and 2% pts had gastric cancer. 13% patients has normal on endoscopic findings. In our study 79 pts were positive for the Rapid Urease Test out of 100 pts. The highest positivity of RUT was seen in pts of Gastritis 91.42% and duodenitis 81.81%, followed by esophagitis 68.42%. The positivity of RUT in gastric ulcer and duodenal ulcer was 80 % and 75 % respectively. Pts with normal mucosa having 69.23% RUT positive. Out of 100 biopsies from symptomatic patients which were subjected to modified Gram's staining *H. Pylori* was demonstrated in 51% pts. Highest positivity was seen in pts with duodenal ulcer 75%, gastritis 62.85% and duodenitis 59.05 %. 4 was smear positive on normal scopy findings. Out of 100 biopsies, culture was positive in 17 pts. *H. Pylori* was isolated from 7% pts of gastritis, 4% pts in duodenitis, 1% from gastric ulcer, 2% from duodenal ulcer and 3% patients with normal scopy findings.

DISCUSSION

In our study majority of the patients is of age group between the 20 to 39 yrs, 47 pts followed by the 40 to 69 yrs, 29 patients. While the study conducted by the Rajeshwari P et al showed the most common age group is the 41- 50 yrs is 53.8%, followed by the age group of 31 to 40 yrs is 50% (Rajeswari, 2017). In this study most of the patients were male 61%, followed by the female 39% . This will correlates with the study conducted by the Adlekha et al. showed the majority of the patients was male 61.9% and female 38.1%. (Adlekha, 2013). In our study on endoscopy, most of the findings was gastritis (35%), duodenitis (22%) and esophagitis (19%). 13 pts had normal endoscopic findings. While the study conducted by the Nkrumah et al showed that on endoscopy, gastritis was found in 31% of the patients (8). Khalid mahmood et al, showed gastritis was the commonest pathology reported (13.85%0 in patients who presented with dyspepsia (Nkrumah, 2002) A study from Saudi Arabia reported antral gastritis to be the commonest gastroscopy finding.(Rabbani, 2005) A smaller study from rural population of Karachi reported gastritis in over 60% of the dyspeptic patients (Ahmad, 2004). In our study out of the 100 pts, 79 were positive for the rapid urease test. Positivity of RUT in acid peptic disease pts was 90% in the study by Nanivadekar et al. McNulty et al reported that RUT was positive in 75% of patients. In our study 51 pts were positive finding on the modified gram's staining. While the study conducted by the Pinkard et al used gram's stain and Warthin-starry stain showed positivity of 63% and 69% respectively. Ayyagari et al used modified Gram's stain and reported 47.3% positivity. In this study out of 100 pts, 13 were positive for the culture. While the study conducted by the Marshall and Warren found culture positivity 11.4% by using campylobacter selective medium. Booth et al reported culture positivity of *H.Pylori* 35%.

Conclusion

H.Pylori is now widely recognized as the most common cause of primary or unexplained gastritis in patients present with the symptoms of Dyspepsia. The incidence is decreasing now bec of the changing socioeconomic factors, increased PPI nad antibiotics use.

The endoscopic diagnosis alone of H.Pylori infection is not sufficient as it has a low sensitivity and specificity and depends on the experience of the endoscopist. The RUT is simple and inexpensive and can be introduced routinely at all endoscopic centres.

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