

Triple Drug Therapy with Proton Pump Inhibitor a Better Option for Helicobacter Pylori Eradication

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Abstract

Introduction: H. Pylori is a gram-negative micro organism residing in the stomach of human. It is a important cause of acid peptic disorders. Bismuth based triple therapy, triple therapy regimens (Triple PPI) and Quadruple therapy are the available treatment options to eradicate H. pylori. Controversy still presents regarding the superiority of treatment modality and results of available studies are variable. Hence this study was undertaken to evaluate and compare the efficacy of triple PPI, Quadruple therapy, and bismuth-based triple therapy in treating acid peptic disorders and Helicobacter pylori eradication. Method: This study was a prospective interventional. After the establishment of a clinical diagnosis of the acid peptic disorder, the patient was posted for endoscopy. H. pylori status was determined by the rapid urease test and culture examination. All patients divided into three groups and offered three different medical treatments the first group received bismuth bases triple therapy, the second group got Triple PPI therapy and the third one received quadruple therapy. efficacy and comparison of all these treatment modalities were evaluated and assessed by symptoms, endoscopic findings, and results of the rapid urease test after 6 weeks. Results: In the present study, 150 patients with upper gastrointestinal symptoms were studied It was found that the maximum number of subjects belonged to the age group 31-40 yrs. Male outnumbered than females. Maximum patients had pain in epigastric region and were having gastritis as a commonest diagnosis., Symptomatic relief by Triple therapy with PPI was maximum than other therapies. Rapid urease test (RUT) was also suggest that treatment with it gives superior eradication rates. Discussion: In our study, we have found that the treatment regime with PPI Triple therapy has given maximum symptomatic relief, there is an association of H. Pylori infection in an acid peptic disorder like duodenal ulcer (86.66%), gastric ulcer (75%), and gastritis (82.85%). the efficacy of the Rapid urease test is 66% and that of culture is 38.66% in the diagnosis of H. pylori infection in acid peptic disorder. Conclusion: PPI Triple therapy is most effective in symptomatic relief and healing of the duodenal and peptic ulcer.

Keywords: Gastritis, rapid urease test, dyspepsia, tetracycline.

Introduction

The acid peptic disorder is a disorder in which due to hyperacidity, there is the damage of inner lining (mucosa) of the stomach and duodenum causing various manifestations like inflammation, ulcer, etc. A major

symptom of the acid peptic disorder is a pain in the abdomen typically nonradiating, burning, and located at in epigastrium, Other include nausea, vomiting, dyspepsia, haematemesis, and melena, etc. Upper gastrointestinal tract disorders are common in surgical practice. A disease of the stomach and duodenum range from a benign disease like gastritis, peptic ulcer diseases which are usually having a self-limiting although a prolonged course with a potentially dangerous complication like perforation with its attendant's peritonitis both chemical and bacterial, to malignant diseases like carcinoma of the stomach. The upper gastrointestinal disease forms

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a major part of the total number of patients attending the outpatient clinic for gastrointestinal disorders. The treatment of peptic ulcers has been based on Schwartz dictum "No acid, no ulcer". Marshall and Warren in 1984 described microorganisms in the stomach of patients with gastritis and peptic ulceration first time in history. These investigators identified a spiral-shaped flagellated organism associated with peptic ulcer originally referred to as campylobacter pyloride. The organism is now known as Helicobacter Pylori¹.

H.Pylori is a gram-negative organism resides in the stomach of human and other animals, affecting half of the population of world².

H.Pylori is a common cause of peptic ulcer of stomach and duodenum leading to clinically present as recurrent abdominal pain. It is correlated with around 90% of duodenal ulcers and 80% of gastric ulcers, major cause of morbidity. Mortality associated however is low but can result in chronic illness leading to significant manpower loss it can also cause lymphoma and gastric carcinoma³.

Present understanding about the aetiology of peptic ulcer disease, gastric cancer, and dyspepsia is under evolution. The invention of Helicobacter pylori as an infective agent change our method to treat and diagnose it. Human beings are the only reservoir for Helicobacter Pylori. Direct transmission from person to person occurs via saliva and feces and infection also through contact with contaminated water⁴.

The Nobel prize in physiology or medicine for the year 2005 was awarded to both J.Robin Warren and Barry J Marshall. These Nobel winners made an astonishing and unbelievable invention that chronic inflammation in stomach and duodenum (Gastritis, gastric and duodenal ulcer), is due to an infection by bacterium H.Pylori. Many tried to disprove it⁵. As recent trend of decrease evidence of peptic ulcers was observed from last 40 years. The discovery of Helicobacter Pylori had a further major impact on the incidence of ulcer⁶.

Bismuth based triple therapy comprising of colloidal bismuth subcitrate (120mg, q.i.d), tetracycline (500 mg, q.i.d) and metronidazole (400 mg, t.i.d) for 14 days is low cost, safe and have high success rates in metronidazole sensitive strains. Few investigators reveal upto 90 percent success rate. If tetracycline was replaced by amoxicillin then success rate decreased to 70 percent to eradicate H.pylori. Triple therapy (Triple therapy with

PPI) is a combination of a proton pump inhibitor and two antibiotics have now almost replaced the use of the classical bismuth-based triple therapy in all over world. This is due to less side effect and better eradication rate. Quadruple therapy is a try to get 100% removal of H. pylori by the addition of anti-secretory agents to the classic bismuth-based triple therapy. It has been noted that this quadruple treatment is more effective when a PPI is used as an anti-secretory agent rather than an H₂ receptor antagonist. Huang et al reported a promising eradication rates of 95% when omeprazole was added to the classical triple therapy.⁷

Controversy still presents regarding the superiority of treatment modality and results of available studies are variable⁸. Hence this study was undertaken to evaluate and compare the efficacy of triple PPI, Quadruple therapy, and bismuth-based triple therapy in treating acid peptic disorders and Helicobacter pylori eradication.

Method

The present study was undertaken in the department of surgery, Jawaharlal Nehru Medical College, Wardha in collaboration with Datta Meghe Medical College Hingana, Nagpur, Datta Meghe Institute of medical science (DMIMS), Sawangi, Meghe, Wardha, Maharashtra India. This study was a prospective interventional. The duration of this study was from September 2018 to September 2019. The numbers of patients were 150.

Sample size- 150

The sample size was calculated as per formula was around 134 Hence 150 sample size was sufficient ($N=2(Z\alpha+Z1-\beta) 2 \sigma/\Delta 2$)

The present study was carried out on the patients attending surgical OPD as well as the surgical ward from September 2018 to September 2019 in a tertiary center. We selected 150 patients having gastrointestinal complaints. The complaints were a pain in the abdomen, usually, in the epigastric region, dyspepsia, nausea, vomiting, haematemesis, melena, etc Detail history of patients was taken with regards to the symptom, their duration, and severity, other complaints, drug history. A thorough clinical examination and routine haematological examination of patients was done. After the establishment of a clinical diagnosis of the acid peptic disorder, the patient was posted for endoscopy. H. pylori status was determined by the rapid urease test and histopathological examination.

Inclusion Criteria: Patients between 15-60 years were having symptoms of the acid peptic disorder.

Exclusion Criteria:

1. Patients taking antibiotics and bismuth compounds or omeprazole 4 wks before endoscopy
2. Pregnancy.

Detail of Procedure Followed: Patients with clinical symptoms of APD were advised to attend the Gastroscopy clinic. The patients were kept nil orally at night and were advised to attend endoscopy clinic early in the morning. Endoscopy was performed with Fujinon Gastroduodenoscope after obtaining informed consent. Esophagogastroduodenoscopy of each patient was done under surface local anesthesia with 4% Xylocaine viscous. Findings were noted and biopsies from the antrum and suspicious lesions were taken. Out of biopsies, one was subjected for a rapid urease test and the second biopsy specimen was used for histopathological examination. Endoscopic findings were recorded as gastritis, duodenal ulcer, gastric ulcer, gastric carcinoma, and endoscopically normal mucosa as per standard criteria.

All patients divided into three groups and offered three different medical treatments the first group received bismuth bases triple therapy, the second group got Tripple PPI therapy and the third one received quadruple therapy efficacy and comparison of all these treatment modalities were evaluated and assessed symptoms, endoscopic findings, and results of the rapid urease test after 6 weeks.

Data Collection: The data collected included the presenting complaints, clinical signs, endoscopic findings, results of rapid urease test, and histopathological examination.

Statistical Analysis: The presence of H pylori infection was correlated with symptoms, and endoscopy findings. This calculation was derived using SPSS 17.0 statistical software.

Ethical approval for the study was obtained from the ethics committee of DMIMS University.

Results

In the present study, 150 patients with upper gastrointestinal symptoms were studied. It was found that the maximum number of subjects belonged to the age group 31-40 yrs. i.e. 26.66% followed by age group 21-30 yrs. i.e. 22.66%. It was found that of subjects male 112 and female 38. M: F 2.94:1. It was found that maximum no. subjects had pain in epigastric region 120 cases i.e. 80% followed by symptoms nausea 75 cases i.e. 50%.

Table 1: endoscopic findings in patients with acid peptic disorder before treatment

Endoscopic findings	No. of Cases
Gastritis	70
Duodenitis	09
Duodenal ulcer	15
Gastric ulcer	08
Gastric malignancy	02
Endosc. Normal mucosa but clinically symptoms of APD	46
Total	150

70 patients were having gastritis, 15 had a duodenal ulcer, 9 patients had Duodenitis, the gastric ulcer was found in 08 patients, gastric malignancy in 02 patients and 46 patients had endoscopic normal mucosa. The highest positivity of RUT was seen in patients of duodenal ulcers (86.66%), followed by gastritis (82.85%) and gastric ulcer (75%).

Table 02: Treatment regimen given in acid peptic disorder

Regimen	No. of Patients	Symptomatic relief	%
Bismuth Triple Therapy	38	24	60.52
Ppi. Triple Therapy	82	78	95.12
Quadruple Therapy	30	22	73.33

Symptomatic relief with PPI Triple therapy was 95.12%, followed by Quadruple Therapy in 73.33% and Bismuth triple therapy 60.52%.

Table 03: Gastroscopic findings after six weeks of treatment:

Endoscopic finding	No. of cases improved	%	No. of cases not improved	%
Gastritis	63	90	07	10
Duodenitis	08	88.88	01	11.11
DU	14	93.33	01	6.66
GU	06	75	02	1.25
GM	01	50	01	50
Endo. normal but clinically APD	42	91.30	04	8.69
Total	134	89.34	16	10.66

Out of a total of 150 patients who received treatment 134 patients (89.34%) improved and 16 (10.66 %) patients not improved.

Table no. 04: The result of rapid urease test and culture before treatment

Test	Positive	%	Negative	%
Rapid urease test	99	66	51	34
Culture	58	38.66	92	61.33

RUT test was positive in 66% of patients and negative in 34% of patients. Culture was positive in 38.66% patients and negative in 61.33% patients.

Table No. 05: the result of rapid urease test and culture after treatment

Test	Positive	%	Negative	%
Rapid urease test	15	10	135	90
Culture	12	8	138	92

RUT test was positive in 10% of patients and negative in 90% of patients. Culture was positive in 8% patients and negative in 92% patients 6 patients from bismuth-based treatment group 5 patients from quadruple and 4 from the Triple PPI treatment group.

Discussion

In this study, 150 patients (112 men and 38 women), within the range of 15 to 72 years, with symptoms suggestive of acid peptic disorder, were included.

In our study, we found that acid peptic disorder was more common in the age group 31-40 years (26.66% cases). Followed by 21-30 years (22.66% cases) and 41-50 years (17.33% cases). In our study in patients

with acid peptic disorder rapid urease test was positive in 99 patients (66%).

Name of the study	Year	RUT %	Culture %
Sivaprakash et al ⁸	1994	38.7	43
Maimomma et al ⁵	1994	65.8	47
Sharma B et al ⁷	2006	59	-
In Our study	2008-09	66	38.66

In present study, the result with 3 different modalities of treatment was used as follows Bismuth triple therapy symptomatic relief in 34 patients (89.43%), PPI Triple therapy in 76 patients (92.68%) and Quadruple therapy in 28 patients (93.33%)

As per another study by Vikram kate (2005)⁷ Bismuth therapy was used symptomatic relief in 30 – 90% patients, PPI triple therapy in 85-95% patients, and Quadruple therapy in 86-98% patients.

In present study, we found gastroscopic findings were improved 134 patients (88.93%) and not improved 16 patients (10.66%) after six weeks of treatment.

The cure rate of 80-85 % was achieved using combination therapy. Richard Guan et al, showed eradication of H. Pylori in 90% cases after a week with a triple regimen.

The present study was carried out on the patients attending surgical OPD as well as admitted patients in the ward who had clinical symptoms suggestive of acid peptic disease from September 2018 to September 2019 in the tertiary care center. A total of 150 patients were studied and advised to attend the Gastroscopy clinic.

1. The symptoms of acid peptic disorder were more in 31-40 years followed by 21-30 years.

2. In our study, we have found there was male predominance with male to female ratio of 2.94:1.
3. In our study, we found that there was an association of symptoms of acid peptic disease with H. Pylori infection. Pain in the epigastric region (80%) and nausea (50%) were the most frequent symptoms associated with H. pylori infection followed by dyspepsia (30.66%).
4. In our study, we have found that there is a strong association between H. Pylori in duodenal ulcer (86.66%), gastric ulcer (75%), and gastritis (82.85%).
5. In our study, we have found that the rapid urease test for H. Pylori was positive in 66% of patients and culture was positive in 38.66%.
6. In our study, we have found that the treatment regime with PPI Triple therapy has given maximum symptomatic relief (95.12%). The other treatment regimens and the symptomatic relief provided by them are as follows:
 - a. Quadruple therapy 73.33%
 - b. Bismuth triple therapy 60.52%
4. PPI Triple therapy is most effective in symptomatic relief and healing of the duodenal and peptic ulcer.

Ethical Clearance: Taken from institutional ethics committee.

Source of Funding: Self.

Conflict of Interest: Nil.

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Conclusion

From the study we could draw the following conclusion:

1. In our study, we have found that the incidence of Helicobacter infection in acid peptic disorder is 66%.
2. In our study, we have found that there is an association of H. Pylori infection in an acid peptic disorder like duodenal ulcer (86.66%), gastric ulcer (75%), and gastritis (82.85%).
3. In our study, we have found that the efficacy of the Rapid urease test is 66% and that of culture is 38.66% in the diagnosis of H. pylori infection in acid peptic disorder.