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Research Article

Management of *Helicobacter pylori* Induced Acid Peptic Disorders: An Institutional Study

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Abstract: A single centre study was planned to asses incidence of *Helicobacter pylori* infection in a patients suffering from acid peptic disorders, in order to find out burden of disease. A section was published in Journal of Evolution of Med and Dent Sciences, 2014, Vol. 3/ Issue 32/ Page 8735-8740 (eISSN 2278-4802). Present study is continuation of our ongoing work in the field of *H. pylori* in this study we are emphasizing on clinical features, diagnosis, treatment and response of *H. pylori* infection in patients with acid peptic disorders was done in order to find out the natural history of the disease and better management plan. The objective of the study was to assess the clinical features, diagnosis, treatment and response of *H. pylori* infection in patients with acid peptic disorders. A total of 100 subjects, suspected clinically as cases of acid peptic disorder, were subjected to upper gastro intestinal endoscopy. Two biopsies were taken and sent for rapid urease test and histopathological examination, Patients were considered to be positive for *helicobacter pylori* infection, even if one out of two tests (either Histopathology or Rapid urease test) is positive. Patients diagnosed as positive were started on anti *H. pylori* regimen (Amoxicillin 750mg BD+ Tinidazole 500 mg BD + Omeprazole 40 mg BD) and patients with negative results are started on PPI and antacids. Reviewed after 1 week to 20 days after completion of regimen. They were reviewed for symptoms persisted/relieved. The data obtained was coded and entered in Microsoft Excel Spreadsheet. The categorical data was expressed as rates, ratios and percentages and comparison was done using chi-square test. Total of 100 subjects were studied, of which 66 were males and 34 were females. Rapid urease test was positive for *H. pylori* infection in 40 %(n=40) of the patients and histopathological report revealed 49% (n=49) of the patients with *H. pylori* infection. Based onboth the diagnostic modalities of which either one may be positive (rapid urease test or histopathological examination) the H. pyloric prevalence in acid peptic disorder patients was found to be 59%.

Keywords: *Helicobacter pylori*, Gastritis, Endoscopy, Urease Test.

INTRODUCTION

Helicobacter pylori, a curved rod shaped bacterium, has been consistently associated with patients suffering from peptic ulcer disease. Due to this high association, it is now believed that Helicobacter pylorus plays an important role in the etiopathogenesis of peptic ulcer disease [1].

Several studies have revealed the association of *Helicobacter pylori* in 70-74% of patients with dyspepsia. Endoscopic studies have shown *Helicobacter pylori* to be found in 80-100% of patients with duodenal ulcers and 60-75% of patients with gastric ulcers [2-4].

Although *H. pylori* is disappearing worldwide, owing to eradication and physiologic reasons, infection with it remains one of the most common bacterial infections in all areas of the world, infecting over 50% of the human race. It is a bacterial pathogen infecting the gastric antrum of half the population worldwide. It has been linked with many diseases, particularly several benign, premalignant, and malignant lesions of the digestive system including chronic gastritis, peptic ulcers, atrophic gastritis, intestinal metaplasia, gastric adenomas, gastric hyperplastic polyps, adenocarcinomas of the distal part of the stomach and lymphomas of mucosa- associated lymphoid tissue [5, 6].

Colonization of stomach by *H. pylori* and chronic active gastritis has a cause and effect relationship. Healing of gastric inflammatory lesions using eradication therapy may lack immediate clinical benefits; however, the eventual benefits are arrest and reversal of gastric histologic lesions, and long term consequences like reduction in gastric atrophy and intestinal metaplasia, which are precursors of gastric carcinoma [7, 8]. *H. pylori* infection was classified by World health organization (WHO) and the International agency for research on Cancer (IARC) in 1994 as a group 1 carcinogen in humans [20].

Methods of detection are divided into invasive and non invasive tests. Non invasive tests available are serology and carbon-labeled urea breath test. The invasive tests available are the rapid urease test, histology, and culture. Among the invasive tests, histology is important in assessment of *H. pylori* status. Endoscopic biopsy allows detection of *H. pylori*, which determines treatment for peptic ulcer disease [9].

Despite the high rate of morbidity and mortality caused by *H. pylori* infection, there is scarcity of literature on it, especially in India. Hence the present study was undertaken to estimate the incidence of *H. pylori* in patients with acid peptic disorders and to evaluate the response to *H. pylori* treatment so as to find effective management strategy for patients presenting of acid peptic disorders with *H. pylori* infection as etiology.

MATERIALS AND METHODS

One year prospective study was conducted between January 2013 to December 2013 at the Department of Surgery, Shimoga Institute of Medical Sciences, Shimoga.

Patients having the symptoms signs of peptic ulcer diseases were subjected endoscopy and suspected lesions were subjected for endoscopic guided biopsy. Prior to the commencement, the study was approved by the Ethical and Research Committee Shimoga Institute of Medical Sciences, Shimoga. All the patients fulfilling the selection criteria were explained about the natureof the study and a written informed consent were obtained.

Procedure

Patient were kept nil by mouth six hours before the procedure. An uppergastro intestinal endoscopy was done and findings were noted (Fig. 1). Two biopsy specimenswere obtained from the antrum. Biopsy was also taken from any suspicious lesions, if noted. One biopsy specimen from the antrum was used for histopathological examination (Fig. 2) and the remaining biopsy specimen sent for rapid urease test (Fig. 3). Based on the rapid urease test and histopathological examination the incidence of H. pylori infection was determined. Subjects were considered to be infected even if one of the two tests was positive.

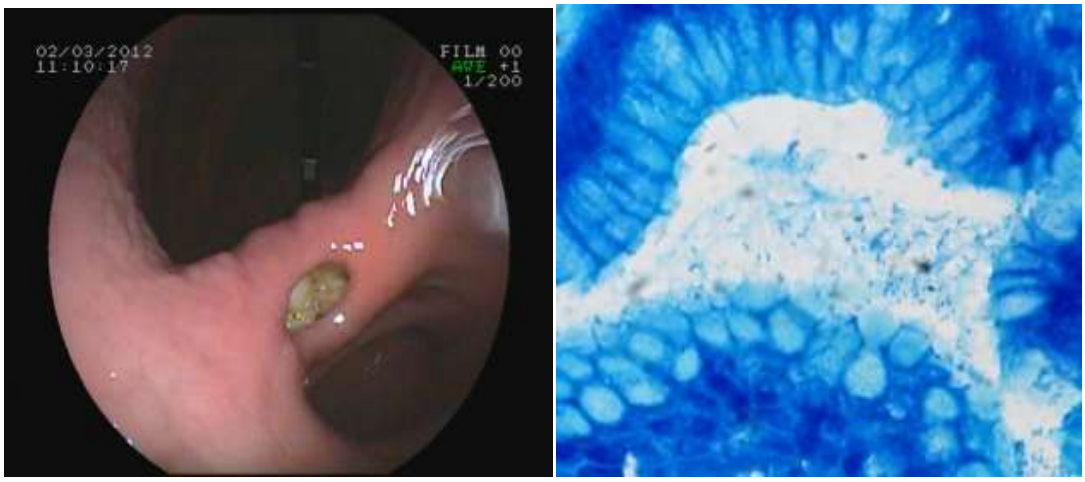

Fig. 1: Upper gastrointestinal endoscopys howing gastric ulcer & Microscopy showing *H. pylori* on giemsa staining.

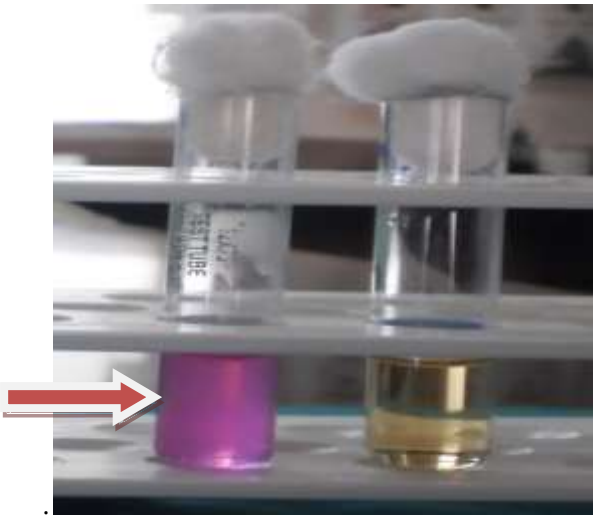

Fig. 2: Rapid urease test (pink color indicates positive result)

Statistical Analysis

The data obtained was coded and entered in Microsoft Excel Spreadsheet. Thecategorical data was expressed as rates, ratios and percentages and comparison wasdone using chi-square test.

RESULTS

Total of 100 (n=100) subjects were studied, of which 66 were males and 34 were females. In this study most of the patients presented with age between 31 to 45 years (38%) followed by 46 to 60 (25%), ≤ 30 (21%) and > 60 years (16%). The mean age of the study population was 45.21 ± 16.11 years. Fifty four percent of the patients reported urban area as the place of residence while 46% belonged to rural area.

Rapid urease test was positive for H. pylori infection in 40 %(n=40) of the patients and histopathological report revealed 49% (n=49) of the patients with *H. pylori* infection. In the this study, based on rapid urease test and histopathological diagnosis, the *H. pylori* induced acid peptic disorder was noted in 59% of the patients by taking either presence of even a single positive result as infection,

Table 1 shows that, thirty seven out of 66 males (56.06%) were positive for infection, whereas 22 out of 34 females (64.71%) were positive, (p=0.405).

Highest numbers of positive patients 23 out of 38, (60.53%) were found in the age group of 31to45 years, whereas least number of positive cases was found in the age group of ≥60 years (Table 2).

Thirty two patients (54.23%) out of 59 positive cases were from rural area whereas 27(45.76%) cases were from urban region, the difference of which was not found to be significant (Table 3).

Table 1: Prevalence of *H. pylori* in relation to sex

Sex	*H. pylori* infection				Total (n=100)	
	Positive (n=59)		Negative (n=41)			
	No	%	No	%	No	%
Male	37	56.06	29	43.29	66	66.00
Female	22	64.71	12	35.29	34	34.00
Total	59	59.00	41	41.00	100	100.00

p=0.405

Table 2: Prevalence of *H. pylori* in relation to age

Age group (Years)	*H. pylori* infection				Total (n=100)	
	Positive(n=59)		Negative (n=41)			
	No	%	No	%	No	%
30 or less	12	57.14	9	42.86	21	21.00
31 to 45	23	60.53	15	39.47	38	38.00
46 to 60	13	52.00	12	48.00	25	25.00
> 60	11	68.75	5	31.25	16	16.00
Total	59	59.00	41	41.00	100	100.00

p=0.753

Table 3: Prevalence of *H. pylori* in relation to place of residence

Place of residence	*H. pylori* infection				Total (n=100)	
	Present (n=59)		Absent (n=41)			
	No	%	No	%	No	%
Urban	27	58.70	19	41.30	46	100.00
Rural	32	59.26	22	40.74	54	100.00
Total	59	59.00	41	41.00	100	100.00

p=0.954

Majority of the patients (98%) presented with pain abdomen. The other complaints included nausea and vomiting (62%), loss of appetite (21%), melena (12%) and hematemesis (2%).

In our study total 11 smokers were there, out of which 8(72.72%) were positive for *H. pylori* infection. Out of 24 alcoholics 10(41.66%) were positive for *H. pylori.* infection. Twenty four patients gave history of tobacco chewing, of which 14(58.33%) were infected. Nine patients gave history of various drugs intake for other health issues, of which 7(77.77%) were positive for *H. pylori* as shown in Table 4.

Table 4: Habits and *H. pylori* infection

Habits	*H. pylori* infection				Total	
	Present		Absent			
	No.	%	No.	%	No.	%
Smoking	8	72.72	3	27.27	11	100
Alcohol intake	10	41.66	14	58.33	24	100
Tobacco chewing	14	58.33	19	41.66	24	100
Drug intake	7	77.77	2	22.22	9	100

In our study most of patient presented with pain abdomen, nausea and vomiting, melena and loss of weight. Single major symptom was pain of abdomen. Details of symptoms complex is depicted in Table 5.

Table 5: Symptoms complex

Complaint complex	*H. pylori* infection				Total	
	Positive		Negative			
	No.	%	No.	%	No.	%
Pain abdomen + nausea and vomiting	39	63.93	22	36.06	61	100
Pain abdomen + loss of wt/appetite	14	70.	6	30	20	100
Pain abdomen + melena	11	91.66	1	8.33	12	100
Nausea and vomiting + loss of wt/appetite	4	57.14	3	42.85	7	100

In this study epigastric pain was the commonest clinical sign observed which is present in 99% of the patients and pallor and voluntary guarding were seen in 32% and 9% of the patients respectively.

Table 6: Clinical signs

Signs	Distribution (n=100)	
	Number	Percentage
Epigastric tenderness	99	99.00
Pallor	32	32.00
Voluntary guarding	8	8.0

In the present study Antral Gastritis (AG) was the commonest findings noted on endoscopy in 51% of the patients. In this study antral gastritis along with duodenitis together seen in 16% of total cases, and 43.75% of *H. pylori* positive cases. Other combinations of endoscopic findings are as shown in table 7.

Table 7: Most common combination of endoscopic findings

Combination of endoscopic findings	Positive		Negative		Total	
	No.	%	No	%	No	%
Antral gastritis + Duodenitis	7	43.75	9	56.25	16	100.00
Antral gastritis + Duodenal ulcer	6	85.71	1	14.28	7	100.00
Antral gastritis + Gastric ulcer	2	100.00	0	0	2	100.00
Duodenitis + Gastritis	3	50.00	3	50.00	6	100.00

We observed rapid urease test was positive for H. pylori infection in 40% of the patients and histopathological report revealed 49% of the patients with H. pylori infection. Both rapid urease test and histopathology were positive in 30 and negative in 41 cases out of 100. Based on rapid urease test and histopathological diagnosis, the *H. pylori* infection was noted in 59% of the patients by taking either presence of even a single positive result as infection as shown in Table 8.

Table 8: Results of Rapid urease test and Histopathology

Names of tests	Positive	Negative
Rapid urease test	40	60
Histopathology	49	51
Rapid urease test and Histopathology	30	41

In our study, 59% of the patients were treated with anti *H. pylori* regimen while PPI with mucosal protective drugs were advised in 41% of the patients as shown in Table 9.

Table 9: Treatment given.

Treatment	Distribution (n=100)	
	Number	Percentage
Anti helicobacter pylori regimen (Amoxicillin 750mg BD+ Tinidazole 500 mg BD + Omeprazole 40 mg BD)	59	59.00
00 PPI with mucosal protective drugs (pantoprazole 40 mg OD + Syrup Mucaine gel 2 tsp BD)	41	41.00
Total	100	100.00

In this study 43(72.88%) out of 59 patients treated with Anti helicobacter pylori regimen (Amoxicillin 750mg BD+ Tinidazole 500 mg BD + Omeprazole 40 mg BD) got relived of symptoms, where as 35(85.36%) out of 41 H.pylori negative cases treated with PPI with mucosal protective drugs (Pantoprazole 40 mg OD + Syrup Mucaine gel 2 tsp BD) got relived of symptoms as depicted in Table 10.

Table 10: Association between treatment given and outcome

Treatment given	Outcome				Total	
	Symptoms relived		Symptoms persisted			
	No.	%	No.	%	No.	%
For Positive patients Anti helicobacter pylori regimen (Amoxicillin 750mg BD+ Tinidazole 500 mg BD + Omeprazole 40 mg BD)	43	72.88	16	27.11	59	59.00
For Negative patients PPI with mucosal protective drugs (pantoprazole 40 mg OD + Syrup Mucaine gel 2 tsp BD)	35	85.36	6	14.63	41	41.00

DISCUSSION

Since the evolution Helicobacter pylorus has been a parasite of human beings. Helicobacter or closely related bacteria colonize the gastro-intestinal tract in many animals, including primates [10].

The prevalence of *H. pylori* varies with age, socioeconomic status and geographic locations. In developing nations, infection occurs early in childhood and incidence is high in the first few years of life

ranging from 40-70%. The prevalence of disease in developing nations can be as high as 90% [11]. In India, almost 80% of population is infected by *H. pylori* and most of them by 10 years of age [12].

The present study was aimed to estimate the incidence of *H. pylori* in patients with acid peptic disorders and to evaluate the response to *H. pylori* treatment so as to find effective management strategy for patients presenting of acid peptic disorders with *H. pylori* infection as etiology.

In present study among 34 females 22(64.71%) were positive for *H. pylori* infection, whereas out of 66 males, 37(56.06%) were positive for infection. Difference was statistically not significant (p=0.405).

Out of 59 positive patients 37(62.71%) patients were males and 22(37.28%) were females. A study from Jammu by Rajesh Kumar *et al*. [13] also reported *H. pylori* positive patients in which 64.13% were males and 35.86% were females as shown in table no.12.

Table 11: Sex distribution and *H. pylori* positivity in various studies

Sl. No.	Name of the studies	Males	Females
1	Rajesh Kumar *et al*. [13]	64.13%	35.86%
2	Present study	62.71%	37.28%

In this study most of the patients presented with age between 31 to 45 years (38%) followed by 46 to 60 (25%) years. The mean age of the study population is 45.21 ± 16.11 years. Mean age of study population of B J Marshall *et al*. [14] study was 55 years, similar studies like Muhammad Zubair *et al*. [15] and Jeh-En Tzeng *et al*. [16] has mean age of 41.95 and 55 years respectively.

In the present study 54% of the patients reported urban area as the place of residence while 46% belonged to rural area. In this study, the incidence of *H. pylori* infection was comparable in patients from rural (59.26%) and urban area (58.7%) (p=0.954).

In the present study antral gastritis (AG) was the commonest findings noted on endoscopy in 51% of the patients. A study done by B J Marshall *et al*. [14] reported gastritis as the most common feature seen in 42% of patients. Another study conducted by Rajesh Kumar *et al*. [13] reported gastritis in 94.56% of cases positive for *H. pylori*.

Incidence of duodenal ulcer and gastric ulcer in this study are 12% and 8% and study done by B J Marshall *et al*. [14] reported duodenal and gastric ulcer of 13%and 22% respectively, similarly study done by Rajesh Kumar *et al*. [13] shows incidence of 4.3% and 1.8%. This variation can be attributed to presence different virulent strains, food habits, environmental factors etc.

In the present study the rapid urease test was positive for *H. pylori* infection in 40% of the patients and histopathological report revealed 49% of the patients with *H. pylori* infection. Based on rapid urease test and histopathological diagnosis, the incidence of *H. pylori* infection induced gastritis was found to be 59%. Incidence of *H. pylori* infection in different studies is as shown in Table 13.

Table13: Comparison of incidence of *H. pylori* in different studies

Sl. No.	Name of study	Results (in percentage)
1	Rajesh Kumar *et al*. [13]	34.71%.
2	Tokunaga Y *et al*. [17]	Modified rapid urease test 73%
		Giemsa staining 91%
3	E.N. Nwodo *et al*. [18]	80.4%.
4	Jeh-En Tzeng *et al*. [16]	59.5%
5	Vandana Berry *et al*. [19]	Rapid urease test 10.93%
		5 Microscopy 8.28%
6	Present study	Rapid urease test 40%
		Giemsa staining 49%
		Total 59%

Management of Helicobacter pylori infection is evolving and so is our understanding of the role of the bacterium in various clinical conditions. In this study 59% of the patients were treated with anti H. pylori regimen (Amoxicillin 750mg BD+ Tinidazole 500 mg BD + Omeprazole 40 mg BD) for 15 days, while PPI with mucosal protective drugs (pantoprazole 40 mg OD + Syrup Mucaine gel 2 tsp BD) treatment was advised in 42% of the patients. Of the 100 patients, 78% of the patients improved while in 22% of the patients symptoms persisted.

Out of 22 patients with symptoms persisted, 16 were positive for *H Pylori* who had taken anti *H Pylori*

regimen. Six patients with persisted symptoms were negative for *H Pylori* and were treated with Proton pump inhibitors (PPI) and mucosal protective drugs.

CONCLUSION

The present study showed higher incidence of H pylori infection in patients with acid peptic disorders (59%). The incidence of the H pylori is not associated with age, sex, place of residence and duration of the complaints as calculated. Fifty nine patients positive for H.pylori were treated with anti H pylori regimen while 41 patients were advised with PPI with mucosal protective drugs. The symptoms were subsided in majority of the patients (78%) while symptoms persisted in 22% of the patients.

The major cause for symptoms persistence in this study can be attributed to low socioeconomic status, rural area, bad hygiene, crowded populations and additive factors like smoking, alcohol, tobacco chewing. Other cause for symptoms persistence may be long duration of regimen, more number of pills per day, quality of drugs.

Overall the present study showed high incidence of H. pylori in patients with acid peptic disorders. The limitation of the study was, comparison of treatment outcome could not be done due to the smaller sample size. Further studies with large sample can give clear picture of prevalence of H pylori, different endoscopic and histopathological diagnosis and treatment outcome and may help in forming the better prevention, diagnosis and treatment plans.

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