Study of Prevalence of H Pylori Infection in Dyspeptic Patients

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Abstract

Background: Helicobacter pylori infection occurs worldwide, affecting more than half of the world population. The clear aetiology of dyspeptic symptoms is still unclear but helicobacter infection is main contributing factor for it we investigated Helicobacter pylori prevalence in dyspepsia.

Methods: 100 cases of dyspepsia attended Adichunchanagiri hospital and research center, studied over a period of 18 months (January 2020 to June 2021), were subjected to upper gastro-intestinal endoscopy, during which 4 biopsies, two each from the antrum and the pathological areas were taken. Two biopsy specimens, one of the antral area and the other of the pathological finding were immediately inoculated into freshly prepared urea broth containing phenol red as the indicator. Positive test for Helicobacter pylori was indicated by change in colour of the medium from yellow to pink or red. The other two biopsy specimens were sent for routine histopathology. The case was taken as Helicobacter pylori positive when the rapid urease test and/or histopathological examination were positive.

Results: Out of 100 dyspeptic patients who were included in the study, there were 65 male patients and 35 female patients. In which 71 patients were found to have been infected with Helicobacter pylori (71%).

Conclusion: In this study, we found that in Dyspepsia the Helicobacter pylori was consistently associated and its well proved with various studies done in past and present. Thus we conclude Helicobacter pylori infection definitely have role in the aetiopathogenesis of dyspepsia.

Keywords: Giemsa; Helicobacter Pylori; Peptic ulcer disease; Urease; Ulcerative dyspepsia.

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Introduction

Dyspepsia is defined as persistent/recurrent pain or discomfort localized to upper abdomen, may or may not be related to meals. It includes symptoms like pain, bloating, nausea and early satiety. Once the patient has been evaluated for dyspepsia, he or she will be categorized as having either organic dyspepsia (eg PUD, gastric Ca, NSAID gastropathy) or functional or non-ulcer dyspepsia.

Causes of dyspepsia includes GERD, diseases of stomach, gallbladder and pancreas.

Helicobacter pylori (H. pylori) is a gram negative microaerophilic bacterium that colonizes the gastric

mucosa of more than half of the world's population with high geographic variability.[1] H.pylori infection is generally acquired during childhood and persists life-long in the absence of treatment with antibiotics. Most of the infected individuals remain asymptomatic for a long period.

As a result, long term colonization of H. pylori can damage the gastric mucosa causing various diseases of the upper gastrointestinal tract such as chronic gastritis, peptic ulcer, and gastric malignancies, particularly gastric cancer and gastric mucosa-associated lymphoid tissue (MALT) lymphoma.[2-3] H.pylori has been recognized as a Class I carcinogen by the International Agency for Research on Cancer.[4] As one of the strongest known risk factors for gastric malignancies.[5-8] Approximately 89% of all gastric cancers are attributed to H.pylori infection and the eradication of this infection has known to reduce gastric cancer incidence.[9,10]

The probable routes of transmission of H.pylori are feco-oral, oro-oral, and intra-familial, thus rendering the risk factors for H. pylori infection closely associated with food and personal hygiene.[11]

Other known risk factors associated to H. pylori infection include age, socioeconomic status, number of siblings, household crowding, ethnicity, migration from high prevalence regions, infection status of family members, and sanitary facilities.[12-14]

This study aimed to identify the prevalence of H.pylori infection in patients with dyspepsia and the various upper GI endoscopy findings in patients with dyspepsia. The symptoms of dyspepsia affects physical, mental, social aspect and health related quality of life. Several studies have revealed the association of Helicobacter pylori in 70-75 percent of patients with dyspepsia. Endoscopic studies have shown that, Helicobacter pylori is found in 80-100 per cent of patients with duodenal ulcers and 60-75 per cent of patients with gastric ulcers.15-17.

Methods

Source of data

The study was conducted at the department of general surgery, Adichunchangiri hospital and research center, teaching hospital attached to Adichunchanagiri institute of medical sciences B.G.Nagara, Nagamangala taluk , Mandya district, on an out patient basis or seeking admission in Adichunchanagiri hospital and research center, from January 2020 to June 2021.

- Study period: 18 months (January 2020 to June 2021).
- Study design: hospital based observational study.
- Sample size: 100 cases.
- Sampling method: purposive sampling.

Inclusion Criteria

- Patients with dyspepsia aged >14years & <70years.
- Patients having dyspeptic symptoms for more than 3 months.
- Patients giving consent for the study.

Exclusion Criteria

- Patients with dyspepsia aged <14 years & >70 years.
- Patients with gall bladder or pancreatic diseases may present with dyspepsia. They are excluded from the study.
- Patients who are not willing and unfit for endoscopy.
- Patients who already have take H.pylori medication.
- Patients who are immunocompromised and are known coagulopathy disorders.

Statistical Analysis

Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean±SD (Min-Max) and results on categorical measurements are presented in Number (%). Significance is assessed at 5% level of significance.

Chi-square/Fisher Exact test has been used to find the significance of study parameters on categorical scale between two or more groups, Non-parametric setting for Qualitative data analysis. Fisher Exact test used when cell samples are very small. The Statistical software namely SPSS 22.0, and R environment ver.3.2.2 were used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc.

Ethical committee clearance

Ethical clearance was given by the ethical research committee of Adichunchanagiri institute of medical sciences, B.G. Nagara, Bellur.

Results

In this clinical study maximum number is seen in 30-40 and 41-50years age group (50 patients) and minimum in <30 years (13 patients) (Table I).

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Table 1: Age distribution of patients studied.

Age in Years	No. of Patients	%
<30	13	13.0
30-40	25	25.0
41-50	25	25.0
51-60	23	23.0
60-70	14	14.0
Total	100	100.0

Mean ± SD: 45.82+/-13.26

Out of 100 patients 35 are females, that is 35% and 65 are males that is 65% (Table II).

Table 2: Gender distribution of patients studied.

Gender	No. of Patients	%
Female	35	35.0
Male	65	65.0
Total	100	100.0

This chart shows distribution of symptoms among the cases studied, pain abdomen(epigastrium) is main symptom in 82 patients, followed by nausea in 75 and vomiting in 74, belching in 71 and lastly bloating in 58 patients (Table III).

Table 3: Clinical features in patients studied.

Clinical features	Gender		Total (n=100)
	Female (n=35)	Male (n=65)	
Pain Abdomen (Epigastrium)	30(85.7%)	52(80%)	82(82%)
Vomiting	25(71.4%)	49(75.4%)	74(74%)
Nausea	24(68.6%)	51(78.5%)	75(75%)
Bloating	14(40%)	44(67.7%)	58(58%)
Belching.	29(82.9%)	42(64.6%)	71(71%)

Out of 100 patients, 64 were smokers and 65 patients were alcoholic (Table IV).

Table 4: Tobacco & Alcohol abuse among the patients studied.

Variables	Gender		Total
	Female	Male	
Tobacco Abuse			
No	28(80%)	8(12.3%)	36(36%)
Yes	7(20%)	57(87%)	64(64%)
Alcohol Abuse			
• No	32(91.4%)	3(4.6%)	35(35%)
• Yes	3(8.6%)	62(95.4%)	65(65%)
Total	35(100%)	65(100%)	100(100%)

Out of 100 patients there was history of drugs (NSAIDS & corticosteroids) intake in 12 patients (Table V).

Table 5: Drug intake (NSAIDS & corticosteroids).

Drug Intake (Nsaids & Corticosteroids)	Gender		Total (n=155)
	Female (n=50)	Male (n=105)	
No	30(85.7%)	58(89.2%)	88(88%)
Yes	5(14.3%)	7(10.8%)	12(12%)
Total	35(100%)	65(100%)	100(100%)

P = 0.606, Not Significant, Chi-Square Test.

This chart shows distribution of dyspepsia among rural/urban population in which 76 patients (76%) are in rural and 26 patients (26%) are in urban locality (Table VI).

Table 6: Urban/Rural Distribution of Patient Studied.

Urban/Rural	Gender		Total
	Female	Male	
Rural	28(80%)	48(73.8%)	76(76%)
Urban	7(20%)	17(26.2%)	24(24%)
Total	35(100%)	65(100%)	100(100%)

P=0.492, Not Significant, Chi Square Test

In the study on endoscopy 23% had duodenal ulcer, 12% had Gastric ulcer, 40% had GS/DS, 3% had GERD, 21% had FD and 1% had Gastric Ca (Table VII).

Table 7: Endoscopic findings distribution.

	No		Yes	
	Number	%	Number	%
DU	77	77.0%	23	23.0%
GU	88	88.0%	12	12.0%
GS/DS	60	60.0%	40	40.0%
GERD	97	97.0%	3	3.0%
FD	79	79.0%	21	21.0%
Gastric CA	99	99.0%	1	1.0%

In the study among 33 patients who had tested for RUT, 23(69.69%) were positive for RUT and 10(30.30%) were negative for RUT (Table VIII).

Table 8: Rapid Urease Test.

		Count	% (of 100 Patients)
Rapid Urease Test (Total 33 tested)	Negative	10(30.30%)	10.0%
	ND	67	67.0%
	Positive	23(69.69%)	23.0%
	Total	100	100.0%

P=0.737, Not Significant, Chi-Square Test.

In the study of HPE for H Pylori, 71% were positive and 29% were negative (Table IX).

Table 9: Histopathologic diagnosis for H Pylori.

		Count	%
Histopathology	Negative	29	29.0%
	Positive	71	71.0%
	Total	100	100%

P=0.321, Not Significant, Chi-Square Test.

In the study among HPE positive subjects 76.9% were positive in RUT and among HPE negative subjects 57.1% were negative (Table X).

Table 10: Association between Histopathology and Rapid Urease Test.

		Histopathology			
		Negative		Positive	
		Count	%	Count	%
RUT	Positive	3	42.9%	20	76.9%
	Negative	4	57.1%	6	23.1%
	Total	7		26	

$X^2 = 3.03$, df = 1

Among 71 patients were H.pylori positive and received triple therapy, 68 patients came for follow up and got cured, 29 patients who received PPI, 25 patients came for follow up (Table XI and XII).

Table 11: Therapy of disease.

Patients	No. of Patients	%
Triple therapy	71	71%
PPI	29	29%
Total	100	100.0

Table 12: Response to therapy.

Patients	No. of Patients	Response	
		Yes	No
Triple therapy	71	68(95.7%)	3
PPI	29	25(86.2%)	4
Total	100	93(93%)	7

Discussion

After the discovery of Helicobacter pylori by Marshall and Warren in 1983, many studies were conducted to confirm the association of Helicobacter pylori with various acid-peptic diseases and carcinoma stomach. The following observations were made:

- The treatment of Helicobacter pylori led to the reversal of gastritis in patients with chronic non-specific gastritis.
- The eradication of Helicobacter pylori decreases the relapse of peptic ulcer to 1%-3% when compared to 80% relapses inpatients with persistent Helicobacter pylori infections after medical management.

In spite of the above findings, the cause-and-effect relationship between Helicobacter pylori and peptic ulcer disease is not proved and furthermore many people infected with Helicobacter pylori did not develop peptic ulceration. The association of Helicobacter pylori with non-ulcer dyspepsia is controversial. Therapeutic trials in non-ulcer dyspepsia patients with Helicobacter pylori infection produced conflicting results. Thus, at this stage in the history of dyspepsia and its association with Helicobacter pylori, the causation or association between the two is still unclear.

Thus we at the "Department of Surgery, Adichunchanagiri Medical College, B.G.Nagara" have made a sincere attempt to explore the possibility of proving this association between Helicobacter pylori and dyspepsia. We have also compared our studies with other studies done previously. A brief outline of the studies compared is given below.

The prevalence of helicobacter pylori in dyspeptic patients(investigated cases) in our hospital is around 71% and this is comparable with other studies. In our study 100 patients diagnosed as ulcer in upper GI endoscopy were all included ,in which 65 are males(65%) and females are35(35%).

Lower number of patients are seen in age group <30 that is 13 patients in which 3 are females and 10 are males. In our study of 100 patients, total 71 are positive for H.pylori (histopathology) in both males and females. In our study clinical symptoms out of 100 patients pain abdomen(82%) is main symptom in 82patients,followed by nausea(75%) in 75 and vomiting(74%) in 74,belching(71%) in 71 and lastly bloating(58%) in 58 patient so predominantly epigastric pain and vomiting are more common.

Out of 100 patients tobacco abuse in 64 patients (64%) and alcohol abuse in 65(65%) and drug (NSAIDS & corticosteroids) intake in 12(12%) are seen, so majority are tobacco and alcohol abuse.

Conclusion

This was a prospective study conducted to determine the role of Helicobacter pylori in dyspepsia. This

study design was based on clinical study and endoscopic findings and biopsy of gastric mucosa (and duodenal mucosa whenever necessary). In 100 patients with a history of dyspepsia, the upper Gastro Intestinal endoscopy performed and endoscopy confirmed the diagnosis.

Rapid urease test and Giemsa staining were conducted on endoscopy biopsy specimens and Helicobacter pylori positivity was based on either Rapid urease test and/or Histopathological examination.

From the present study it is evident that,

- Helicobacterpylori infection is more common in males than females.

- Increasing trend of prevalence of Helicobacter pylori with increasing age in dyspeptic patients.

- Prevalence of H.Pylori in patients with dyspeptic symptoms attending Adichunchanagiri hospital.(both outpatient and inpatient) is 71%.

- There was no specific symptoms attributable to H.pylori infection.

- In Peptic ulcer disease patients H.pylori is strongly associated with duodenal ulcer (82.6%) than gastric ulcer(75%)

- H.Pylori is one of important factor in developing peptic ulcer diseases.

- H.Pylori is more commonly associated with ulcer dyspepsia than non ulcer dyspepsia(functional dyspepsia).

- Patients from Rural and semi urban areas are more associated with H.pylori infection.

- Helicobacter pylori is consistently associated with dyspepsia, which is proved well with studies done in past so also in this study hence, Helicobacter pylori infection definitely have a strong role in the aetiopathogenesis of dyspeptic disease.

- Early diagnosis and eradication of helicobacter Pylori not only improves the symptoms of dyspepsia but also helps to cure the organic disease & its complications.

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