Symptom based Long term Follow up of Dyspepsia and Gastro-Esophageal Reflux Disease after initial Proton Pump Inhibitor Treatment and H pylori Eradication

Dr. Aditi Aniket Deshpande¹, Dr. Anurag Shrikant Lavekar²

¹Paediatric Surgeon, Lokmanya Tilak Municipal Medical College, Mumbai, Maharashtra
²Hepato-gastroenterologist, Ramkrishna Care Hospital, Raipur, Chhattisgarh.

ARTICLE INFO

Background/Aims: Dyspepsia and GERD are common conditions in Asia. Though Dyspepsia has shown sufficiently good response to PPI and H pylori eradication in majority of published articles, GERD has been ambiguous. This study comparatively assessed the long-term outcome of dyspepsia and GERD cases after standard treatment with PPI with/out anti H pylori drugs. Methods: Subjects were interviewed telephonically, to assess current symptom status, with GDS Score at 5-years after initial OGD-scopy and rapid urease test which indicated PPI treatment with/out anti H pylori medication. The symptomatic ones as per the score were subjected to repeat OGD-scopy and C14 UBT to determine endoscopic findings and current H pylori status. This data was analyzed to compare dyspepsia and GERD responses to PPI treatment and anti H pylori medication. Results: At follow-up, symptomatic dyspepsia patients had significantly higher mean score (11.33) than GERD (9.67). GERD showed significantly poorer response to initial PPI treatment than dyspepsia. In dyspepsia, H pylori infected patients were significantly more symptomatic as against GERD, in which H pylori infection couldn’t be correlated with persistent symptoms. Relapse and new infection rates of H pylori was same in both groups. Conclusions: Dyspepsia showed better response to PPI treatment than GERD. In dyspeptic patients, relapse of H pylori infection was a significant reason for persistent symptoms. Persistent GERD needs further investigation as H pylori infection was less likely to be responsible for persistent symptoms in GERD. Relapses and new infection with H pylori occurred with similar frequencies in both dyspepsia and GERD. This study carries clinical significance because it is the first comparative study in the literature comparing these two common conditions by telephonic assessment of symptoms

Corresponding Author: Dr. Aditi Aniket Deshpande, Paediatric Surgeon, Lokmanya Tilak Municipal Medical College, Mumbai, Maharashtra
INTRODUCTION:
Dyspepsia and Gastro Esophageal Reflux Disease (GERD) are common conditions affecting around 20.8% and 14% of the general population as per latest worldwide metanalyses data. These conditions cause significant impairment of quality of life. Surprisingly, a survey done in the city of Mumbai (India) in June 2011 has shown that prevalence of dyspepsia was 41% and that of GERD was 10.6% when studied in population of 2549 adults. This suggests that there is a vast difference in epidemiology of these conditions between Western and Indian populations.

Dyspepsia and GERD very often do not show any structural or biochemical changes associated with the symptoms and their severity; hence the response is to be primarily judged by the subjective symptom relief in most clinical settings. Common factors proposed to be responsible for dyspepsia and GERD are- Helicobacter pylori (H pylori) infection, dietary habits, stressful and sedentary lifestyle, obesity, alcohol intake, smoking and chronic use of drugs like NSAIDs and steroids.

In Western literature, many studies have shown positive correlation between H pylori and dyspepsia and rationale of eradication of H pylori whereas some of the studies haven’t been able to show any correlation. In case of GERD, majority of the western data has shown negative association between H pylori and GERD. eradication of H pylori predisposes to GERD, some have shown no association whereas a small number of studies have commented about equivocal association. This controversy ultimately justifies the Test and treat approach for H pylori infection as per American College of Gastroenterology guidelines for treatment of H pylori infection.

Very few studies are available in Indian population about treatment efficacy and recurrence or persistence of symptoms and its causes. No study in India has yet been done to compare the effect of treatment of H pylori infection between these two conditions. Also, long term symptomatic improvement after a standard treatment protocol has not been studied yet. This prompted us to do this study to see the response of these symptom complexes to commonly prescribed PPI treatment and the effect of H pylori infection on behavior of the diseases. Our study was designed to assess long term outcome of dyspepsia and GERD cases after standard treatment with Proton Pump Inhibitor drugs (PPI) and /or anti H pylori drugs (namely Metronidazole 400mg/ Amoxycillin 500mg/ Omeprazole 20mg)

Aims and Objectives:
- To assess the severity of symptoms of Dyspepsia and Gastro-Esophageal Reflux Disease (GERD) at 5 years following Oesophagogastroduodenoscopy (OGD-scopy) and to compare the response to PPIs.
- To assess and compare the association of both conditions with H-pylori.
- To correlate symptomatic persistence in both conditions with H pylori infection.
- To diagnose relapse rates in patients previously treated for H Pylori infection and new infection rates.
- To compare the outcome of PPI treatment in H pylori infected patients of each group to those without the infection.

Materials and Methods:
Patient selection and sample size
- This study was conducted in an urban community hospital in the city of Mumbai. Database of OGD scopies from year 2014 was used to prospectively collect data for scoring, investigations, endoscopy and analysis. 100 patients from this database were enrolled in this cohort study after exclusion from the cohort of 230 patients who underwent OGD-scopy for all indications.
- These patients were categorized under two groups of Dyspepsia and GERD depending on their predominant presenting complaint. The study had Institutional Ethical Committee clearance and adhered
to the principles of the declaration of Helsinki

Inclusion Criteria:

- We defined Dyspepsia and GERD for uniformity of inclusion of cases as follows:
- ‘Dyspepsia’ describes a symptom complex which can be caused by several underlying conditions such as peptic ulceration, gastritis or gastric malignancy or it can be without any underlying cause – which is known as non-ulcer / functional dyspepsia.[14,15]

Dyspepsia is defined as
- Onset at least 3 months previously
- Symptoms: post prandial fullness, early satiety, epigastric pain, epigastric burning. [13]

GERD is defined as symptoms of heart-burn and/or acid regurgitation with or without
- Erosive esophagitis
- Extraesophageal symptoms such as sore throat, chronic dry cough, change in voice, Foreign Body sensation in the throat.[13]

Exclusion criteria:
- Children
- Pregnant women
- Long term use of steroids or anti-inflammatory drugs (NSAIDs)
- Gastrointestinal Malignancy
- Overlapping symptoms (of dyspepsia with GERD)

Study design:
- Cross-sectional study type

Patients undergoing oesophago-gastro-duodenoscopy (OGD-scopy) for dyspepsia and GERD symptoms were included. OGD-scopy was done with Pentax EG2940 endoscope under local anesthesia with viscom lignocaine 4% gargles and lignocaine throat spray. Helicobacter pylori (H pylori) infection was diagnosed by Rapid Urease Test. Biopsy of pyloric mucosa was taken during endoscopy and put in the Rapid Urease test kit. The color change of the indicator from yellow to red after half an hour up to the end of first 24 hours after biopsy were considered positive tests i.e. positive test suggests presence of H pylori infection in the mucosa. The endoscopy was followed by short term proton pump inhibitor treatment (6 weeks) and anti-H Pylori treatment (metronidazole / amoxycillin/ omeprazole for 10 days) when indicated by the positive Rapid urease test. All these patients were contacted again after a period of 5 years. The interviews were conducted telephonically. Their symptom scores were assessed with the help of Glasgow Dyspepsia Severity Score (GDSS). It has been proven to be highly reproducible and has high validity and responsiveness.[14] Patients were asked to recall symptoms over period of 6 months preceding the interview. ‘9’ was taken as a cut off for persistent symptomatic status or relief for this study i.e.
≥ 9 = symptomatic
<9 = asymptomatic

Patients who were symptomatic with dyspepsia or GERD symptoms at the end of 5 years were considered ‘non responders. This group of ‘non responders’ included patients who had never responded to treatment with 40 mg of pantoprazole for 6 weeks and also those who had relapse of symptoms after initial relief. Symptomatic relief was the primary outcome measure and persistence or recurrence of H pylori infection was the secondary outcome measure. Symptomatic patients were asked to visit the clinic once again. They were subjected to OGD-scopy and noninvasive C14 urea breath test. All the case files were revisited for completion of demographic data. Fig 1 illustrates the study flow chart of the methodology.

C14 Urea Breath Test (UBT):
C14 capsule with measured activity was given to the patient. Activity of C14 in patient’s breath
was measured at the end of 10 minutes. Pt was asked to blow in the Hymine hydrochloride solution till the blue color changes to colorless. The activity was measured by liquid scintillation method. The details of the C14 UBT kit are mentioned in Fig 2.

**Figure 1: Methodology of the study**

**Figure 2: Equipment of C14 UBT**
Prerequisites for C14 UBT:

i. Fasting for at least 6 hours prior to test

ii. Patient needs to swallow the capsule with just enough water to ensure that capsule goes to stomach.

iii. No antibiotics, bismuth drugs for 1 month before test

iv. No coating agents or sucralfate or PPI for 2 weeks prior to test

Positivity of C14 test was documented as “relapse” in initially treated patients, where as it was recorded as “fresh infection” for patients who did not have *H Pylori* infection initially.

All the persistently symptomatic patients were treated with a course of PPI for 6 weeks after OGD-scopy with *H pylori* eradication treatment when indicated by C14 UBT positivity.

The results were compared statistically with χ2 test with 95 % confidence interval. All statistical analyses were two-tailed and significance was accepted at p-value<0.05. SPSS version 19 (IBM Corp) was used for the analyses.

RESULTS:

Result 1: Demographic results

230 patients had undergone OGD-scopy in 2014. After exclusion as per criteria, 100 patients were included for the analysis.

a. Age distribution:

Figure 3 shows the bar chart of age distribution of the participants.

Dyspepsia peaked in 6th decade while GERD was relatively steady with higher occurrence in 41 to 70 years of age.

b. Gender distribution:

Dyspepsia was equally prevalent in both genders (Males- 33, Females-30) while GERD was nearly twice as prevalent in males as compared to females (Males-24, Females- 24).

Result 2: Severity of symptoms and comparison of GDS scores

Table 1 shows mean scores of dyspepsia and GERD. At follow up, symptomatic dyspepsia patients had significantly higher mean score (11.33) than GERD (9.67).

Result 3: Response to PPI

Table 2 shows that GERD showed significantly poorer response to initial PPI treatment than dyspepsia.

Result 4: Association with *H pylori* infection

Table 3 shows that *H Pylori* infection was significantly more common in GERD patients in 2014.

Result 5: Correlation of symptoms at follow up with *H pylori* infection

Table 4 shows that in dyspepsia, *H pylori* infected patients were significantly more symptomatic.

Table 5 shows that in GERD, *H pylori* infection could not be correlated with persistent GERD symptoms.

Result 6: Relapse of *H pylori* infection

Table 6 shows that relapse of *H pylori* infection was same in both the groups, at the end of study period.

Result 7: New infection by *H pylori*

Table 7 shows new infection rates of *H pylori* in dyspepsia and GERD which were almost same.
Figure 3: Demographic Representation of the sample size

Table 1: Comparison of Mean scores of Dyspepsia and GERD

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean scores</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyspepsia</td>
<td>11.33</td>
<td>1.871</td>
</tr>
<tr>
<td>GERD</td>
<td>9.67</td>
<td>.866</td>
</tr>
</tbody>
</table>

(p=0.027)

Table 2: Non-responders to PPIs

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of patients in 2014</th>
<th>Asymptomatic in 2019 (Responders)</th>
<th>Symptomatic in 2019 (Nonresponders)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyspepsia</td>
<td>63</td>
<td>54 (85.8%)</td>
<td>9(14.2 %)</td>
</tr>
<tr>
<td>GERD</td>
<td>37</td>
<td>28(75.7%)</td>
<td>9(24.3%)</td>
</tr>
</tbody>
</table>

(p=0.009)

Table 3: Initial association with H pylori infection

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of patients in 2014</th>
<th>H pylori infection in 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyspepsia</td>
<td>63</td>
<td>21(33.3%)</td>
</tr>
<tr>
<td>GERD</td>
<td>37</td>
<td>14(37.8%)</td>
</tr>
</tbody>
</table>

(p=0.003)
Table 4: Correlation of persistent dyspeptic symptoms with *H pylori* infection

<table>
<thead>
<tr>
<th><em>H pylori</em> infection in Dyspeptic patients in 2014</th>
<th>Asymptomatic in 2019</th>
<th>Symptomatic in 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive (21)</td>
<td>17</td>
<td>4 (19.0%)</td>
</tr>
<tr>
<td>Negative (42)</td>
<td>37</td>
<td>5 (11.9%)</td>
</tr>
</tbody>
</table>

(p=0.008)

Table 5: Correlation of persistent GERD symptoms with *H pylori* infection

<table>
<thead>
<tr>
<th><em>H pylori</em> infection in GERD patients in 2014</th>
<th>Asymptomatic in 2019</th>
<th>Symptomatic in 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive (14)</td>
<td>11</td>
<td>3 (21.4%)</td>
</tr>
<tr>
<td>Negative (23)</td>
<td>17</td>
<td>6 (26.1%)</td>
</tr>
</tbody>
</table>

(p=0.139)

Table 6: Relapse rates of *H pylori* infection

<table>
<thead>
<tr>
<th>Groups</th>
<th><em>H pylori</em> infected patients in 2014</th>
<th><em>H pylori</em> infected patients in 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyspepsia (63)</td>
<td>21</td>
<td>3 (14.2%)</td>
</tr>
<tr>
<td>GERD (37)</td>
<td>14</td>
<td>2 (14.3%)</td>
</tr>
</tbody>
</table>

Table 7: New infection rates of *H pylori* infection

<table>
<thead>
<tr>
<th>Groups</th>
<th><em>H pylori</em> negative in 2014</th>
<th><em>H pylori</em> positive in 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyspepsia</td>
<td>42</td>
<td>2 (4.7%)</td>
</tr>
<tr>
<td>GERD</td>
<td>23</td>
<td>1 (4.3%)</td>
</tr>
</tbody>
</table>
Annexure A: Glasgow Dyspepsia Severity Score

The Glasgow Dyspepsia Severity Score

(A) Frequency of dyspeptic symptoms
Over the past six months how frequently have you experienced dyspeptic symptoms?

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>0</td>
</tr>
<tr>
<td>On only 1 or 2 days</td>
<td>1</td>
</tr>
<tr>
<td>On approximately 1 day per month</td>
<td>2</td>
</tr>
<tr>
<td>On approximately 1 day per week</td>
<td>3</td>
</tr>
<tr>
<td>On approximately 50% of days</td>
<td>4</td>
</tr>
<tr>
<td>On most days</td>
<td>5</td>
</tr>
</tbody>
</table>

(B) Effect on normal activities
Does the dyspepsia interfere with normal activities such as eating, sleeping or socializing?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>0</td>
</tr>
<tr>
<td>Sometimes</td>
<td>1</td>
</tr>
<tr>
<td>Regularly</td>
<td>2</td>
</tr>
</tbody>
</table>

(C) Time off work
How many days have you lost off work due to your dyspepsia in the past six months?

<table>
<thead>
<tr>
<th>Days</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td>1–7 days</td>
<td>1</td>
</tr>
<tr>
<td>More than 7 days</td>
<td>2</td>
</tr>
</tbody>
</table>

(D) Consultation with medical profession
How often have you attended a doctor due to dyspepsia in the past six months?

<table>
<thead>
<tr>
<th>Attended</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td>Once</td>
<td>1</td>
</tr>
<tr>
<td>Twice or more</td>
<td>2</td>
</tr>
</tbody>
</table>

(E) GP visits to patient’s home
How often have you called your GP to visit you at home because of your dyspepsia in the past six months?

<table>
<thead>
<tr>
<th>Visits</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td>Once</td>
<td>1</td>
</tr>
<tr>
<td>Twice or more</td>
<td>2</td>
</tr>
</tbody>
</table>

(F) Tests for dyspepsia
How many tests have you had for your dyspepsia in the past six months?

<table>
<thead>
<tr>
<th>Tests</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td>One</td>
<td>1</td>
</tr>
<tr>
<td>Two or more</td>
<td>2</td>
</tr>
</tbody>
</table>

(G) Treatment for dyspepsia
(1) Over the last six months, how frequently have you used drugs which you have obtained by yourself?

<table>
<thead>
<tr>
<th>Used</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>0</td>
</tr>
<tr>
<td>Less than once per week</td>
<td>1</td>
</tr>
<tr>
<td>More than once per week</td>
<td>2</td>
</tr>
</tbody>
</table>

(2) Over the last six months, for how long have you used drugs prescribed by a doctor?

<table>
<thead>
<tr>
<th>Duration</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>0</td>
</tr>
<tr>
<td>For 1 month or less</td>
<td>1</td>
</tr>
<tr>
<td>For 1–3 months</td>
<td>2</td>
</tr>
<tr>
<td>For more than 3 months</td>
<td>3</td>
</tr>
</tbody>
</table>
DISCUSSION:
This long-term follow-up study of patients with Dyspepsia and GERD symptoms revealed that GERD patients have poor response to PPI therapy as well as *H pylori* eradication as compared to dyspepsia. The rates of relapse as well as new infection with *H pylori* were same in both groups.

We specifically excluded the participants with overlapping of symptoms to reduce the bias in segregation of the two groups. Around 30 % GERD patients have presentation with symptoms of dyspepsia. Often, there are no structural or biochemical abnormalities in patients suffering from GERD as well as dyspepsia. The severity and response to treatment is thus a subjective assessment by the investigator and patients and hence can be biased. Hence, we used the Glasgow Dyspepsia Severity Scoring for objective evaluation of response and comparison between the symptom groups.

Why GDSS?
Glasgow Dyspepsia Severity Score (Proposed by European Journal of Gastroenterology and Hepatology 1996) is one of the 10 maximally approved scoring systems amongst unidimensional as well as multi-dimensional scores and the only scale validated for interviewing the patients telephonically. In one of the available studies published in European Journal of Gastroenterology, the mean score in healthy volunteers was 1.16 (range: 0-7) and was significantly higher in duodenal ulcer (DU) patients (mean score 11.1, range: 6-16) and Dyspepsia patients (mean score 10.5, range: 6-17). This scoring tool has helped us to make the severity of symptoms more objective and easier to assess and compare between the groups. We did not have pre endoscopy scores on these patients so as to observe and compare them with post endoscopy scores. The comparison of scores between the GERD and dyspepsia groups was done in order to compare response to treatment.

We did not find a specific cut off value described in the literature to differentiate significant symptoms from milder discomforts. Patients who had scores higher than 8 had reported to be distressed significantly by their symptoms, hence patients with GDS scores above or equal to 9 were considered to be symptomatic and were investigated further.

Comparison of scores for assessing severity of symptoms:
We found that symptomatic dyspepsia patients had mean score of 11.33 (Range 9 to 14) after long term of initial PPI therapy whereas symptomatic GERD patients had mean score of 9.67 (Range 9 to 11). A few other studies have used GDSS for comparison of pre and post treatment with anti *H pylori* drugs. These include a study by Mc Coll in UK. In this study, 1 year follow up response of PPI and anti *H pylori* treatment was studied in acid peptic diseases (APD). GDSS of 0 to 1 was labeled as ‘no symptoms.’ They found that these therapies were successful for the treatment of APD with statistically significant drop of the scores (from 13 to 1)

Response to PPI:
Our study showed statistically significant comparative poor response of GERD to PPI. On the other hand, the long-term treatment response with PPI was good with dyspeptics achieving complete resolution of symptoms.

Results of Calabrese et al are quite contrary to our results. The authors, in their results, have mentioned that PPIs are central in the management of GERD and is unchallenged with regards to their efficacy. They are considered safe and more effective than histamine receptor antagonists for healing esophagitis and for preventing its recurrence using a long-term maintenance treatment. This is a large sample study with 847 patients and suggests Pantoprazole effectiveness unequivocally for GERD patients. (p<0.01)

Another long-term follow-up study by Kindt showed that about half (50%) of dyspepsia patients reported disappeared or improved symptoms after a mean follow-up of 5 years of initial treatment with PPI/ H₂ antagonists. The response to initial PPI treatment in dyspepsia was found to be 85.8% in our study.

Association with *H pylori* infection:
As per American Family of Physicians, prevalence of *H pylori* infection with dyspepsia was 30% in North American population as against 80 to 90% in developing countries. But in our study, we found similar proportion of association as compared to North American population. In contrast to our results, one south Indian study which has taken 197 subjects
found that the association of dyspepsia and *H pylori* infection was statistically insignificant.  

**H pylori eradication: Does it affect symptom outcome in dyspepsia and GERD?**

In our study, dyspeptic patients infected with *H pylori* showed more tendency of remaining symptomatic in spite of PPI and anti *H pylori* therapy. Symptoms in GERD persisted with equal frequency in both *H pylori* positive and negative results. Persistence of symptoms was found to be due to pan gastritis, reflux oesophagitis and gastritis on follow up OGD-scopy.

A study done in the past by Grande has shown that there is no significant evidence for role for *H pylori* infection in the development of GERD, no such relationship has been proven even in dyspepsia in Indian population.

Another study by Cremonini in accord with many other studies has shown that anti-*H pylori* treatment is associated with newly occurring (de novo) as well as rebound or exacerbated GERD. But this couldn’t be commented upon in our study as we didn’t find any exacerbation of GERD after *H pylori* eradication.

In a review article for comparison of different symptom scoring scales in dyspepsia published in GUT in 2002, it is mentioned that following eradication of *H pylori* in patients with acid peptic disease, the GDS score changed from 11.4 to 1.3, compared with an average change of 10.5 to 8.5 in patients in whom the infection was not eradicated. We could not compare our pre and post treatment scores as baseline pretreatment scores are not available in our study.

McColl et al also used GDSS in their UK Medical Research Council trial in which 315 patients were followed up for one year after PPI and anti *H pylori* treatment with omeprazole, amoxycillin, and metronidazole (regime same as our study). It showed a statistically significant effect in favor of anti *H pylori* treatment (21% response) compared with placebo (7%) They labeled ‘response’ at score of 0 to 1 i.e.no/ minimal symptoms persisted.

In contrast to our results of dyspeptic patients, a study at Michigan medical center has shown long-term symptom follow-up of Dyspepsia in both the control (not infected) and *H pylori* infected groups gave similar results. This was in coherence with result of a study which proved that *H Pylori* eradication by “test and treat approach” has modest effect on dyspepsia. It has also been documented that symptom reduction is more evident at 1 year of eradication of *H pylori* by test and treat strategy than after 4 weeks. As we have not documented the scores at one year, we could not verify these findings in our study. Another long-term follow-up after 6 to 7 years study in Finland has shown dyspepsia is a long-lasting disorder with an excellent prognosis regardless of *H pylori* infection which suggested that there was no significant role of *H pylori* infection in deciding overall prognosis in dyspepsia.

We showed similar results at the end of 5 years where only 9 out of 63 dyspeptic patients were symptomatic at a long term follow up. Our findings imply that, in clinical practice, *H pylori* infected population will have tendency to remain symptomatic in dyspepsia over long term.

In GERD, on the other hand, both infected and not infected population will have similar probability to remain symptomatic after PPI only (no additional GERD medication) treatment. Overall PPI treatment has better control of dyspepsia symptoms than GERD.

**Relapse of *H pylori* infection:**

Relapse of *H pylori* infection at 5 years follow-up amongst the symptomatic patients after initial eradication was same in both groups i.e. 14.3%. This was different from the picture of more infection in GERD group in the symptomatic population in 2014. In a Bangladeshi study (developing country) of 72 dyspepsia subjects, 16.7% patients showed relapse of *H pylori* infection at 6-8 months from eradication.

**New *H pylori* infection rates:**

*H pylori* infection occurs generally in childhood; new infection is comparatively rare in adults. The risk factors for *H pylori* infection are- poor sanitary conditions, poor hygiene of food, poverty, traditional practice of eating stale food, etc.

Studies have shown new *H pylori* infections with subsequent gastritis may occur in adulthood. Our study has shown new *H pylori* infection rates in dyspepsia and GERD to be same (4.3%) i.e. 0.8% /year. A Finnish study has shown new infection rate of 0.4% / year in a retrospective study after 32 years of 102 patients.
Limitations

- *H pylori* positivity in asymptomatic patients is not checked after long term in view of ethical issues.
- Baseline GDSS at the time of initial endoscopy is not available. This study couldn’t compare pre and post treatment symptom level of subjects. Short term follow-up scores are also not available.
- Resistance of the organism to medicines in anti *H pylori* kit (metronidazole, amoxicillin, omeprazole) is not considered while checking for relapse.

CONCLUSION:

Our study concluded that dyspepsia showed better response to PPI treatment than GERD. In dyspeptic patients, relapse of *H pylori* infection resulted in persistent symptoms. Long-term symptoms of GERD need further investigation as *H pylori* infection was less likely to be responsible for persistent symptoms in GERD. Relapses and new infection with *H pylori* occurred with similar frequencies in both dyspepsia and GERD.

Clinical Significance:

This is a comparative study of responses of dyspepsia and GERD to initial PPI therapy after 5 years with or without anti *H pylori* medications by test and treat approach. This study is first of its kind as nowhere in literature baseline comparison of these two common conditions has been done by telephonic assessment of symptoms. We anticipate that this study will be useful for clinical approach of readers to dyspepsia and GERD in practice.

REFERENCES:


How To Cite This Article:

Source of Support: Nil
Conflict of Interest: None declared

Your next submission with British BioMedicine Institute will reach you the below assets
- Quality Editorial service
- Swift Peer Review
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats  
  (PDF, E-pub, Full Text)
- Unceasing customer service

Track the below URL for one-step submission
http://www.britishbiomedicine.com/manuscript-submission.aspx