

Significant endoscopic findings and the probable associated factors in dyspeptic patients: A cross-sectional study conducted in a tertiary care hospital, rural Mandya

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Abstract

Introduction: Dyspepsia is the most common gastrointestinal problem. Majority of dyspepsia is functional dyspepsia. Due to the high prevalence of dyspepsia, inappropriate use of upper GI Endoscopy can lead to unnecessary costs, risk of complications, and associated with reduced diagnostic yield.

Objectives:

- To determine the prevalence of significant endoscopic finding (SEF) and H.Pylori in dyspeptic patients.
- To determine the response of dyspeptic patients to PPIs and H.pylori eradication therapy.
- To assess the factors predicting SEF in dyspeptic patients.

Materials and Methods: This was a cross-sectional study conducted for a period of 18 months among 100 patients with dyspepsia at department of general surgery of a tertiary care hospital. Data was collected using a semi-structured questionnaire by interview technique. The study subjects were subjected to upper gastro-intestinal endoscopy during which biopsies were taken and sent for routine histopathology examination. Descriptive and inferential statistics has been carried out in the present study. A P value < 0.05 was considered statistically significant.

Results: The mean age of the study subjects was 45.13±14.06 years. Pain abdomen was the commonest (82.0%) alarm symptom of dyspepsia and 64.0% of those with dyspepsia were smokers and 61.0% were alcoholics. Overall prevalence of significant endoscopic finding (SEF) was 36.0% and duodenal ulcer (22.0%) was the commonest of all. 71.0% revealed H.pylori infection and at least 90.0% responded well to proton pump inhibitors (PPIs) and triple drug therapy. Among the different factors, bloating or belching was found to be significantly associated with the SEF.

Conclusion: The prevalence of SEF was 36.0% and H.pylori was 71.0%. Most of them i.e. 90.0% responded both clinically and microbiologically to the treatment and bloating or belching was a significant alarm symptom associated with SEF. A trial of proton pump inhibitors (PPIs) and triple drug therapy can be considered before subjecting the patients to the invasive procedure of endoscopy.

Keywords: Dyspepsia, significant endoscopic finding, H.pylori, smoking, alcohol consumption, NSAIDs, corticosteroid, H.pylori eradication therapy

Introduction

Dyspepsia being the commonest upper gastrointestinal (GI) symptom refers to a heterogeneous group of symptoms that are localized to the epigastric region ^[1]. Globally, the prevalence of dyspepsia was estimated to range from 1.8% to 57% with an overall average of 20.8% ^[2]. In India, from the limited data available, 7.6 to 49% of Indian population report

dyspeptic symptoms^[3]. Based on the endoscopic findings, dyspepsia can be subdivided into organic dyspepsia and functional dyspepsia (FD). The causes for organic dyspepsia are peptic ulcer, gastroesophageal reflux disease, gastric or esophageal cancer, pancreatic or biliary disorders, intolerance to food or drugs, and other infectious or systemic diseases^[4]. Whereas the common symptoms of FD according to the Rome IV Committee definition are Postprandial fullness, early satiation, epigastric pain or epigastric burning with no structural diseases to explain and the symptoms should persist for more than 3 months from the onset of symptom for ≥ 6 months before diagnosis^[5]. Among patients with dyspepsia, only 25% have an organic cause whereas in the rest of the patients, a diagnosis of functional dyspepsia can be made.^[6]

A clinically significant finding was defined as patient having erosive esophagitis, Barrett's esophagus, gastric or duodenal ulcer disease, and gastro esophageal malignancy. The pooled prevalence of significant endoscopic findings was 27.5% when using a broad definition of dyspepsia or 18% when including studies using the Rome criteria to define dyspepsia^[7].

The management of dyspepsia focuses on identifying high risk patients including new-onset dyspepsia after 45 to 55 years of age (average age 50 years) and those with one or more alarm features like bleeding, anemia, early satiety, unexplained weight loss, dysphagia, odynophagia, vomiting, family history of gastrointestinal cancer, previous esophagogastric malignancy, previous documented peptic ulcer, previous upper gastrointestinal surgery, lymphadenopathy, or an abdominal mass^[8, 9]. Several trials and data of some meta-analyses assessed the potential role of *H. pylori* eradication in improving dyspeptic symptoms and demonstrated that cure of infection is associated with a small, but significant therapeutic gain as compared to placebo. Hence for patients with no alarm features, the last Consensus of an International panel of clinical investigators on gastroduodenal functional disorders (Rome III) recommended *H. pylori* eradication in all infected patients with non-ulcer dyspepsia diagnosed at upper endoscopy, also suggesting non-invasive testing followed by *H. pylori* eradication ("test and treat") in those patients or a trial of proton pump inhibitor (PPI) depending on the *H. pylori* prevalence^[10].

Endoscopy plays an important step in the diagnosis and management of dyspepsia and is an effective method to differentiate patients with clinically significant findings (CSFs) from those with FD. Due to the high prevalence of dyspepsia in the country, a prompt endoscopy for every dyspeptic patient is not a practical approach, as this will lead to high costs and low yield of endoscopy^[11]. Therefore, the selective use of endoscopy in high-risk patients would be the most cost-effective approach^[12]. Hence this study was conducted with the following objectives i.e., to determine the prevalence of significant endoscopic finding (SEF) and *H. Pylori* in dyspeptic patients, to determine the response of dyspeptic patients to PPIs and *H. pylori* eradication therapy and to assess the factors predicting SEF in dyspeptic patients.

Materials and Methods

This was a cross-sectional observational study conducted for a period of 18 months from October 2019 to March 2021. A total of 100 patients with dyspepsia who has undergone upper G.I Endoscopy at department of general surgery of a tertiary care hospital, Mandya district, on an outpatient basis or those seeking admission were selected by purposive sampling. Considering 40.4% prevalence of endoscopic findings among patients with dyspepsia and a 10% non-response rate, the sample size of 100 was estimated with 5% alpha error, 10% absolute precision^[13].

Patients with dyspepsia aged >14years & <70years, patients having dyspeptic symptoms for more than 2 weeks and those who were willing to participate in the study were included in the study whereas patients with gall bladder or pancreatic diseases, patients who were unfit for endoscopy, who already have taken *H. pylori* medication and those patients who were immunocompromised and had known coagulopathy disorders were excluded from the study. Written informed consent was taken from all the study participants and ethical clearance was obtained from Institutional Ethics Committee. The socio-demographic data, clinical history

and details about the risk factors of dyspepsia were collected using a semi-structured questionnaire by interview technique. Clinical examination included vitals, general examination and systemic examination. The study subjects were subjected to upper gastro-intestinal endoscopy by standard procedures under topical anesthesia after taking written consent, during which biopsies from the antrum and the pathological areas were taken. The biopsy specimens were sent for routine histopathology and special staining with Giemsa stain.

Procedure of upper gi endoscopy

All the patients in this study group, both in-patient as well as outpatient underwent upper gastro-intestinal endoscopy under topical anesthesia. The patients were asked to fast for 12 hours prior to the procedure. No sedation was given to our patients for fear of aspiration. Oral 10% xylocaine sprays were given to the patient 5-10 minutes before the procedure for the local anesthetic effect to the oropharynx and over posterior pharyngeal wall. The upper gastro-intestinal endoscopy was conducted with flexible, fibre optic endoscope with patients in left lateral position with thighs and knee flexed. Artificial dentures, if present were removed. A guard was placed between teeth to protect tongue, teeth as well as the endoscope. The tip of endoscope was placed at the cricopharyngeal sphincter of the oesophagus and patient was encouraged to swallow while gentle pressure was exerted, small amount of air was passed through the endoscope to visualize the esophageal lumen.

Examination of the esophagus

The mucosa is thoroughly examined, and a slight indentation of the diaphragm is noted. The oesophago-gastric junction is easily recognized as a transition from slightly opaque grey squamous esophageal mucosa to red glistening gastric folds.

Examination of the stomach

When the endoscope reaches the oesophago-gastric junction, air is insufflated into the stomach. To obtain a view of the stomach, the tip is first moved slightly downward and to the left, then upward until the pyloric ring is visible. On withdrawal of the instrument, the stomach is usually thoroughly examined, with special attention paid to the area just below the angulus on the lesser curve, which is difficult to see but is a common site for ulceration, as previously mentioned. The endoscope must be inverted ('J' manoeuvre) to examine the fundus of the stomach completely.

Examination of the duodenum

The endoscopist must be satisfied that the entire duodenal cap mucosa has been seen. This could be challenging, especially in the area just distal to the pyloric ring. Close examination of the mucosa of the cap often reveals small polyps, which are usually areas of heterotopic gastric mucosa, Brunner glands, or pancreatic rests. Biopsy can be taken to confirm this diagnosis. Without attempting to enter the second part of the duodenum, which is easily identifiable due to the circular muscle folds, the examination is incomplete. It can be difficult to get out of the cap at times. The tip is advanced over the superior duodenal fold, slightly to the right and then strongly downward. Withdrawing the endoscope at this point often results in advancement as the loop in the stomach straightens ^[14].

Operational definition

- **Significant endoscopic findings:** Is defined as the macroscopic presence of a stricture, ulcer or tumour ^[15].

Statistical Analysis

Data was entered in Microsoft excel and analyzed using SPSS version 20.0. Descriptive and inferential statistics has been carried out in the present study. Results were presented as proportions, mean \pm SD, Range. Categorical variables were analyzed using chi-square test and Fisher's exact test. A *P* value < 0.05 was considered statistically significant.

Results

With a mean age of 45.13 ± 14.06 years, highest proportion i.e. 50.0 percent of the study subjects belonged to 41 to 60 years and most of them were males (66.0%). Majority i.e. 76.0% hailed from the rural area. Among the clinical symptoms with which the patients presented to the hospital, pain abdomen was the commonest (82.0%) followed by nausea (75.0%) and vomiting (74.0%), regurgitation (71.0%) and bloating or belching was seen among 58.0% of the subjects. 64.0% of those with dyspepsia were smokers and 61.0% were alcoholics and 12.0% gave chronic history of use of NSAIDs or corticosteroids. [Table-1]

Overall prevalence of significant endoscopic finding (SEF) was 36.0% and duodenal ulcer (22.0%) was the commonest of all followed by, gastric ulcer (13.0%), and carcinoma stomach among 1.0%. The other pathological findings included erosive gastritis among 40.0% of the study subjects and gastroesophageal reflux disease in 3.0% of them. 71.0% of the total study subjects had confirmed *H. pylori* infection on histopathological report. [Table 2]

93.0% responded to proton pump inhibitors (PPIs) and triple drug therapy. Clinical symptomatic improvement was seen among 100.0% of gastric ulcers and gastroesophageal reflux disease and most of them with duodenal ulcers (95.5%) and erosive gastritis (92.5%) also showed clinical improvement. 90.5% of those with functional dyspepsia showed clinical improvement. The microbiological response in terms of *H. pylori* negativity was seen among all except for those in erosive gastritis (95.0%) and with functional dyspepsia (95.2%). [Table 3]

Though higher proportion of those with significant endoscopic finding (SEF) were aged more than 40 years, females, rural residents, chronic alcoholics and positive for *H.pylori*, the association between such factors and SEF was not statistically significant ($p > 0.05$). [Tables 4 & 5]

Among the alarming symptoms of pain abdomen, nausea and vomiting, early satiety, belching or bloating and regurgitation, higher proportions of those with significant endoscopic finding, had symptoms of belching or bloating (44.8% vs 23.8%) and it was statistically significant ($p < 0.05$). [Table 6]

Table 1: Socio-demographic and clinical details of the patients

Variables	No. of Patients (n)	Percentage (%)
Age-group in years (n=100)		
≤ 40	38	38.0
41-60	47	47.0
> 60	15	15.0
Gender (n=100)		
Males	66	66.0
Females	34	34.0
Residence (n=100)		
Rural	76	76.0
Urban	24	24.0
Clinical Symptoms/ Alarm features[‡]		
Pain Abdomen (n=100)	82	82.0
Vomiting (n=100)	74	74.0
Nausea (n=100)	75	75.0
Early Satiety (n=100)	73	73.0

Bloating/Belching (n=100)	58	58.0
Regurgitation (n=100)	71	71.0
Risk Factors identified based on history[‡]		
Smoking (n=100)	64	64.0
Alcohol (n=100)	61	61.0
Chronic intake of NSAIDs and/ or Corticosteroids (n=100)	12	12.0

[‡]Individual Row percentage

Table 2: Prevalence of significant endoscopic findings (SEF) and H.pylori in patients with dyspepsia (n=100)

Variables	No. of Patients (n)	Percentage (%)
Endoscopic findings (n=100)		
Normal endoscopic finding (functional dyspepsia)	21	21.0
Significant endoscopic finding	36	36.0
Other pathological findings	43	43.0
Presence of H. pylori on Histopathology (n=100)		
Yes	71	71.0
No	29	29.0

Table 3: Response to Proton Pump Inhibitors (PPIs) + Triple drug therapy treatment in patients with Significant Endoscopic Finding (SEF) (n=100)

Dyspepsia	No. of Patients (n)	Clinical response	Microbiological response
Normal endoscopic finding (functional dyspepsia)	21	19 (90.5)	20 (95.2)
Significant endoscopic finding	36	34 (94.4)	100 (100.0)
Other pathological causes	43	42 (93.1)	41 (95.3)

Table 4: Association of socio-demographic findings with Significant Endoscopic Finding (SEF) (n=100)

Variables	SEF		χ^2 -value p-value
	Present	Absent	
Age-group in years			
≤40	10 (26.3)	28 (73.7)	2.49 (0.11)
>40	26 (41.9)	36 (58.1)	
Gender			
Male	23 (34.8)	43 (65.2)	0.11 (0.74)
Female	13 (38.2)	21 (61.8)	
Residence			
Rural	29 (38.2)	47 (61.8)	0.64 (0.42)
Urban	07 (29.2)	17 (70.8)	

Table 5: Association of risk factors with Significant Endoscopic Finding (SEF) (n=100)

Variables	SEF		χ^2 -value P-value
	Present	Absent	
History of Smoking			
Yes	22 (34.4)	42 (65.6)	0.20 (0.65)
No	14 (38.9)	22 (61.1)	
History of Chronic Alcoholism			
Yes	22 (36.1)	39 (63.9)	0.00 (0.99)
No	14 (35.9)	25 (64.1)	

History of chronic intake of NSAIDs and/ or Corticosteroids (n=100) [‡]			
Yes	02 (16.7)	10 (83.3)	(0.20)
No	34 (38.6)	54 (61.4)	
H.pylori infection			
Positive	28 (39.4)	43 (60.6)	1.26 (0.26)
Negative	08 (27.6)	21 (72.4)	

[‡]Fisher's exact test applied

Table 6: Association of alarm features with Significant Endoscopic Finding (SEF) (n=100)

Variables	SEF		χ^2 -value p-value
	Present	Absent	
Pain Abdomen			
Yes	27 (32.9)	55 (67.1)	1.87 (0.17)
No	09 (50.0)	09 (50.0)	
Nausea and Vomiting [‡]			
Yes	32 (35.2)	59 (64.8)	(0.72)
No	04 (44.4)	05 (55.6)	
Early Satiety			
Yes	24 (32.9)	49 (67.1)	1.15 (0.29)
No	12 (44.4)	15 (55.6)	
Bloating/Belching			
Yes	26 (44.8)	32 (55.2)	4.67* (0.03)
No	10 (23.8)	26 (44.8)	
Regurgitation			
Yes	24 (33.8)	47 (66.2)	0.51 (0.47)
No	12 (41.4)	17 (58.6)	

* indicates significant statistical association at $p < 0.05$

[‡]Fisher's exact test applied

Discussion

Dyspepsia is a common syndrome which is encountered in the regular clinical practice^[16] and in a low resource setting like India, weighing the necessity for recommending endoscopy as the diagnostic procedure against its effectiveness is required as a large number of uninvestigated dyspepsia are functional causes^[17]. The yield out of endoscopy among the dyspeptic patients is reported to be questionable and varied among different studies^[8] and assessing the prevalence of significant endoscopic findings in people with dyspepsia and also the factors like the symptoms those which could predict endoscopic pathology could add to contribute to dyspepsia guidelines^[7]. With this the current study was conducted.

The mean age of the study subjects was 45 years and majority were in the age group of 41 to 60 years. Desai SB and Mahanta BN, reported mean age as 40 years and most of them were younger than 40 years in their study and males were predominantly affected which is in line with the current study^[18]. Men also are noted to have the higher chances of smoking and consuming alcohol which again are predisposing factors of dyspepsia which also correlates for the predominance of males in this study^[19]. Majority i.e. 76.0% hailed from the rural area in our study as it is located and caters mainly to rural part of Mandya Desai SB and Mahanta BN also reported history of smoking among 15.1% and 38.6% were alcoholic and history of NSAID consumption was seen in 9.4%. In our study, 64.0% of those with dyspepsia were smokers and 61.0% were alcoholics and 12.0% gave chronic history of use of NSAIDs or corticosteroids. The contrasting difference in the age-group, history of personal habits might be due to different study settings and also the study populations^[18]. However Yellapu R and Boda S found the mean age as 43 years and 35 to 54 years age group commonly presented with dyspepsia in their study setting^[20]. Shafiq S and Wadhwa RP reported post-prandial fullness, epigastric burning, early satiety, nausea and heart burn as common symptoms reported but our patients presented with pain abdomen as the commonest symptom

accompanied by nausea and vomiting, regurgitation and bloating or belching^[19]

Yellapu R and Boda S reported were gastritis among 52.6%, GERD in 15.4%, erosive esophagitis in 11.1%, hiatus hernia in 10.2%, gastric ulcer in 6.7%, duodenal ulcer in 4.8%, duodenitis in 3.3% and mixed findings in 37.1% of patients^[20]. According to Shafiq S and Wadhwa R, 64% did not have any pathological cause of dyspepsia and only 36% had abnormal endoscopic findings among whom duodenal ulcer was the most common ones observed in 7.9%, followed by erosive gastritis in 6.7%, reflux esophagitis in 6.1%, and gastric ulcer in 3.9%. Other findings included varioliform gastritis, esophageal malignancies, esophageal candidiasis, esophageal varices, gastric malignancy, and duodenal carcinoids^[19]. Desai SB and Mahanta BN revealed significant endoscopic findings in 56.3% patients that included peptic ulcer in 25.9%, esophagitis in 4.4%, and upper GI malignancy in 3.1% and less than 2.0% constituted other significant lesions^[18]. As per our operational definition of significant endoscopic findings, we found 36.0% to have significant endoscopic finding (SEF) and duodenal ulcer was the commonest of all (22.0%), followed by gastric ulcer (13.0%) and carcinoma stomach among 1.0% of them. Erosive gastritis in 40.0% of the study subjects and gastroesophageal reflux disease in 3.0% constituted other pathological findings. Thyagaraja K *et al.*, reported that 64% of cases yielded positive results for H.pylori as per rapid urease test and in follow up responded well to triple therapy^[21]. 71.0% of the total study subjects had confirmed H. pylori infection on histopathological report in our study. In another study conducted at Bagalkot, found 41.9% prevalence of H.pylori infection based on Histopathology^[22]. However, it was slightly higher in our study setting and the prevalence differs based on dietary habits, environmental factors, socio-economic status, sanitation and that might have led to such varied prevalence^[22, 23].

93.0% showed good response to proton pump inhibitors (PPIs) and triple drug therapy. A minimum of 90.0% of those with any type of dyspepsia showed clinically and microbiologically good response. And in few of the conditions some of them with duodenal ulcer, erosive gastritis, functional dyspepsia and none in carcinoma stomach showed correlated response both clinically and microbiologically. Similarly in a study where the association between the severity of antral gastropathy in dyspeptic patients was studied with the status of H.pylori, the degree of antral gastropathy did not vary with respect to the status of H.pylori and have explained with a supporting evidence that the post infection immunity and inflammatory status increase the symptoms of functional dyspepsia and the cause of dyspepsia could be inflammation caused by H. pylori^[24]. In case of carcinoma stomach, the inflammation is said to be triggered primarily by H. pylori infection which initiates precancerous lesions and progress to atrophic gastritis and intestinal metaplasia. However further progression to dysplasia and carcinoma generally attributed to processes that does not require the presence of H. pylori^[25]. Kang SJ *et al.*, have reported that in some studies from Asia, the H. pylori eradication did not significantly improve dyspeptic symptoms and have mentioned the need for individualized management^[26].

On eliciting the association of different factors with significant endoscopic finding, bloating/belching was found to be statistically significantly associated with the significant endoscopic finding and in a study conducted by Jafar NAH, bloating and belching was significantly associated with H.pylori which is one of the important cause of dyspepsia. Similarly in ours slightly higher proportion of those with H.pylori showed the symptoms of bloating or belching though lacked in significance, but it was significantly associated with significant endoscopic finding^[27]. The significance of symptom complexes is difficult to establish as the patients present with multiple symptoms rather than a single symptom. As this is a purposive sampling, the generalizability becomes limited and can be generalized only to the current study setting.

The prevalence of SEF was 36.0% and H.pylori was 71.0%. Most of them i.e. 90.0% responded both clinically and microbiologically to the treatment and bloating or belching was a significant alarm symptom associated with SEF. With the good response following PPIs and H.Pylori eradication therapy in this study, it can be concluded that, a trial of PPIs and

H. Pylori eradication therapy can be given among the patients as a first line of choice before subjecting them to endoscopy and the persistence of symptoms can be considered as an indication of endoscopy and reserve such invasive procedure for the subjects who have an absolute indication and also allay the burden to health care setting.

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