

Do Symptoms Predict Endoscopic Findings In Dyspeptic Patients?

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Abstract

Objective: To evaluate whether specific symptoms and patient characteristics were predictor of endoscopic findings in dyspeptic patients. **Material and Method:** A total of 225 patients attended to the out-patient clinics of internal medicine with dyspepsia were included in the study. Esophagogastroduodenoscopy was applied after the information about age, gender, smoking status, alcohol consumption, type and characteristics of dyspeptic symptoms of the patients had enrolled, and the findings were compared. **Results:** Heartburn was the predominant symptom with a rate of 85.8%. The most common diagnosis determined by endoscopy was gastritis (82.7%). Six independent predictors of organic disease; male gender, smoking, alcohol consumption, dysphagia, regurgitation, and episodic style of symptoms. Esophagitis was increased 2.0 fold in men and 2.2 fold in patients with dysphagia ($p=0.024$, $p=0.028$, respectively). Gastritis was increased 3.2 fold with smoking and 2.2 fold if the symptoms were episodic ($p=0.036$, $p=0.026$, respectively). Duodenal ulcer was increased 7.3 fold in men who smoke and had regurgitation ($p=0.0001$). **Conclusion:** Although six independent predictors of organic disease were found in this study; male gender, smoking, alcohol consumption, dysphagia, regurgitation and episodic style of symptoms, further validation of these findings in larger patient groups of general practice is recommended.

Keywords: endoscopy, dyspepsia, diagnosis, predictors

Dispeptik hastalarda semptomlar endoskopik bulguları ön görülebilir mi?

Amaç: Dispeptik hastalarda özgül semptomların ve hastaya ait özelliklerin endoskopik bulguların öngörücüsü olup olmadığının değerlendirilmesi.

Materyal ve metod

Çalışmaya dahiliye polikliniğine dispepsi ile başvuran toplam 225 hasta dahil edildi. Hastaların yaş, cinsiyet, sigara içme durumu, alkol tüketimi, dispeptik semptomların tipi ve özellikleri ile ilgili bilgiler kaydedildikten sonra özofagogastroduodenoskopi uygulandı. Bulgular karşılaştırıldı.

Bulgular

En baskın semptom %85.8 oranıyla yanma idi. Endoskopi ile tespit edilen en sık tanı gastritti (%82.7).

Organik hastalık için altı bağımsız öngörücü; erkek cinsiyet, sigara içme, alkol tüketimi, disfaji, regürjitasyon ve semptomların epizodik olmasıydı. Özofajit erkeklerde 2.0 kat ve disfaji olan hastalarda 2.2 kat artmıştı (sırasıyla, $p=0.024$, $p=0.028$). Gastrit sigara içme ile 3.2 kat ve semptomların epizodik olmasıyla 2.2 kat artmıştı (sırasıyla, $p=0.036$, $p=0.026$). Duodenal ülser sigara içen ve regürjitasyonu olan erkeklerde 7.3 kat artmıştı ($p=0.0001$).

Sonuç: Bu çalışmada organik hastalığın altı bağımsız öngörücüsü, erkek cinsiyet, sigara içme, alkol tüketimi, disfaji, regürjitasyon ve semptomların epizodik olması, bulunmakla birlikte genel uygulamada daha geniş hasta gruplarında bu bulguların doğrulanması önerilmektedir.

Anahtar kelimeler: endoskopi, dispepsi, tanı, öngörücüler

Introduction

Dyspepsia is a non-specific term used for expressing upper abdominal discomfort. It is one of the most common reasons for patients with gastrointestinal complaints to admit to the health centers^{1,2} The vast majority of the patients with a dyspeptic episode for the first time are treated empirically in primary care centers, but specialist treatment in secondary care is usually based on the outcome of technical investigations.

Although upper gastrointestinal system endoscopy is the most sensitive research tool, it may not always be the most appropriate primary examination because of the difficulties, risks and high-cost.³ The high cost of endoscopy and high prevalence of dyspepsia symptoms has led to extensive studies of how best apply endoscopy. Clinical parameters such as dyspepsia subtypes (ulcer-like, reflux-like, and motility-like) have been shown not to predict pathological conditions. Other factors such as age, sex and some of the 'alarm symptoms' have been shown to be predictive in some studies [age alarm], but not others.⁴ American Gastroenterology Association's (AGA) guidelines recommend gastrointestinal endoscopy for patients; over the age of 50, with new onset dyspepsia, having alarm symptoms (dysphagia, weight loss, bleeding, vomiting) and resistance of symptoms despite appropriate empirical treatment. In the absence of alarm symptoms, there is still debate about endoscopy for evaluation and treatment of dyspepsia.⁵

In this study, in contemplation of guiding for primary care physicians, it was aimed to evaluate whether specific

symptoms and patient characteristics were predictive of endoscopic findings.

Materials and methods

A total of 225 patients who were admitted to the out-patient clinics of internal medicine between April 2008-July 2008 with dyspepsia were included into the study. Patients were informed about the study and written consents were received. Information of patients about age, gender, alcohol consumption, smoking status, non steroid anti inflammatory drug (NSAID) usage, dyspeptic symptoms and the characteristics of symptoms were recorded. Dyspepsia was defined as persistent or recurrent abdominal pain or abdominal discomfort, centered in the upper abdomen, with a duration of at least 3 months.⁶ Epigastric symptoms such as, heartburn, regurgitation, dysphagia, nausea and vomiting, bloating/fullness, night pain, early fill-up, bleeding, and symptom duration and progress, the relation of symptoms with fasting and satiety were also recorded.

Flexible esophagogastroduodenoscopy was performed to all patients. The endoscopic findings were based on Sydney classification.⁷ The circumscribed break of considerable depth (>5mm) in the mucosa, covered with exudate, present in the prepyloric, pyloric or duodenal bulb region, was classified as duodenal ulcer. Gastric ulcer was diagnosed when the described mucosal defect located at the angulus or above it. Gastric or duodenal ulcer was diagnosed either in case of an active ulcer, or in the case of a deformity of the duodenal bulb or ulcer scar. Esophagitis was diagnosed in the presence of erosive, ulcerative or haemorrhagic changes, gastritis was diagnosed in the case of all of the following abnormalities are unequivocally present -such as edema, erythema, evidence of mucosal breaks, intramural bleeding spots, etc. Duodenitis was diagnosed in the presence of erosive changes with or without hypertrophic/edematous or haemorrhagic changes independent of a frank ulcer. Lower esophageal sphincter (LES) relaxation was diagnosed when the flap valve, which normally appears to "hug" the endoscope, was seen to be lax creating an opening between the endoscope and the surrounding stomach folds.

The obtained data were assessed by SPSS (Statistical Package for Social Science Inc., Chicago, IL, USA) 12.0 package program. Chi-square dependencies test for

Table 1. Distribution of epigastric symptoms

	N	%
Regurgitation	127	56.4
Dysphagia	46	20.4
Nausea-Vomiting	131	58.2
Bloating-Fullness	167	74.2
Heartburn	193	85.8
Night pain	118	52.4
Early fill-up	60	26.7
Weight loss	11	4.9
Bleeding	7	3.1
Epigastric pain	113	50.2
Fasting pain	45	20.0
Postprandial pain	92	40.9

categorical data, logistic regression analysis for calculation of the risk coefficients were used. $p < 0.05$ was accepted as significant.

Study was conducted with the consent of local ethical committee.

Results

A total of 225 patients included into the study, 74 (32.9%) were men and 151 (67.1 %) were women. Average age of the patients was 43.5 ± 14.6 years (range 16-84 years). The 24% of the patients were smoking, whereas only 4.0% of them were consuming alcohol. The rate of NSAID usage was 75.6%.

Heartburn was the predominant symptom followed by bloating with a rate of 85.8% and 74.2%, respectively (Table 1). The duration of the symptoms were, ≤ 1 year in 35 (15.6%), 2-4 years in 82 (36.4%) and ≥ 5 years in 108 (48.0%) patients.

The endoscopic investigation of 23 (10.2%) patients were normal. While 141 (62.7%) of the patients had 2 or more endoscopic diagnosis, 61 (27.1%) patients had single diagnosis. The most common diagnosis determined by endoscopy was gastritis (82.7%), followed by esophagitis (28.0%), LES relaxation (15.1%), bulbar deformity (14.2%), duodenal ulcer (8.0%), duodenitis (4.4%), hiatal hernia

Table 2. Mean ages of patients regarding to endoscopic diagnosis

Diagnosis	n (%)	Age (year)		
		Mean \pm SD	Minimum	Maximum
Esophagitis	63 (28.0)	44.0 \pm 15.3	16.0	84.0
Gastritis	186 (82.7)	43.3 \pm 14.3	16.0	84.0
Gastric ulcer	6 (2.7)	54.3 \pm 16.3	31.0	74.0
Bulbar deformity	32 (14.2)	37.6 \pm 13.5	17.0	70.0
Duodenal ulcer	18 (8.0)	49.6 \pm 18.4	19.0	84.0
Duodenitis	10 (4.4)	41.4 \pm 19.7	20.0	84.0
Gasrtic cancer	6 (2.7)	6 0.3 \pm 17.8	26.0	74.0
Hiatal hernia	9 (4.0)	50.1 \pm 16.2	30.0	75.0
LES relaxation	34 (15.1)	38.1 \pm 14.6	19.0	75.0

Table 3. Distribution of gender, habits and special symptoms of patients according to endoscopic diagnosis

	Esophagitis	Gastritis	Bulbar deformity	Peptic ulcer	Duodenal ulcer	LES relaxation
Gender						
Male	35 (25.2)*	63 (85.1)	14 (18.9)	23 (31.1)	21 (28.4)	8 (10.8)
Female	28 (37.8)	123 (81.5)	18 (11.9)	35 (23.2)	32 (21.2)	26 (17.2)
Smoking	18 (33.3)	50 (92.6)*	13 (24.1)	18 (33.3)	18 (33.3)	13 (24.1)*
Alcohol	4 (44.4)	7 (77.8)	4 (44.4)	5 (55.6)	5 (55.6)*	0 (0.0)
NSAID	45 (26.5)	141 (82.9)	22 (12.9)	44 (25.9)	41 (24.1)	23 (13.5)
Regurgitation	41 (32.3)	102 (80.3)	24 (18.9)*	40 (31.5)*	38 (29.9)*	20 (15.7)
Dysphagia	19 (41.3)*	38 (82.6)	9 (19.6)	15 (32.6)	14 (30.4)	6 (13.0)
Nausea-vomiting	39 (29.8)	110 (84.0)	19 (14.5)	37 (28.2)	34 (26.0)	22 (16.8)
Bloating-fullness	44 (26.3)	137 (82.0)	22 (13.2)	43 (25.7)	38 (22.8)	24 (14.4)
Heartburn	52 (26.9)	159 (82.4)	30 (15.5)	50 (25.9)	28 (23.7)	30 (15.5)
Night pain	38 (32.2)	94 (79.7)	18 (15.3)	31 (26.3)	28 (23.7)	18 (15.3)
Early fill-up	11 (18.3)	44 (73.3)*	5 (8.3)	15 (25.0)	13 (21.7)	7 (11.7)
Weight loss	1 (9.1)	6 (54.5)*	0 (0.0)	3 (27.3)	1 (9.1)	0 (0.0)
Bleeding/anemia	1 (14.3)	7 (100.0)	2 (28.6)	4 (57.1)	4 (57.2)	2 (28.6)
Epigastric pain	33 (29.2)	88 (77.9)	18 (15.9)	31 (27.4)	28 (24.8)	18 (15.9)
Symptom progress						
Permanent	6 (35.3)	11 (64.7)	1 (5.9)	4 (23.5)	2 (11.8)	2 (11.8)
Episodic	15 (29.4)	46 (90.2)*	3 (5.9)	8 (15.7)	7 (13.7)	3 (5.9)
Fasting pain	8 (17.8)	37 (82.2)	6 (13.3)	10 (22.2)	9 (20.0)	7 (15.6)
Postprandial pain	32 (34.8)	79 (85.9)	15 (16.3)	26 (28.3)	26 (28.3)	14 (15.2)

* $p < 0.05$

(4.0%), gastric ulcer (2.7%) and gastric cancer (2.7%), respectively. The mean ages of the patients regarding to endoscopic diagnosis were shown in Table 2. The patients with gastric cancer had the highest mean age while the patients with bulbar deformity had the lowest.

The distribution of gender and special symptoms of patients according to endoscopic diagnosis were shown in Table 3. Multiple regression analysis found six independent predictors of organic disease; male gender, smoking, alcohol consumption, dysphagia, regurgitation and episodic style of symptoms.

Esophagitis was significantly higher in men and patients with dysphagia ($p=0.021$ and $p=0.024$, respectively). There was no significant relation between esophagitis and other variables. Logistic regression analysis revealed that esophagitis was 2.0 fold higher in men than women ($p=0.024$) and it was 2.2 fold higher in patients with dysphagia ($p=0.028$). In the coexistence of these two parameters esophagitis probability was found 3.9 fold increased. ($p=0.016$) (Table 4).

Gastritis was higher in smokers, but was significantly lower in patients with early fill up, and weight loss ($p=0.027$, $p=0.026$, and $p=0.025$, respectively). It was also higher if the symptoms of the patient were episodic ($p=0.05$). According to logistic regression analysis, probability of gastritis increased 3.2 fold by smoking ($p=0.036$). Gastritis was also 2.2 fold higher in patients whose symptoms were episodic ($p=0.026$) (Table 4).

In patients with bulbar deformity, smoking, alcohol consumption and regurgitation were significantly higher

($p=0.017$, $p=0.026$, $p=0.022$, respectively). Bulbar deformity was observed 5.2 fold higher in alcohol consumers ($p=0.022$), and 2.6 fold higher in patients with regurgitation ($p=0.031$) (Table 4).

As the number of cases with gastric ulcer, duodenal ulcer and duodenitis were inadequate; bulbar deformity, duodenal ulcer and duodenitis were classified as "duodenal ulcer" and bulbar deformity, gastric ulcer, duodenal ulcer and duodenitis were classified as "peptic ulcer".

In patients with regurgitation peptic ulcer was significantly higher ($p=0.026$). Peptic ulcer was determined 6.3 fold higher in patients who were male in gender, smoking and had regurgitation ($p=0.0001$). Duodenal ulcer was significantly higher in alcohol consumers and patients with regurgitation ($p=0.021$ and $p=0.01$, respectively). Logistic regression analysis revealed that the probability of duodenal ulcer was 7.3 fold higher in men who had regurgitation and smoke ($p=0.0001$) (Table 4).

As the number of gastric cancer cases diagnosed by endoscopical and pathological investigation were inadequate, statistical evaluation could not be carried out. But none of the patients with gastric cancer was smoking, consuming alcohol and had no dysphagia symptom and gastric disease history and the most seen clinical finding of them was weight loss.

Smoking and male gender were found as predictors of LES relaxation. In logistic regression analysis, it was revealed that LES relaxation was 2.8 fold higher in men and 3.4 fold higher in smokers ($p=0.034$ and $p=0.06$, respectively) (Table 4).

Table 4. Predictors of organic epigastric diseases

	Predictor	p	Odds Ratio	95.0% Confidence Interval for Odds Ratio	
				Lower	Upper
Esophagitis	Male gender	0,024	2,021	1,098	3,721
	Dysphagia	0,028	2,164	1,088	4,305
	Male+Dysphagia	0.016	3.925	1.197	12.869
Gastritis	Smoking	0.036	3.205	1.077	9.543
	Episodic symptoms	0.026	2.208	1.102	4.426
Bulbar deformity	Alcohol consumption	0.022	5.174	1.271	21.067
	Regurgitation	0,031	2,577	1,092	6,084
Peptic ulcer	Male + smoking + regurgitation	0.0001	6,280	2.205	17.882
Duodenal ulcer	Male + smoking + regurgitation	0.0001	7.246	2.533	20.722
LES relaxation	Male gender	0.034	2.798	1.078	7.258
	Smoking	0.006	3.407	1.426	8.143

LES, lower esophageal sphincter

Another result revealed by statistical analysis was that, the rate of hiatal hernia and LES relaxation were significantly higher in patients with esophagitis ($p=0.0001$).

Discussion

Dyspepsia is an extremely common condition that affects approximately 25-45% of general population and accounts for 2-5% of the all admissions to family physicians.^{8,9} Besides the impact on the quality of life, it leads to a huge financial burden in terms of medical support, diagnostic examinations and treatment.¹⁰ Yet the endoscopy is the gold standard for diagnosis of structural disease in patients with dyspepsia, it involves some discomfort, significant social inconvenience and cost.¹¹ Therefore, our aim in the present study was to evaluate whether specific symptoms and patient characteristics were predictors of endoscopic findings.

Heartburn was the predominant symptom depicted by the patients, and gastritis was the most common diagnosis determined by endoscopy in our study group. Results of previous studies conducted either in Turkey or other countries were revealed epigastric pain as the predominant symptom.¹²⁻¹⁴ The difference between the results of these studies and ours could be related to the differences of study populations, methodologies and definition of the symptoms and which of the complaint is the predominant may vary according to the person. Moreover, many patients in our study had several complaints simultaneously.

In our study the most common diagnosis determined by endoscopy was gastritis with a rate of 82.7%. Similar

to our results Okçu et al.¹² found gastritis as the most common endoscopic diagnosis (69%), while it was reported as duodenal ulcer in Kolk's study¹³ and esophagitis in Thompson's study.¹⁵ However, the prevalence of gastric cancer (approximately 2%) was similar and consistent with the AGA technical review¹⁶ in all these studies.

In the present study six independent predictors of organic disease were found; male gender, smoking, alcohol consumption, dysphagia, regurgitation and episodic style of symptoms. Three-quarters of our patients were using NSAIDs. These drugs might be one of the causes of dyspeptic complaints, however, their usage was not a predictor for gastric disease in our study as in the other studies. The patients with gastric cancer in our study had the highest mean age and those with bulbar deformity had the lowest. Age was not a predictor either for gastric cancer or the other gastric findings. Nonetheless, male gender was one of the independent predictors of esophagitis, peptic ulcer and LES relaxation. Van Bommel et al.¹⁷ were reported in their study that gender was an independent variable for referral, women formed the majority of dyspeptic patients, while more men were referred. In our study group the number of women was higher than men, but female gender was not a predictor of any endoscopic findings.

Baldi et al.¹⁸ determined hiatal hernia and male gender as independent risk factors for esophagitis. In our study, male gender and dysphagia were found as independent risk factors for esophagitis, and the rate of esophagitis was significantly high in men who had dysphagia. On the

other hand, Yoshihara et al.¹⁹ could not find a relation between esophagitis and dysphagia.

Oddson et al.²⁰, found significant correlation between gastritis and smoking but not with alcohol consumption. Similarly, in our study we found a relation between smoking and gastritis, and smoking and episodic pain were determined as independent risk factors for gastritis. No relation was found between alcohol consumption and gastritis. Smoking was also an independent predictor of peptic ulcer and LES relaxation. In a study by Kadakia et al.²¹, nicotine was found to reduce LES pressure without effecting LES relaxation and esophagus motility. This finding may explain the relation between smoking and LES relaxation.

In the present study alcohol consumption was found as a predictor only for bulbar deformity. Kolk et al.¹³ reported that patients with peptic ulcer were more often smokers but they found no difference between major diagnostic groups in alcohol consumption. They also reported that, patients with peptic ulcer were mentioned having heartburn and regurgitation. In our study we found that regurgitation was a predictor for peptic ulcer and bulbar deformity. Besides, the rate of having peptic ulcer was significantly higher in patients with male gender, smoking and regurgitation together. Bayyurt et al.²² found gender, smoking and alcohol as risk factors for both duodenal and gastric ulcer. Salih et al.²³, reported in their study, which they researched the risk factors for gastric ulcer, duodenal ulcer and gastritis in Turkish population that, alcohol consumption in the presence of *Helicobacter pylori*, NSAIDs usage and smoking were risk factors for

duodenal ulcer development. The common result of all studies is that male gender and smoking are important risk factors for peptic ulcer development.

In this study, among dyspeptic symptoms only dysphagia, regurgitation and episodic pain were found as predictors of organic diseases. As the number of gastric cancer cases were inadequate, statistical evaluation could not be carried out, but none of the patients with gastric cancer was smoking and consuming alcohol. The most seen clinical finding in patients with gastric cancer was weight loss which was an alarm symptom for malignancy. The results of similar studies indicate various predictors for organic diseases. Studies of clinical predictors of endoscopic findings in smaller primary care settings have shown that symptoms are poor predictor of anatomical pathology.⁴

Limitations of this study were small size of the study group and the selection of patients from a secondary care unit.

Conclusion

In conclusion, the variety of dyspeptic symptoms embarrasses the objective assessment of dyspeptic patients and the diagnosis rests on advanced investigation. Although six independent predictors of organic disease were found in this study; male gender, smoking, alcohol consumption, dysphagia, regurgitation and episodic style of symptoms. Further validation of these findings in larger patient groups of general practice is recommended. Until then, we think that taking these predictors into consideration before deciding endoscopy may decrease endoscopy frequency and may be guide to primary care physicians.

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