

The Relationship Between Existence of Typical Symptoms and Psychological Factors in Patients With Erosive Esophagitis

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Background/Aims

In Asian countries including Korea, the prevalence of gastroesophageal reflux disease (GERD) is on the rise and its clinical impact has been emphasized. The purpose of this study was to investigate the clinical characteristics of esophagitis patients with or without symptoms, and their association with psychological factors.

Methods

Subjects diagnosed as erosive esophagitis of Los Angeles-A or more in screening by upper gastrointestinal endoscopy were enrolled. Questionnaires regarding GERD symptoms and Symptom Checklist-90-Revision were used to identify the presence of psychological symptoms.

Results

There was no difference between the subjects' general characteristics (gender, age, body mass index, smoking and alcohol intake) according to the existence of typical symptoms in these patients with erosive esophagitis. Patients with typical GERD symptoms were more likely to have atypical symptoms, dyspepsia and higher scores on psychological symptoms (somatization, obsessive-compulsiveness and phobic anxiety) than those without.

Conclusions

Psychological symptoms and other gastrointestinal symptoms should be considered in the patients with erosive esophagitis. (*J Neurogastroenterol Motil* 2012;18:284-290)

Key Words

Esophagitis; Gastroesophageal reflux; Psychological test

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Introduction

Gastroesophageal reflux disease (GERD) is defined as a disorder in which gastric contents reflux recurrently into the esophagus, causing troublesome symptoms and/or complications.¹ This disorder can be classified into non-erosive reflux disease (NERD), erosive reflux disease (ERD), Barrett's esophagus and so on, depending on the endoscopic findings.²

In the West, the proportion of the people experiencing typical GERD symptoms such as heartburn and acid regurgitation reaches 20%-40% in the general population and the prevalence of GERD is known to be 10%-20%.³⁻⁶ In Korea, the prevalence of patients with typical GERD symptoms is as low as 3.5%-8.5%.⁷⁻¹³ In Korea and other Asian countries, the prevalence of GERD is lower than in the West but, has been increasing and its importance has recently been emphasized.^{1,14}

GERD symptoms may develop in response to psychosocial factors as well as organic etiologies.^{15,16} Psychosocial factors can affect the development of symptoms, responses to treatment and quality of life.^{16,17} There have been many studies on the relationship between GERD symptoms and psychosocial factors.^{15,16,18,19} However, few studies restricted enrollment of patients with endoscopically-confirmed erosive esophagitis. In addition, not much is known about the differences in characteristics between symptomatic and asymptomatic GERD patients.²⁰

In the present study, we compared the baseline characteristics of patients with or without typical GERD symptoms. We investigated whether atypical symptoms of GERD and symptoms of functional dyspepsia (FD) are associated with the presence of typical symptoms of GERD. And we also investigated the correlation of typical GERD symptoms with psychological factors in esophagitis patients.

Materials and Methods

From September 2007 to September 2008, among the patients who visited the Hanyang University Hospital for a routine check-up, patients diagnosed with erosive esophagitis Los Angeles (LA)-A or more were enrolled. At the same time the patients completed a questionnaire relating to GERD (age, body mass index, alcohol intake, smoking, past history of GERD, typical or atypical symptoms of GERD and symptoms of functional dyspepsia), as well as the Symptom Checklist-90 Revision (SCL-90-R) to identify psychological symptoms. We had ob-

tained consent from the patient using the questionnaire. The definition of GERD was based on the Montreal definition and Asia-Pacific consensus, and the definition of FD was found on the Rome III criteria.^{1,2,21}

Typical and Atypical Symptoms of Gastroesophageal Reflux Disease

We considered heartburn and/or acid regurgitation as typical GERD symptoms. Heartburn was defined as having more than one of the following 4 symptoms more than once a week.

- (1) Burning or stinging sensation of the anterior chest
- (2) Burning or hot sensation of the substernal area or pit of the stomach
- (3) Burning sensation like having powdered red pepper on the chest
- (4) Hot and uncomfortable sensation when drinking water

We defined the symptom of regurgitation as a perception of refluxed gastric contents in the mouth or hypopharynx more than once a week. Atypical GERD symptoms including hoarseness, globus and chronic cough were also examined. Hoarseness was defined as having a horse throat, and globus as having the sensation of a foreign body in the throat or pit of the stomach. Chronic cough was defined as coughing at night or frequent coughing without having a cold. Atypical symptoms were scored when they occurred more than once a week.

Patients with typical GERD symptoms were classified as belonging to the symptomatic erosive esophagitis (SEE) group and patients without typical symptoms were classified as belonging to the asymptomatic erosive esophagitis (AEE) group. Therefore, patients without typical GERD symptoms were classified in the AEE group whether they had atypical GERD symptoms or symptoms of FD or no symptoms.

Symptoms of Functional Dyspepsia

Symptoms of FD included epigastric pain, epigastric burning, early satiation and postprandial fullness. Epigastric pain or burning was defined as painful or burning sensation in the epigastric area at least once a week during the previous 3 months, with onset at least 6 months previously, and this symptom had to be discontinuous and not relieved by defecation. Early satiation was defined as a feeling that the stomach was overfull soon after starting to eat so that the meal could not be finished. This symptom should have occurred more than 3 times per week over the previous 3 months, with onset at least 6 months previously. Postprandial fullness was an unpleasant sensation like the pro-

longed persistence of food in the stomach occurring after ordinary-sized meals, at least 3 times a week over the previous 3 months, with onset at least 6 months previously.

Symptom Checklist-90 Revision

SCL-90-R is a simple questionnaire of 90 items, each of which is rated on a 5-point scale of distress (0-4) ranging from “not at all” to “extremely”. SCL-90-R is used to evaluate psychological symptoms in 9 symptom dimensions. We used the Korean edition of SCL-90 modified and standardized by Kim et al²² in 1984.

The 9 primary symptom dimensions are referred to: somatization, obsessive-compulsive behavior, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism. There are also 3 global indices: the global severity index (GSI), positive symptom distress index (PSDI) and positive symptom total (PST). GSI is the mean score for all 90 items. It is designed to measure overall psychological distress. The PSDI is designed to measure the intensity of symptoms, while the PST reports the number of self-reported symptoms.

Statistical Methods

Statistical analyses were performed using SPSS version 12.0 for Windows (SPSS Inc., Chicago, IL, USA). A *P*-value of less than 0.05 was considered to be significant in all the analyses.

Results

Clinical Characteristics of the Patients

A total of 55 patients were enrolled in the study. The SEE group included 29 patients (22 males) and the AEE group 26 patients (22 males). Mean age was 48.4 years in the SEE group, 49.4 years in the AEE group and BMI was 24.2 in the SEE

group, 22.6 in the AEE group. Fifteen patients in the SEE group drank more than 2 or 3 times per week (51.7%), and 14 (53.8%) in the AEE group. The number of smokers was 11 (37.9%) in the SEE group and 6 in the AEE group. There was no statistically significant difference between the 2 groups in age, body mass index (BMI), alcohol drinking or smoking status (Table).

Los Angeles Classification and Previous History of Gastroesophageal Reflux Disease

Patients with erosive esophagitis LA-A or more were enrolled in this study. In the SEE group, 13 (44.8%) were LA-A, 12 (41.4%) LA-B, 3 (10.3%) LA-C and 1 (3.4%) LA-D. In the AEE group, 19 (73.1%) were LA-A, 7 (26.9%) LA-B, and none LA-C or LA-D (Fig. 1). The SEE group had more severe levels of esophagitis (LA-B or more) than the AEE group but it was not statistically significant (*P* = 0.055). Fourteen patients (48.3%) had previous history of GERD in the SEE group and 6 (23.1%) in the AEE group and this difference did not attain statistical significance, either (*P* = 0.052).

Association With Atypical Gastroesophageal Reflux Disease Symptoms

Twenty subjects (68.9%) in the SEE group complained of globus, and 5 (19.2%) in the AEE group (*P* < 0.001). Fifteen (51.7%) complained of chronic cough in the SEE group, and 4 (15.3%) in the AEE group (*P* = 0.009). There was no difference in terms of hoarseness between the SEE and AEE groups (13 (44.8%) vs 6 (23.0%), *P* = 0.090, Fig. 2).

Association With Symptoms of Functional Dyspepsia

There were 11 (37.9%), 11 (37.9%) and 17 (58.6%) patients with epigastric pain, early satiation, and postprandial fullness, re-

Table. Baseline Characteristics of Patients

	Symptomatic erosive esophagitis (n = 29)	Asymptomatic erosive esophagitis (n = 26)	<i>P</i> -value
M:F	22:7	22:4	
Age (mean ± SD, yr)	48.4 ± 13.3	49.4 ± 12.6	<i>P</i> = 0.791
BMI (mean ± SD)	24.2 ± 2.8	22.6 ± 5.2	<i>P</i> = 0.166
Frequent alcohol consumption (> 2-3/wk) (n [%])	15 (51.7)	14 (53.8)	
Smoking (n [%])	11 (37.9)	6 (23.1)	<i>P</i> = 0.494

M, male; F, female; BMI, body mass index.

Frequent alcohol consumption: more than twice a week.

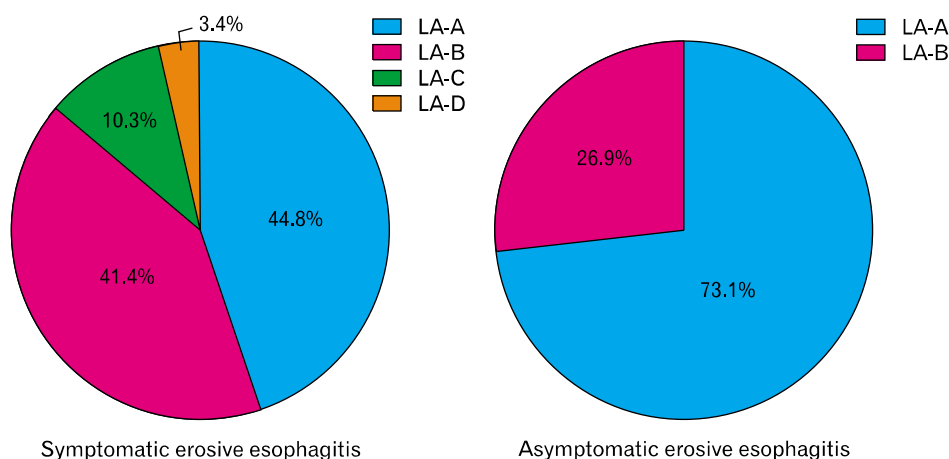


Figure 1. Los Angeles (LA) classification in the symptomatic erosive esophagitis group, 13 (44.8%) were LA-A, 12 (41.4%) LA-B, 3 (10.3%) LA-C and 1 (3.4%) LA-D. In the asymptomatic erosive esophagitis group, 19 (73.1%) were LA-A, 7 (26.9%) LA-B, and none LA-C or LA-D.

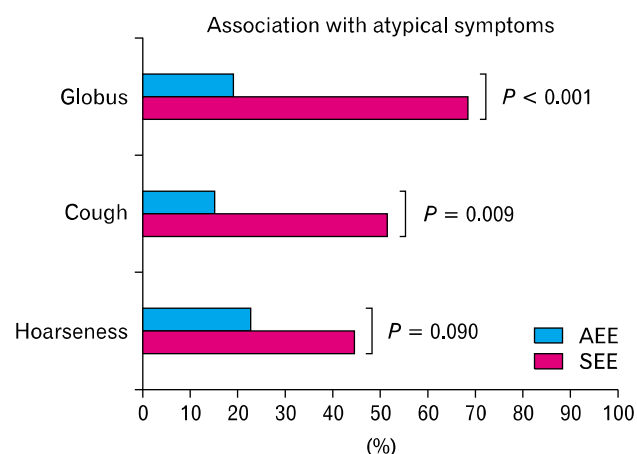


Figure 2. Association with atypical symptoms. Twenty subjects (68.9%) in the symptomatic erosive esophagitis (SEE) group complained of globus, and 5 (19.2%) in the asymptomatic erosive esophagitis (AEE) group ($P < 0.001$). Fifteen (51.7%) complained of chronic cough in the SEE group, and 4 (15.3%) in the AEE group ($P = 0.009$).

spectively, in the SEE group, and 1 (3.8%), 1 (3.8%) and 5 (19.2%), respectively, in the AEE group. The SEE group outnumbered the AEE group in all symptoms and this difference was statistically significant (epigastric pain, $P = 0.003$; early satiation, $P = 0.003$; postprandial fullness, $P = 0.005$) (Fig. 3).

Association With Psychological Symptoms Using Symptom Checklist-90 Revision

Fifty-three of the 55 patients filled out SCL-90-R; 27 in the SEE group and 26 in the AEE group. In the SEE and AEE groups, the mean values for somatization, obsessive-compulsive behavior, interpersonal sensitivity, depression, anxiety, hostility,

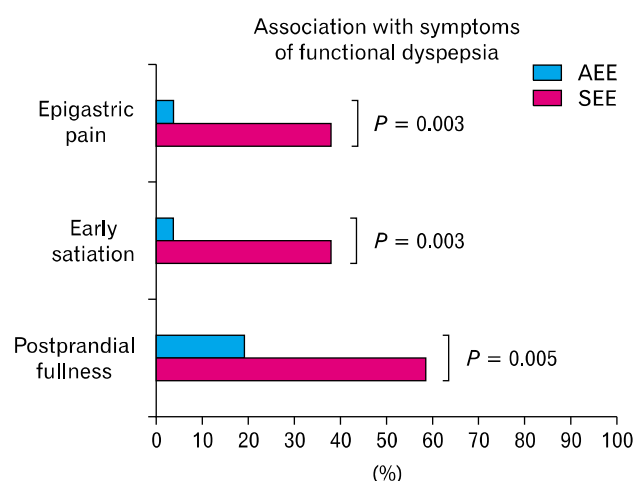


Figure 3. Association with symptoms of functional dyspepsia. There were 11 (37.9%), 11 (37.9%) and 17 (58.6%) patients with epigastric pain, early satiation, and postprandial fullness, respectively, in the symptomatic erosive esophagitis group, and 1 (3.8%), 1 (3.8%) and 5 (19.2%), in the asymptomatic erosive esophagitis group. This difference was statistically significant (epigastric pain, $P = 0.003$; early satiation, $P = 0.003$; postprandial fullness, $P = 0.005$). SEE, symptomatic erosive esophagitis; AEE, asymptomatic erosive esophagitis.

phobic anxiety, paranoid ideation and psychoticism were (SEE/AEE) 52.37/44.62, 46.22/41.50, 45.74/44.77, 44.63/42.81, 45.89/43.12, 45.56/44.23, 49.59/44.65, 46.48/43.35 and 46.00/43.92, respectively. The scores in all categories were higher in the SEE group than the AEE group, but only the differences for somatization ($P = 0.004$), obsessive-compulsive behavior ($P = 0.041$), and phobic anxiety ($P = 0.022$) were statistically significant (Fig. 4). The GSI, PSDI and PST were 46.30/41.96, 48.81/40.04 and 45.81/42.12 in the SEE and AEE groups,

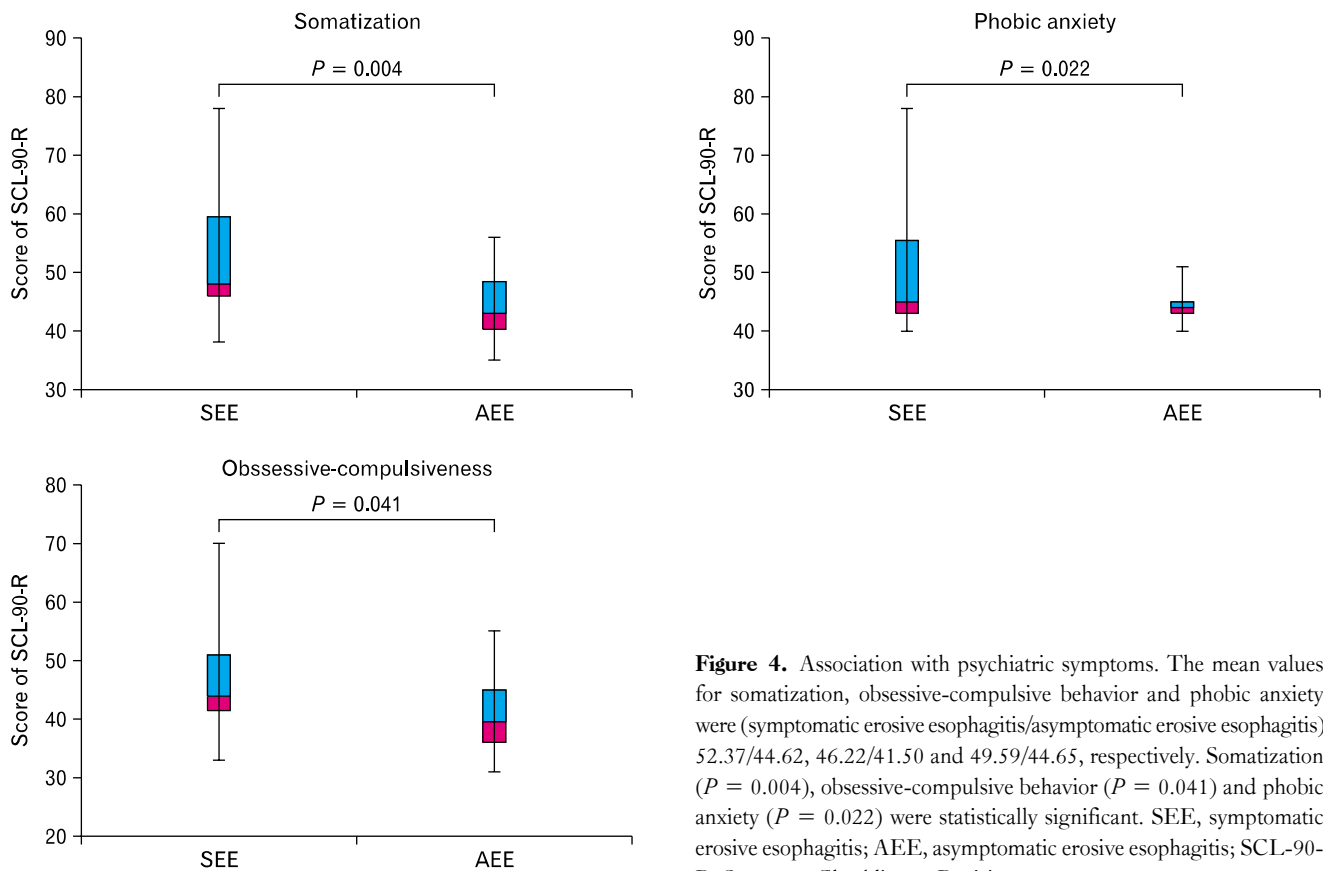


Figure 4. Association with psychiatric symptoms. The mean values for somatization, obsessive-compulsive behavior and phobic anxiety were (symptomatic erosive esophagitis/asymptomatic erosive esophagitis) 52.37/44.62, 46.22/41.50 and 49.59/44.65, respectively. Somatization ($P = 0.004$), obsessive-compulsive behavior ($P = 0.041$) and phobic anxiety ($P = 0.022$) were statistically significant. SEE, symptomatic erosive esophagitis; AEE, asymptomatic erosive esophagitis; SCL-90-R, Symptom Checklist-90 Revision.

respectively. Only the difference in PSDI was statistically significant (GSI, $P = 0.063$; PSDI, $P = 0.009$; PST, $P = 0.224$).

Discussion

Complications due to reflux, and lower quality of life because of reflux symptoms, are generally included in gastroesophageal reflux disease (GERD).²³ Reflux symptoms refer to typical reflux related symptoms (heartburn and acid regurgitation) and atypical symptoms (chest pain, dysphagia, globus, indigestion, cough, asthma, bronchitis, pneumonia and hoarseness etc). Among patients with GERD, those with endoscopically confirmed-erosion are classified as erosive esophagitis. In most studies, about a third of patients with erosive esophagitis had no symptoms, and only a quarter of patients with reflux symptom had erosive esophagitis.²⁴ Asymptomatic erosive esophagitis is often discovered during upper gastric endoscopy, and several studies have reported these types of GERD as asymptomatic GERD or silent GERD.²⁵

We investigated the relationship between the presence of typical symptoms and psychological factors, as well as the clinical

characteristics of patients with erosive esophagitis. Several similar papers have been published previously.^{15,16,18,19} However, most of them failed to apply strict criteria for esophagitis or for the various symptoms. In this study, we set strict criteria for defining subjects' symptoms and for classifying erosive esophagitis. Our study was conducted with patients diagnosed with erosive esophagitis LA-A to D based on endoscopy. Subjects with minimal changes in the Z-line were excluded because of the uncertainty over its diagnostic interpretation. Because it is difficult to prove the association of atypical GERD symptoms with GERD, only subjects with typical GERD symptoms defined as SEE group. As in many other studies, we enrolled only patients experiencing typical GERD symptoms more than once a week.

Old age, male sex, race, family history, higher socioeconomic status, higher BMI level and smoking, are well known risk factors for typical GERD. However, the risk factors for asymptomatic GERD remain unclear. Age, BMI, alcohol intake, smoking and gender were investigated in the present study, and those risk factors did not differ between the SEE and AEE groups. However, Cho et al²⁰ have claimed that AEE was more strongly

associated with old age and male sex than SEE, and Nozu and Komiyama²⁶ stated that smoking, male gender, and lower BMI were independent factors associated with AEE. A larger study is needed because numbers of patients in the studies performed so far, including our own, have been small.

According to earlier studies, GERD symptoms do not predict the severity of esophagitis. However in our study which only considered erosive esophagitis, we found that patients with typical symptoms of GERD had more severe levels of esophagitis, of LA-B or more, even though there was no statistical significance. In particular, all the patients with LA-C and D esophagitis had typical symptoms. Therefore when severe esophagitis classified as LA-C or more is confirmed by endoscopy, we may assume that it is probably accompanied by typical symptoms.

In this study, patients with typical symptoms were more likely to also have atypical symptoms and symptoms of functional dyspepsia, compared to patients without typical symptoms. Many previous studies have led to the same conclusion.^{27,28} There is an overlap between reflux symptoms, irritable bowel syndrome, and functional dyspepsia, and IBS and FD are common over the entire spectrum of GERD.²⁷ Rey et al²⁸ found that the atypical symptoms of GERD were closely correlated with the typical symptoms.

Psychological disorders have been associated with various gastrointestinal diseases including GERD.²⁹ Bile acid secretion and gastric motility are known to be affected by the emotion and stress.³⁰ McDonald-Haile et al¹⁹ reported that relaxation training can improve symptoms of reflux and esophageal acid exposure. Baker et al¹⁸ researched 51 patients with GERD and 43 control subjects, and they suggested that depression, somatization, anxiety and intensity of reporting symptom distress were more common in GERD patients. Johnston et al³¹ reported that phobia, obsessionality and somatization disorder were more common in people who visited hospital with sensation of heartburn. A study by Núñez-Rodríguez and Miranda Sivelo¹⁵ also showed that patients with reflux symptom scored higher than the controls in somatization, obsessiveness, interpersonal sensitivity, phobia, psychosis and Global Index. Kamolz et al³² and Biertho et al³³ found that postoperative outcomes of anti-reflux surgery of patients with psychological disorder were worse than those of a control group. These results suggest that psychological factors can influence the perception and/or severity of GERD. We therefore investigated the correlation between psychological factors and the presence of typical GERD symptoms in patients with erosive esophagitis. The scores of patients with symptomatic erosive esophagitis were higher than those of asymptomatic patients on

all items of SCL-90-R, and somatization, obsessive-compulsive behavior, phobic anxiety and PSDI were statistically significant.

This study had several limitations. The first was the small sample size. Hence, a well-designed multicenter study is needed to obtain a statistically significant result. The second limitation is derived from the difficulties that the study subjects had in understanding the contents of questionnaire. Lay persons were not able to understand the specific symptoms of esophagitis and functional dyspepsia, and the psychological examination consisted of too many question lists to answer, so that 2 subjects gave up doing the psychological test. The third limitation of the study was that even if a patient reported symptoms of functional dyspepsia he was not diagnosed with functional dyspepsia because symptoms of functional dyspepsia could also be reported in erosive esophagitis. The Rome III criteria of functional dyspepsia require one or more of the following symptoms: bothersome postprandial fullness, early satiation, epigastric pain, epigastric burning with no evidence of structural disease even with, the use of endoscopy. These criteria have to be fulfilled for at least 3 months with symptom onset at least 6 months earlier.²¹ In this study, endoscopy was performed on all the patients and all were diagnosed with structural disease or "erosive esophagitis" by endoscopy. Therefore they could not be diagnosed with functional dyspepsia. Fourth, some of the patients with atypical reflux symptoms were classified in the asymptomatic erosive esophagitis group because only the patients with typical symptoms were included in the symptomatic erosive esophagitis group. Therefore, the lack of agreement with previous studies on the relationship between reflux symptoms, clinical characteristics and GERD severity may be attributable to differences in the classification of patients. Fifth, we did not evaluate the severity of symptoms such as frequency and strength. Therefore we might have ignored the correlation between the severity of symptom and the presence of esophagitis.

In conclusion, this study shows that reflux symptoms in patients with endoscopically-demonstrated esophagitis are associated with psychosocial factors. In addition, reflux symptoms are associated with atypical symptoms of GERD and functional dyspepsia. These findings suggest that in managing GERD patients we should investigate their psychological status and include caring for their stressors and that we should assess dyspeptic symptoms as well as the atypical GERD symptoms that often occur along with GERD symptoms. We suggest that it would be helpful in the management of GERD patients unresponsive to normal treatment to assess whether they have psychological disorders or other dyspeptic symptoms.

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