

Reflux Esophagitis and Its Relationship to Hiatal Hernia

We performed this study to evaluate the prevalence of reflux esophagitis and/or hiatal hernia in patients referred to a medical center and to examine the relationship between endoscopic reflux esophagitis and hiatal hernia. The study was carried out in 1,010 patients referred to Yong Dong Severance Hospital for upper gastrointestinal endoscopy because of symptoms related to the gastrointestinal tract from September 1994 to March 1996. The presence of hiatal hernia was defined as a circular extension of the gastric mucosa of 2 cm or more above the diaphragmatic hiatus. Reflux esophagitis was found in 5.3% of patients, hiatal hernia in 4.1%, duodenal ulcer in 7.2% and gastric ulcer in 8.2%. The prevalence rates of reflux esophagitis and hiatal hernia in males were significantly higher than those in females. Thirty-two percent of patients with reflux esophagitis had hiatal hernia. In patients without reflux esophagitis, hiatal hernia was found in only 2.5% ($p < 0.01$). There was no significant association between the presence of hiatal hernia and the degree of esophagitis on endoscopy. Duodenal ulcer was the second most common endoscopic abnormality found in patients with reflux esophagitis. The prevalence rate of reflux esophagitis and/or hiatal hernia at a medical center is relatively low compared to peptic ulcer disease and other reports from the Western countries. Our study confirms the close association between reflux esophagitis and hiatal hernia.

Key Words: Esophagitis, peptic; Hernia, hiatal

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INTRODUCTION

Reflux esophagitis is the most common form of gastroesophageal reflux diseases (1). It is most often recognized either by the presence of recurrent symptoms of heartburn, acid regurgitation, and dysphagia or by the presence of erosion or ulceration in the squamous epithelium of the esophagus detected endoscopically, radiologically or histologically (1). The prevalence of reflux esophagitis differs depending on whether an analysis is based on symptoms or signs of disease (1-4). When based on symptoms (primarily heartburn), the disease is very common in the Western countries (1).

The prevalence of reflux esophagitis in Korea appears to be low compared to several reports from the Western countries (5). In several endoscopic studies, hiatal hernia was found in 63-84% of patients with reflux esophagitis and the association between reflux esophagitis and hiatal hernia is generally accepted as being significant (6-8).

In this study, we evaluated the prevalence rate of reflux esophagitis and/or hiatal hernia by endoscopy in patients who were referred to a medical center and exam-

ined the relationship between reflux esophagitis and hiatal hernia.

PATIENTS AND METHODS

The study was carried out in 1,010 patients referred to Yong Dong Severance Hospital for upper gastrointestinal endoscopy from September 1994 to March 1996. All of the patients enrolled in this study were complaining of at least one of the symptoms such as heartburn, dysphagia, regurgitation, indigestion and other ulcer-like symptoms. Patients who had disorders such as esophageal or gastric malignancy and esophageal varices were excluded. Patients with a history of operation on the gastrointestinal tract were also excluded. The diagnosis of reflux esophagitis was based on the presence of gross mucosal injury ranging from red longitudinal streaks with associated friability to erosion or ulceration in the distal esophagus. Grading of reflux esophagitis was done according to the Savary-Miller grading system (9). The presence of hiatal hernia was determined by noting via an endoscope

a gastric pouch lined with rugal folds above the crural impression. The length of a gastric pouch lined with rugal folds above the crural impression should be at least 2 cm while the patients were asked to breathe quietly without inflating the stomachs. No special respiratory maneuvers were employed to increase abdominal pressure and encourage herniation. We also recorded the concomitant existence of endoscopic signs of other gastroduodenal diseases, such as gastric ulcers and duodenal ulcers.

The statistical comparison among groups was tested by chi-square test using a PC-SAS statistical analysis package (SAS institute, Cary, NC.). The difference was considered significant when *p* value was less than 0.05.

RESULTS

Patients' characteristics

There were total 1,010 patients (male 488, female 522), aged 15-85 yr (mean ±SD, 46 ±14). Reflux esophagitis was found in 54 patients (5.3%), hiatal hernia in 41 patients (4.1%), duodenal ulcer in 73 patients (7.2%) and gastric ulcer in 83 patients (8.2%).

Prevalence of reflux esophagitis and hiatal hernia by sex and age

Reflux esophagitis and hiatal hernia were observed more frequently in men (reflux esophagitis 7.8%, hiatal

hernia 5.7%) than in women (reflux esophagitis 3.0%, hiatal hernia 2.5%) (*p* < 0.01, Fig. 1, 2).

The age distribution and prevalence rate of patients with reflux esophagitis and hiatal hernia are shown in Table 1. There was no statistically significant difference.

Associated conditions in reflux esophagitis

Reflux esophagitis was the only pathological finding observed in 28 patients (51.9%). Otherwise reflux esophagitis was frequently combined with hiatal hernia in 17 patients (31.5%), duodenal ulcer in 14 patients (25.9%), gastric ulcer in 1 patient (1.8%) and both duodenal ulcer and gastric ulcer in 2 patients (3.7%) (Table 2).

Table 1. Prevalences of reflux esophagitis and hiatal hernia according to age

Age group (yr)	Reflux esophagitis (+)	Hiatal hernia (+)	Number
10-19	2 (9.1%)	0 (0.0%)	22
20-29	7 (5.7%)	6 (4.9%)	123
30-39	13 (6.6%)	9 (4.5%)	198
40-49	12 (4.9%)	9 (3.7%)	243
50-59	11 (5.0%)	5 (2.3%)	218
60-69	6 (4.3%)	5 (3.5%)	141
70-79	3 (5.2%)	6 (10.3%)	58
≥80	0 (0.0%)	1 (14.3%)	7
Total	54 (5.3%)	41 (4.1%)	1,010 (100%)

p: not significant

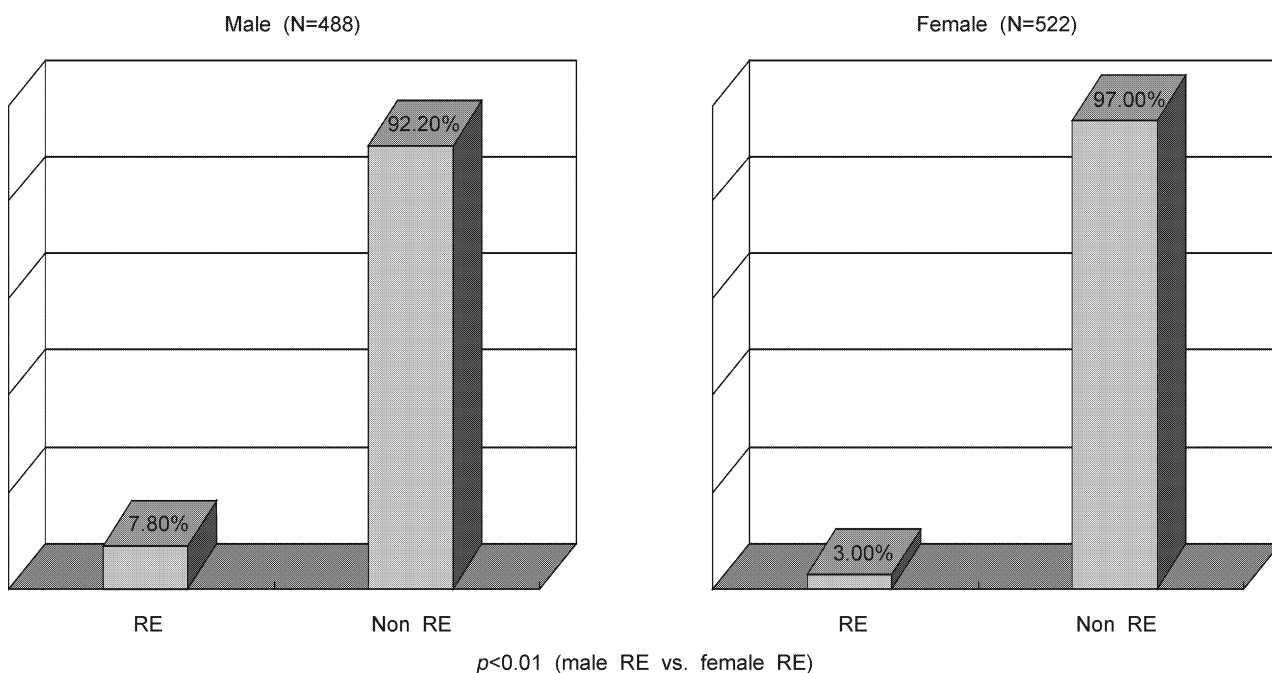


Fig. 1. Prevalence of reflux esophagitis by sex (RE, reflux esophagitis).

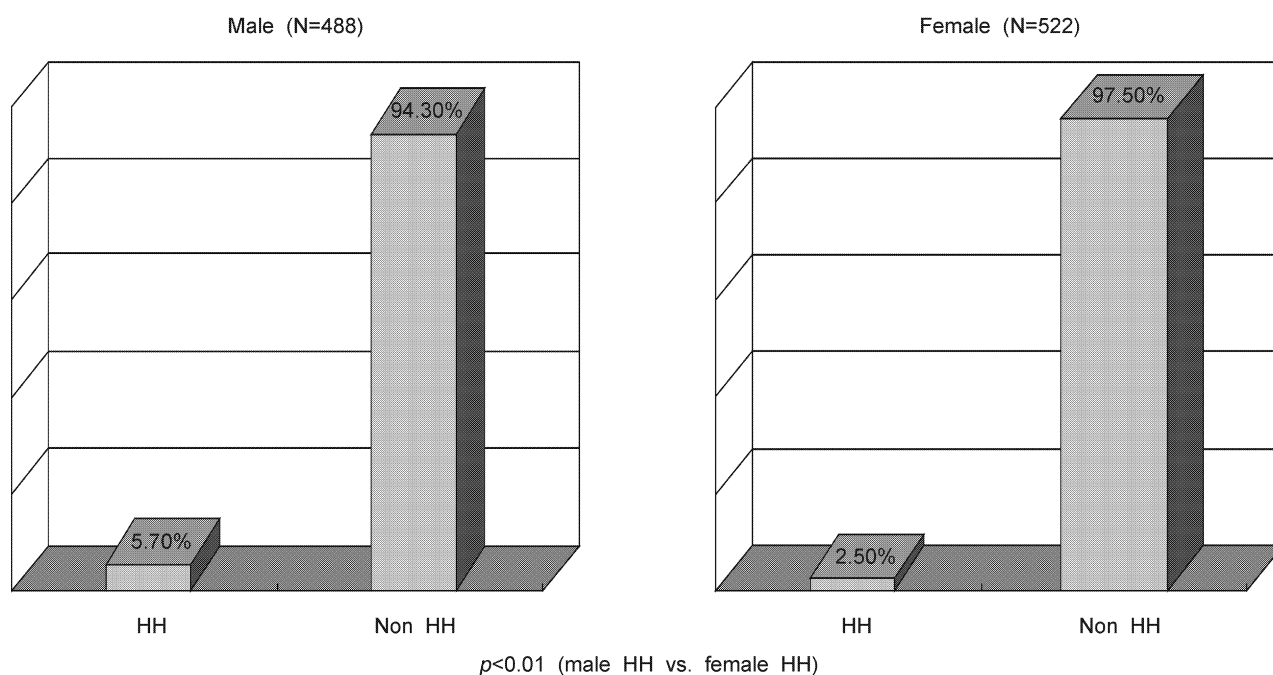


Fig. 2. Prevalence of hiatal hernia by sex (HH, hiatal hernia).

Table 2. Associated endoscopic findings in reflux esophagitis

Endoscopic findings	Number (%)
Esophagitis, isolated	28 (51.9)
Esophagitis + hiatal hernia	17 (31.5)
Esophagitis + duodenal ulcer	14 (25.9)
Esophagitis + gastric ulcer + duodenal ulcer	2 (3.7)
Esophagitis + gastric ulcer	1 (1.8)
Total	54 (100.0)

Table 3. Relationship between reflux esophagitis and hiatal hernia

	Hiatal hernia	
	Present	Absent
Reflux esophagitis		
Present	17 (31.5%)*	37 (68.5%)
Absent	24 (2.5%)*	932 (97.5%)

* $p<0.01$

Table 4. Relationship between hiatal hernia and the severity of reflux esophagitis

	Reflux esophagitis	
	Grade I	Grade \geq II
No. with hiatal hernia	13 (29.5%)	4 (40.0%)
No. without hiatal hernia	31 (70.5%)	6 (60.0%)

p : not significant

Relationship between reflux esophagitis and hiatal hernia

Among patients with reflux esophagitis, hiatal hernia was found in 31.5%. In contrast, in patients without reflux esophagitis, only 2.5% had hiatal hernia ($p<0.01$, Table 3).

When the relationship between hiatal hernia and the severity of reflux esophagitis was examined, there was no significant association between the presence of hiatal hernia and the degree of reflux esophagitis (Table 4).

DISCUSSION

Although reflux esophagitis is one of the most common disorders affecting the esophagus in the Western countries, the figures on its incidence and prevalence differ depending on the study populations (2, 6). If the prevalence of the disease is based on symptoms (primarily heartburn), it is very common (1). For example, 44% of adult Americans had heartburn at least once per month (1, 10). However, if the prevalence is based on signs of esophageal damage, approximately 7% of symptomatic Americans have erosive esophagitis (1, 11). In United Kingdom and Switzerland, it has been reported to be 22.8% and 11.7% respectively (4). According to Berstad et al. (6), the prevalence rates of reflux esophagitis and hiatal hernia were approximately 15% and 17%, respectively in primary endoscopic examination of dyspeptic patients. The overall prevalence in the Western countries

for symptomatic reflux is about 5% and for erosive esophagitis is about 2% of those with symptoms (3).

In Korea, it is generally accepted that the prevalence and incidence of reflux esophagitis are lower than in the Western countries. Nevertheless, there is no report on the prevalence and incidence of reflux esophagitis in the general Korean population. The study of Yi et al. (5) showed that the estimated age-adjusted prevalence of endoscopically-proven reflux esophagitis in a general health screening population was 2.7%. This result is very low compared to those from the Western countries. In our study the prevalence rate of reflux esophagitis was 5.4%, which means that the prevalence of reflux esophagitis in the general Korean population would be much lower than that of the Western countries.

In reflux disease, reported data show an approximately equal sex ratio (10), but there is a marked male predominance in reflux esophagitis, which ranges from 2:1 to 6:1 (3, 12). The male predominance is more evident in Korea. It was reported as high as 32:1 (5) in Korea and our result also showed that the prevalence of reflux esophagitis was significantly higher in males. As for hiatal hernia, there is some evidence that it is more common in women (13). However, in our study, hiatal hernia was found to be more common in men.

The prevalences of reflux esophagitis and hiatal hernia increase with age in the Western countries (1, 3, 13). However, as shown here, we could not find such a tendency in our patients with reflux esophagitis. On the other hand, although it was not statistically significant, hiatal hernia had a tendency to increase with age.

The most frequently associated condition found endoscopically in reflux esophagitis was hiatal hernia. In a report by Berstad et al. (6), association between peptic ulcer disease and reflux esophagitis has been suggested. Yi et al. (5) also reported that approximately 18% of the esophagitis patients had peptic ulcer disease. Our data also showed some association between the two disorders. Interestingly, duodenal ulcer was found much more often in the patient with esophagitis than gastric ulcer, not only in Berstad's study (6) but also in ours, although the prevalence of duodenal ulcer was lower than that of gastric ulcer. The significance of this association needs further investigation. In this study, hiatal hernia was demonstrated in 31.5% of patients with reflux esophagitis. Conversely, only 2.5% of the patients without reflux esophagitis had hiatal hernia, which is significantly different.

In this study, most of the patients had a mild degree of esophagitis. Some of the reported studies suggested that there was an association between the severity of esophagitis and the presence of hiatal hernia (6). However, there was no significant association in our study.

In conclusion, the prevalences of reflux esophagitis and hiatal hernia are relatively low compared to those of the Western countries but not uncommon in Korea. Our study confirms a significant association between reflux esophagitis and hiatal hernia.

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