

# Brief Questioning by Nursing Staffs before Endoscopic Examination May Not Always Pick Up Clinical Symptoms of Endoscopic Reflux Esophagitis

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**Summary** The clinical features of patients reflux esophagitis without any symptoms have not been clearly demonstrated. This study evaluated the clinical features of patients with endoscopy-positive reflux esophagitis, who did not complain of symptoms, as detected by brief questioning by nursing staffs. Eight thousand and thirty-one patients not taking medication for gastrointestinal disease, were briefly asked about the presence of heartburn, dysphagia, odynophagia and acid regurgitation by nursing staffs before endoscopy for assessment of esophagitis utilizing the Los Angeles Classification. Endoscopically, 1199 (14.9%) patients were classified as positive for reflux esophagitis. The endoscope positive subjects who complain heartburn were 539/1199 (45.0%). The endoscope positive subjects who do not complain symptoms were 465 in 1199 positive reflux esophagitis (38.8%). We compared endoscopic positive subjects without any complain by brief question by nursing staffs to endoscopic positive subjects with heartburn. Male gender, no obesity, absence of hiatus hernia, and low-grade esophagitis were associated with endoscopy-positive patients who do not complain of symptoms. The results of this study indicated correct detection of clinical symptoms of reflux esophagitis might be not easy with brief questioning by nursing staffs before endoscopic examination.

**Key Words:** Loss Angeles Classification, gastroesophageal reflux disease, heartburn

## Introduction

Gastroesophageal acid reflux causes a variety of clinical symptoms, such as heartburn, acid regurgitation, dysphagia and retrosternal pain. These reflux symptoms show varying severity, frequency and incidence [1]. Endoscopic evaluation is a reliable method for evaluation of esophagitis [1, 2] and the Los Angeles Classification is one of the most

accepted grading systems for esophageal mucosal breaches [2, 3]. It is widely accepted that such typical clinical symptoms of gastroesophageal reflux reflect the presence and grading of endoscopic reflux esophagitis. Clinical symptoms might vary between countries and races [4, 5], and several studies from Japan have indicated a relationship between symptoms and reflux esophagitis [6–17]. Our coworkers have previously indicated that clinical symptoms detected by short questions before endoscopic examination were not always equivalent to grading of reflux esophagitis, especially regarding dysphagia, in a cross-sectional study of 8031 subjects [8, 18]. The present study aimed to assess limitation of brief asking of symptoms before endoscopic

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examination by nursing staffs, and to assess clinical characteristics of patients reflux esophagitis without any symptoms by this process.

## Materials and Methods

### Patients

This study re-analyzed, focused on symptoms detection by nursing staff, data detected in the previous study [8], and the recruited method described briefly as follows: Patients were recruited from 23 hospitals, including the Saga Medical School, in Saga Prefecture (population, ~800,000), and were not randomly selected community samples as in our previous studies [8]. A total of 8031 Japanese patients (4120 male, 3911 female; aged >30 years, mean 59.4) were enrolled in the present multicenter study from September 1996 to October 1998. Among the 8031 patients, 6166 were outpatients who visited the 23 hospitals but did not receive medication for gastrointestinal disease, and the other 1865 were mainly selected from those receiving secondary examinations from a primary gastroenterological mass survey conducted in Saga Prefecture (50000/year), or patients who visited the hospitals for a routine physical examination. The study was conducted according to the provisions of the Declaration of Helsinki. The clinical study committee of Saga Medical School Hospital approved the study, and all patients were informed about the basic concept of the present study and of gastrointestinal endoscopy. Patients were excluded if they had received medication for gastrointestinal disease, or had had laparotomy. Patients who had had a major psychotic episode, mental retardation or dementia were also excluded.

### Symptoms assessment

Before endoscopic examination, each patient was interviewed by nursing staffs who briefly asked questions regarding current clinical symptoms, including heartburn, dysphagia, odynophagia (chest pain or irritation on swallowing) and acid regurgitation. The patients simply answered "yes" or "no". Endoscopists were blinded to the interview results before their evaluation of reflux esophagitis.

### Upper gastrointestinal endoscopy

Upper gastrointestinal endoscopy for evaluation of reflux esophagitis was performed by experienced endoscopists, certified by the Japan Gastroenterological Endoscopy Society. The endoscopists were directed to grade esophageal mucosal breaks with esophagitis according to the Los Angeles Classification of Esophagitis in 1996 [2]. To reduce interobserver variation in the grading of esophagitis, pre-testing and several meetings were held before this study was conducted. The criteria for the diagnosis of esophagitis were: grade A, one or more mucosal breaks, each no longer

than 5 mm; grade B, at least one mucosal break more than 5 mm long; grade C, at least one mucosal break, continuous between the tops of two or more mucosal folds; grade D, circumferential mucosal break. The endoscopists were also required to check for upper gastrointestinal diseases such as gastric and/or duodenal ulcers, polyps and cancer, but disorders other than esophagitis were not evaluated in this study.

### Statistical analysis

We analyzed data from endoscopy-positive patients who did not complain of symptoms. Most of the analyses gave rise to contingency tables by the  $\chi^2$  test of independence and the Cochran–Mantel–Haenzel method. We used a logistic regression model to compute the odds ratio (OR) and the 95% confidence interval (CI) in multivariate modeling. Age, sex and other symptoms were adjusted to calculate the OR. Two-tailed *p* values <0.05 were considered significant. Statistical analyses were performed with the SAS statistical package (version 6.08; SAS Inc., Cary, NC).

## Results

Esophagitis was found in 1199/8031 (14.9%) patients. The grade of reflux esophagitis was evaluated by endoscopy, as follows: grade A, 717 (8.9%) patients; grade B, 341 (4.2%); and grade C + D, 141 (1.8%). Heartburn was the most common symptom of reflux esophagitis and was found in 539 of 1199 (45.0%) endoscopy-positive patients. Four hundred and sixty-five of 1199 (38.8%) of endoscopy-positive patients did not complain of any symptoms. The clinical characteristics of Group I (esophagitis with heartburn) and Group II (esophagitis without any symptoms) were compared. As indicated in Table 1, the number of males was significantly higher in Group II compared to Group I. Body mass index (BMI) was significantly higher in Group I than in Group II. The rate of hiatus hernia was high in Group I, and endoscopic esophagitis was significantly more severe in Group I compared to Group II. Other factors including age, smoking and alcohol consumption did not differ between the two groups.

Univariate analysis of clinical characteristics of patients in Groups I and II is shown in Table 2. This indicated that gender, BMI, hiatus hernia, and severity of reflux were closely related to the presence or absence of clinical symptoms of endoscopic reflux esophagitis. Results of multivariate analysis are shown in Table 3. As indicated, male gender, absence of hiatus hernia, patients not overweight, and absence of severe reflux esophagitis (grades C and D) were clinical characteristics of Group II patients compared to Group I.

Table 1. Analysis evaluated by  $\chi^2$  test of the relationship between several factors in endoscopy-positive subjects

Factors	Group I (n = 539)	Group II (n = 465)	p value
Sex (males/females)	270/269	276/189	0.003
Age (30/40/50/60/70/80 years)	46/103/97/129/117/47	38/79/83/113/109/43	0.955
BMI (<25:25≤)	369:142	356:82	0.001
Hiatus hernia (+/-)	279/260	186/279	<0.001
Smoking (+/-)	176/363	170/295	0.194
Alcohol drinking (+/-)	231/308	202/263	0.852
Grade (A:B:C:D)	271:187:58:23	332:100:26:7	<0.001

Group I: endoscopic esophagitis with heartburn. Group II: endoscopic esophagitis without any symptoms. Grade: evaluation of reflux esophagitis with Los Angeles Classification [2]. BMI: body mass index (kg/m<sup>2</sup>)

Table 2. Univariate analysis evaluated between Groups I and II

Factors	OR	95% CI
Sex (males/females)	1.46**	0.54–0.88
BMI <25	1	reference
25≤	0.60**	0.44–0.82
Hiatus hernia (+/-)	0.62**	0.48–0.80
Esophagitis: grades A + B	1	reference
Esophagitis: grades C + D	0.43**	0.28–0.66

\*\**p*<0.01. OR was adjusted for each symptom, age and sex. Group I: endoscopic esophagitis with heartburn. Group II: endoscopic esophagitis without any symptoms. BMI: body mass index (kg/m<sup>2</sup>).

Table 3. Multivariate analysis evaluated between Groups I and II

Factors	OR	95% CI
Sex (males/females)	1.35*	0.57–0.98
BMI <25	1	reference
25≤	0.62**	0.45–0.84
Hiatus hernia (+/-)	0.69**	0.53–0.90
Esophagitis: grades A + B	1	reference
Esophagitis: grades C + D	0.45**	0.29–0.72

\**p*<0.05, \*\**p*<0.01. OR was adjusted for each symptom, age and sex. Group I: endoscopic esophagitis with heartburn. Group II: endoscopic esophagitis without any symptoms. BMI: body mass index (kg/m<sup>2</sup>).

## Discussion

In the present study, we evaluated endoscopy-positive patients who did not complain of symptoms by brief questions by nursing staffs, as in our previous studies [8, 18], and who had not been given medication for gastrointestinal disease. Precise and structured questionnaires for reflux symptoms are useful for diagnosis of gastroesophageal reflux disease, and heartburn is a major and specific symptom that is associated with abnormal manometric and pH results [19–25]. It has also been shown that a brief and simple questionnaire is reliable for noting changes in reflux symptoms [10, 26]. We did not use precise questionnaires in this study, because the aim was to establish whether patients who suffered from reflux symptoms in daily life could be detected by brief questioning by nursing staffs. This consisted of briefly asking the patients about heartburn, dysphagia, odynophagia and acid regurgitation before endoscopic examination, and the patients simply answered “yes” or “no”.

The present study focused on patients with endoscopy-positive reflux esophagitis without clinical symptoms, assessed by brief questioning by nursing staffs. The number of endoscopy-positive patients who did not complain of any

symptoms was ~6% (465/8031) of the whole group tested. The ratio of patients without symptoms among those with endoscopic esophagitis was relatively high, 465/1199 (38.8%). This high ratio was partly due to the specific conditions of the present study. The patients surveyed were limited to outpatients who did not receive medication for gastrointestinal disease. The patients were selected from those receiving secondary examinations from a primary gastroenterological mass survey conducted in Saga Prefecture, and the patients visited the hospital for a routine physical examination. The level of severe esophagitis in this study was low, around 2%. The nursing staffs asked patients brief questions, and patients simply answered “yes” or “no”.

The cross-sectional study with a large subject population indicated that the characteristics of patients with endoscopic esophagitis without any clinical symptoms were male gender, absence of obesity and hiatus hernia, and low-grade esophagitis, compared to patients with endoscopic esophagitis with heartburn. We performed a large number of routine endoscopic examinations, because upper gastrointestinal endoscopy is an examination routinely performed once a year in Japan due to the high prevalence of gastric cancer and squamous cell cancer of the esophagus. As a

result, the characteristics of the esophagitis patients without any symptoms questioned by nursing staffs were estimated in this study.

Endoscopic examination and clinical symptoms are most reliable for diagnosis of reflux esophagitis in normal clinical situations [1, 4, 5, 8, 27–29]. This study indicated that detection of clinical symptoms of reflux esophagitis was not easy using a short questionnaire administered by nursing staffs. This suggests that precise interview for clinical symptoms and/or a questionnaire for reflux esophagitis might be required for nursing staffs and health practitioners to carry out precise diagnosis of reflux esophagitis.

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