

THE ASSESSMENT OF CLINICAL MANIFESTATIONS OF GASTROESOPHAGEAL REFLUX DISEASE (GERD) AMONG MONGOLIANS

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Abstract

The new millennium has distinct changes in the pattern of gastrointestinal disease in the Asian Pacific region. In Mongolia, increasing interest of gastroesophageal reflux disease related to the availability of new methods of investigation and modalities of treatment. Since 1999 year, [24-h pH monitoring](#) has gained widespread clinical use in the identification of gastroesophageal reflux disease in our country.

Our aim was to assess clinical manifestations and classify of hospital-based gastroesophageal reflux disease among Mongolians. In this prospective study, we collected 172 outpatients with gastroesophageal reflux disease. Diagnosis was considered by combination of three criteria - clinical, endoscopic and pH-metric. Gastroesophageal reflux disease was graded according to the severity of esophagitis using Los Angeles classification. All individual parameters of esophageal pH monitoring, such as frequency of all or only long reflux episodes, and an overall summary score of pH monitoring.

The morphological and physiological findings of four groups of gastroesophageal reflux disease patients in Mongolia are presenting the various clinical forms of gastroesophageal reflux disease, which differentiated by activity of reflux esophagitis, occurrence of Barrett's esophagus, presence of *Helicobacter pylori* infection, and severity of acid reflux episodes. We recorded that peculiarity of hospital based gastroesophageal reflux disease in Mongolia with association of gastroduodenal pathology.

Keywords: gastro esophageal reflux disease, reflux esophagitis, Barrett's esophagus

INTRODUCTION

21st century is considered as a century of Gastroesophageal Reflux Disease.¹ frequent symptoms of gastro esophageal reflux affect 10 - 30 % of the adult population in US. Western countries, yet less than one third of reflux patients ever develop reflux esophagitis.² Now a new conceptual model is adopted that considers GERD as three unique groups of patients: non-erosive reflux disease (NERD), erosive esophagitis (RE) and Barrett's esophagus (BE).³ * This subset with NERD comprises up to 65-75% of the GERD population. A symposium held at the World Congress of Gastroenterology in 1994 has proposed the use of mucosal breaks for the diagnosis of erosive esophagitis and classification. The Los Angeles classifica-

tion has gained wide acceptance among doctors of the world.'

GERD appears to occur less frequently and milder of endoscopic severity in Asia than in US and Europe. In last few years has the evidences to suggest that GERD is increasing in some Asian countries such as Taiwan, Japan, Malaysia and Singapore. This could be due to changing socio-economic conditions, lifestyle changes, decreasing prevalence of *Helicobacter pylori* etc in the region."

There are no particular study of GERD in our country, which is becoming one of the common disorders in the medical practice in Mongolia. GERD documented in 3.8 percent of the patients underwent

upper gastrointestinal endoscopy during 1996-1999 and the subject number was increased up to 16.5 percent during 2000-2002 at the Shastin and Central Clinical Hospital. The previous studies show that male patients suffered from reflux disease 2 times more than female patients and generally indicate increasing prevalence of GERD in Mongolia. The last decade has been significant progress in our ability to assess and treat GERD. In Mongolia since 1999, 24-hour pH monitoring has gained widespread clinical use in the identification of GERD. Prolonged esophageal pH monitoring is an established and well-standardised test to measure and quantify esophageal acid exposure, indirectly to determine the esophageal motor dysfunction."

The aim of the present study was to assess clinical manifestations of GERD, depending morphophysiological appearance of esophagus and stomach among Mongolians. Consequently we would like to explore the difference of GERD in Mongolia. In this prospective study we have investigated 172 patients with GERD. The diagnosis of all patients was confirmed by (1) GERD questionnaire, (2) 24-h esophageal pH-metry, and (3) upper gastroduodenal endoscopy with biopsy and *priori* test.

METHODS

Patients The study consisted of patients (59 men and 79 women, mean age 39.7) who were undergoing upper gastrointestinal endoscopy for symptoms of GERD in the outpatient endoscopy clinic at the State Central Hospital of Mongolia from 2002 until 2004. A standardised GERD questionnaire was used to obtain a history from each patient.¹ Patients were considered symptomatic for GERD if their chief complaints comprised typical reflux symptoms, such as heartburn, regurgitation, acidic taste, and the temporal relationship of their to body position or food intake. Patients being worked up for GERD included those with chest pain, epigastric pain, sore throat, hoarseness, and pulmonary symptoms. Subjects with a diagnosis of infectious, caustic, or radiation or pill-induced esophagitis were excluded in the present study. All pa-

tients underwent an 24-h esophageal pH monitoring and an esophagogastroduodenoscopy (EGD). GERD patients depending on following endoscopic appearance were divided into four groups: group 1 - 41 patients with NERD, group 2a - 37 patients with only RE, group 2b - 63 patients of RE with gastritis, and group 2c - 32 patients of RE with peptic ulcer (figure 1 and Table 1).

pH-metry Ambulator) 24-h pH monitoring was used to determine the presence of acid exposure in the esophagus. Two days prior to the pH metn was stopped antisecretory therapy. After calibration, a transnasal pH electrode ([Gastroscan-24, Istok-Sistema, Russia](#)) was passed and positioned in the body of stomach, 2nd electrode - in the cardia of the stomach, 3rd electrode - 5 cm above the superior border of the lower esophageal sphincter. The degree of reflux was determined by continuous sampling and storage at 20-second intervals on a pH gram. After the test, the recorder was connected to a computer for future evaluation. A reflux episode was considered relevant only if a drop of intraesophageal pH to <4.0, the total acid contact was measured separately also for the upright and supine monitoring periods. The frequency of all reflux episodes and the total long(>5min) reflux episodes were determined for the total 24-h period. A summary score as described by each patient.

Table 1. Characteristics of GERD patients

Criteria	Group 1 n - 41	Group 2 n-37	Group 3 n - 63	Group 4 n-31
Number of patients	41	37	63	31
Male (n)	21	23	29	20
Age (yrs)	43.7	42.4	39.7	32.1
Body weight index >27 (in)	10	14	11	3
Duration of reflux (yrs)	2.4	4	5.7	2.5
Tobacco use (n)	15	18	13	12
Alcohol use (n)	14	14	16	8

Endoscopy and biopsy After an overnight fast, a routine EGD was performed with Olympus endoscope (ill XO 40 using topical anesthesia. We were used to record abnormalities of the upper gastrointestinal tract terms of "Terminology. Definition and Diagnostic Criteria" . " RE was classified Los Angeles Classification System. Biopsy was indicated in cases where the endoscopic appearances suggest columnar metaplasia of the esophagus. We was used ureasa test ("Pantazol" England. "Pronto Drj - Test" USA. "Mon-HP" Mongolia) for detection *11.pylori* infection.

Statistical analysis (jumped data expressed as the mean i standart error, statistical significance was determined h\ Students t lest.

RESULTS

The total study consisted of 172 subjects with reflux symptoms considered by 24-h esophageal pi I mclry. The median value of pi I measurement parameters in each clinical group of GERD patients were demonstrated the pathologic gastroesophageal reflux (Table 2).

The acid reflux among NERD patients characterized by total time of pi I decreasing below 4.0 points with 13.1 £2.6 percentage of total daily time and the frequency of reflux episodies with 3.00+4.29. also the number of longest acid episodes was 6.20 ^ 0.83 with 55.81+ I 7,5 min of dura-

tion of longest acid episodes

Total reflux time in patients with RE was 20.99. 23.91 and 26.9 percentage of total daily time consequently in group 2a. group 2b and group 2c. which were 1.6 2 times more than in patients of group 1 (p<<).(0)1, p<0.01, p<0.01). I he frequency of reflux episodes during 24h was 64.52+12.88 in patients of group 2a and 71.37+ I 3.8 in patients of group 2b and 95.1 1 t 10.29 in patients of group 2c. Daily reflux episodes were determined 2 times more for the group 2a comparatively to group 1 (p<0.00) 1). but it is more similar to group 2b (p>0.01).

The frequency of longest acid episodes in group 2a was encountered 9.94*2.10. in group 2b 11.06+2.09. in group 2c 8.37+1.42. Duration of longest acid episodes among all groups of RE was longer than in group 1.but this was longest among patients of group 2b (12.25 i 17.04. p<0.001) and group 2c(117.87±15.60,p<0.001).

The severity of acid reflux occurs for the patients of group 2c more than other GERD groups. which 2-3 times more by DeMeester summary score (109.32' 16.7, p<().()01). DeMeester summary score was 45.19 among the patients of group 1.and 76.12 among the group 2b. and 83.78 among the group 2b.

Among the total 172 subjects with pathologic gastroesophageal reflux by 24-h esophageal pi I mctry were determined 41 (23.8%) patients, who

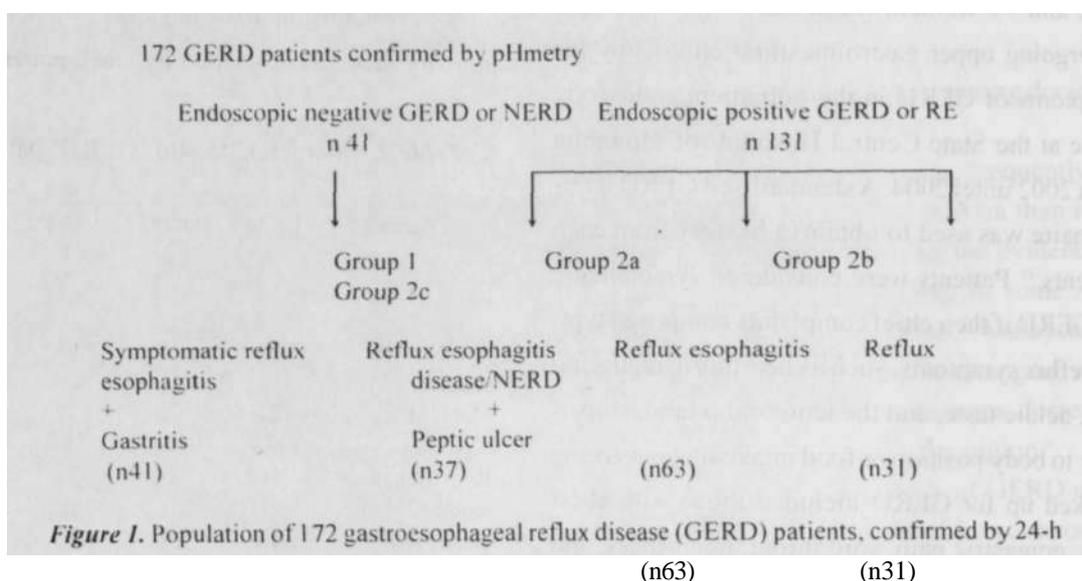


Figure I. Population of 172 gastroesophageal reflux disease (GERD) patients, confirmed by 24-h intraesophageal pH metry. who referred for endoscopy. GERD patients depending on following endoscopic appearances were divided into four groups: group 1-41 patients of NERD, group 2a - 37 patients with only esophagitis (RE), group 2b - 63 patients of RE with gastritis, and group 2c - 32 patients RE with peptic ulcer.

had no esophageal imicosaj abnormalil es initio scopically) and the) called by patients with \I.KI). Of the remaining 131(1 76.1%) patients with various grades of RE, 56 (32.5%) harbored grade A. 35 (20.3%) - grade B. : I (13.9%) - grade C. 16 (9.4%) - grade I).

The clinical features of GERD patients in each of the four groups is presented in table 3. The severity of RE was showed in group 2c. which demonstrated RE with A and B grade 25.8% each. but Ki: with G grade was 29.0%, and 1) grade - 19.3%. Detection of *H.pylori* infection was in 25.0% - 36.0% among patients of group I and 2a. In group 2b *H.pylum* was found in 72.0%. and in case of group 2c - in 90.0%. The pathomorphology investigation was confirmed active pangastritis in 63.9% of patients, superficial gastritis in 29.8%. antral erosive gastritis in 37.1% and atrophic gastritis with intestinal metaplasia in 10.3% patients among group 2b and group 2c. Also morphological analysis confirmed BE in 29 (16.8%) GERD patients. and 6 cases of them had dysplasia. The frequency of BE and dysplasia were presented in the clinical group of GERD patients as following: in group 1 BE 7.3 % and no dysplasia, group 2a - 21.6% and 2 cases of dysplasia, group 2b - 15.8%

KI \ grade (%)	51 3*	46 0*	25 8
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Barrett's esophagus i"«i	21 6*	11 3	19.3*
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DISCUSSION

GERD has been traditional!) approached as a 'spectrum' of disease/ Appoxunately 70% of GERD patients have non-erosive reflux disease (NERD) or endoscopy negative reflux disease. " " The far end of the spectrum is occupied by patients with RI or with GERD complications, such as esophageal ulceration, stricrute. BE. and adenocarcinoma of the esophagus.¹¹ In addition RE accompanies m 56%-78% of chronic gastritis and

Table 2. Presentation of DeMeester and Johnson's criteria by 24-h esophageal pi I parameters among clinical variables of GERD patients

Longest acid episodes	- 3.5	(1.2.0.83	9.94.2.10	8.06.2.09	11.37. 1.42*
Duration of longest reflux	9.2	55.8P 17.5	67.58:16.69	112.25: 17.0 4*	117.S7: 15.60 *
Summary score	• 14.7 2	45.19 t 11.3	76.12 ± 23.5*	83.78 i 29.5*	109J2 t Ui.7*

*P<0.001 statistical ditYerence. All data was shown as a mean - SI

peptic ulcer. In this case the management of RE is considered as the secondary concern.^{1 1S "}

We were determined some clinical Forms among GERD patients. According to our study, NERD occurs in 23.8% (41 pts) of patients, while RE presents in 76.1% (131 pts). The data shows that among hospital-based GERD patients were predominated endoscopic positive reflux, on the other hand NERD patients visit to hospital rarely.

Clinical manifestation aj group I NERD patients: The duration and the severity of reflux syndrome of NERD patients no differs from reflux complains of RE patients ($p > 0.01$). A large of paper concluded the no difference in acid exposure and long-term symptoms surveillance between NERD and RE.¹¹

Those patients from our study demonstrate lack of an esophageal and gastric mucosal injury, consequently found lower prevalence of *H.pylori* infection. By the last ten years the *H.pylori* infection had high occurrence in Mongolia." :J luul et al (2002) was defined that the prevalence of *H.pylori* infection among healthy adolescents is high like as 63.5%, and *H.pylori* infection acquisition occurs primarily during childhood in Mongolia." We suggested that 24.3% of occurrence of *H.pylori* infection in NERD patients compare with the frequency of *H.pylori* infection in Mongolian populations have no clinical important.

But our results of 24-h pH metry showed that all of DeMeester and Johnson's criteria of gastroesophageal acid reflux was higher among NERD group than criteria of healthy people. This argument is supporting that the direct diagnosis of ambulatory 24-h esophageal pH monitoring varies according to the different GERD groups.

The association between columnar lined esophagus and GERD was first shown in the landmark paper of Bremner in 1970. In our study defined 7.3% case of BE without dysplasia in group I. that serves of long lasting influences of acid reflux into esophageal mucosa.

Among endoscopic positive reflux patients we had detected only 37 (or 28.2% of total patients) patients had independent RE, but 63 (48.0%) patients had chronic gastritis, and 31 (23.6%) patients had combined gastroduodenal peptic ulcer. We think

differences of clinical manifestations of those RE patients were depended on associated gastroduodenal pathology.

Clinical manifestation of group 2a Independent RE patients: findings from our study demonstrate that RE patients have a significantly greater esophageal exposure to acid than do NERD patients. Consequently, the frequency of BE and dysplasia were presented more often among RE patients. So group 2a presented 21.6% of BE, and 2 cases of dysplasia than differs from NERD group ($p < 0.01$).

Our research illustrates that *H.pylori* infection in patients with independent RE occurs in 36%. that no significant from prevalence of *H.pylori* infection among NERD patients ($p > 0.01$). Our results of incident of *H.pylori* infection among NERD or RE patients similar to studies from Japan.^{ix} Germany^{2"} and China¹⁰ that shown a significantly lower incidence of *H.pylori* infection in patients with RE than in matched controls.

Clinical manifestation of group 2h RE patients with chronic gastritis: Most patients of this group exhibit a higher rate of reflux episodes than do NERD ($p < 0.01$) and do independent RE patients ($p < 0.01$). Our recent study was shown that the important for clinical features of RE patients with accompanied gastroduodenal pathology was the higher occurrence of *H.pylori*. In 72% of RE patients with chronic gastritis was detected *H.pylori* infection. Differences in esophageal acid exposure and acid secretion, finally pattern of gastroduodenal lesions may account for differences in the clinical outcome of *H.pylori* infection. Also group 2b presented higher frequencies of BE with 15.8% of cases and 3 of them had a dysplasia.

Clinical manifestation of group 2c RE patients with peptic ulcer: We strongly referred that 24-h esophageal pH monitoring is useful as diagnostic approach for establishing the severity of GERD. High degree of esophageal acid exposure related to patients of this group. Direct method to identify of daily frequency and time-period of intraesophageal acidity in the patients with GERD by DeMeester and Johnson's criteria is determined the desynchronization of daily intraesophageal pH levels. We considered that 24-h pH metry became one

of the histopathological method. The morphological parameters were reflected in diagnosis of (il RI).

The occurrence of *fl.pylori* among the GERD patients closely related to peptic ulcer disease, that reached up to 90% in patients from group 2c.

Although information about *Helicobacter pylori* infection is involved, studies of its role to the protection against GERD, or its complications is not completely understood." It has been reported that patients are at risk of developing RI after successful *H.pylori* eradication therapy, and that the presence of the bacterium might be protective against the development of RI. (On the other hand, Harvey et al. explored that *H.pylori* infection was associated with a slightly increased prevalence of heartburn but not reflux, and treatment to eradicate *H.pylori* had no benefit in patients with heartburn or gastroesophageal reflux¹¹ reviewed the effects of *H.pylori* and its eradication on (d RI) in patients with duodenal ulcers or RI. They concluded that the *H.pylori* infection eradication in duodenal ulcer disease provokes RI or worsens heartburn. There are insufficient data to draw firm conclusions about impact of *H.pylori* in patients with RE at present and need more high quality clinical studies in future.

Nowadays the prevalence of BE among patients (>1.1) is unclear. The frequency of BE varies in different reports depending on the population being studied and the sensitivity of the technique used to establish the diagnosis. A lower prevalence is generally observed at gastrointestinal endoscopy: 2% (6.8%), 4% (2M), 0.6% of 5,300 patients were found to have columnar epithelium in the esophagus/ BE is usually a sequela of moderate to severe RE. BE is reported in around 10% -20% of patients with endoscopic esophagitis and up to 44% of patients with chronic peptic esophageal strictures. Our findings from our morphological analysis confirmed BE in 2% (>X%) GERD patients, and 6 cases of them had dysplasia, including an one case of high degree dysplasia. This study of determination of occurrence of BE among GERD patients shows that clearly depend on clinical manifestations of GERD among Mongolians. In group 2c were determined 19.3% case of BE with 1 case of dysplasia, that shown occurrence of BE and dysplasia no significant differs

from that seen in IS and Europe in several aspects, not only rarer of (il RI) prevalence as a whole but a less severe form of erosive esophagitis. BE and esophageal adenocarcinoma have lower incidence rates. Our study showed clinical features of (il RI) similar in Asian region like increasing rate of GERD, mild severity of RI. But differs from them by high frequency of BE and combination of Up-associated gastroduodenal chronic pathology among Mongolian (il RI) patients. I therefore we record that peculiarity of hospital based GERD in Mongolia is the association of gastroduodenal pathology. According to clinical manifestations, depending on morphological appearance of esophagus and stomach we suggest to divide endoscopic positive GERD patient- into 3 subgroups: independent RI. RE with combination of gastritis, and RI associated peptic ulcer.

Finally, this approach focused our attention on different forms of GERD patients may not share similar pathophysiological mechanisms, and that several mechanisms may result in symptoms of GERD. And different GERD patients do not share similar features, they have different diagnostic and therapeutic managements

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