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Characteristics of Esophageal Motility in Chinese GERD Patients

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Abstract

Objective: to evaluate the characteristics of esophageal motility in Chinese patients with typical symptoms of GERD, heartburn/regurgitation, underwent Upper endoscopy were divided into two subgroups: Erosive esophagitis,(RE) and nonErosive reflux disease(NERD) Compare with healthy controls volunteers.

Materials and Methods:

A Retrospective study analysis was conducted at the Gastroenterology motility department and outpatient of Union Hospital, Tongji Medical College of Huazhong University of Science and Technology, Wuhan, China for a period of 1 year from July 2014 to June 2015. A total of 239 GERD patients with typical symptoms heartburn/regurgitation, and 17 healthy control volunteers enrolled in similar period for study. The patients were collected as Consecutives GERD from 2012 still 2014 and managed at the department were recruited and underwent upper endoscopy were divided into two subgroups: Erosive esophagitis,(RE) and non Erosive reflux disease(NERD.)

Results:

Demographic and characteristics of GERD patients (Total number =256).

With typical symptoms of GERD 239 cases, and 17 healthy controls were enrolled in this study. the General Information collected from patients; 134 patients with RE, male 88 cases, account for 65.70%, female 46 patients, account for 34.30%; 105 patients with NERD, male 43 cases, account for 41%, female patients 62 cases, account for 59%, and 17 Normal control groups. Male have 6 cases, accounting for 35% , female 11 cases, account for 64.70%. Three groups of gender, were compared using CMH-$\chi 2$ revealed the significant differences were observed between the three groups respectively above gender, ($\chi 2 = 16.891$, $P < 0.01$). The patients in RE group, the proportion of male was significantly higher than those NERD group. The difference was statistically significant 88 (65.70%) vs. 43（41.00%, ($P<0.05$). The mean of typical symptoms in (RE) 116 patients account for 86.60%. In the (RE) only 18 cases of patients with atypical symptoms accounting for 13.43%. In NERD patients the mean of the typical symptoms had 95 cases accounting for 90.48%; only 10 cases of patients with atypical

symptoms, accounting for 9.53%. With Demeester scoring; the proportion of abnormal (RE) and (NERD) groups significantly higher than those normal control group the difference was statistically significant (P < 0.001). In RE groups and NERD with lower LESpressure than those normal control groups the difference was statistically significant (p=0.02). In RE patients with hiatal hernia, the relaxation rate, abnormalities was significantly higher than those normal control groups the difference was statistically significant (P <0.01). The NERD patients with Ineffective esophageal motility(IEM) were significantly higher than those in the RE groups; the difference was statistically significant(p=0.04).With synchronous contraction, and Amplitude, in both two groups, no significant difference between RE and NERD. The erosive esophagitis including 101 cases of patients with grade A accounted for75.37%; and 26 cases with grade B accounting for 19.40%, patients with grade C 5 cases account for 3.73% with gradeD 2 cases account for 1.49%.

Conclusion

The characteristics of GERD with abnormal esophageal motility between two subgroups in RE and NERD patients were comparable. The prevalence of hiatal hernia in RE predominance of male patients with typical symptoms of GERD, smoking history, and drinking ; duration of reflux acid and body weigh and BMI likely esophagitis in than those NERD Groups. RE groups and NERD with lower LESpressure and percentage of relaxation rates than normal control groups. The two subgroups of GERD RE and NERD have similar Ineffective esophageal motility (IEM) with synchronous contraction and Abnormal peristaltic amplitude In 24-hour pHmonitoring of esophagus in the RE and NERD abnormal higher than normal control groups. RE patients and NERD patients were similar abnormal esophageal motility

Keywords: GERD, Clinical characteristics, Esophageal motility

1. Introduction

Gastroesophageal reflux disease (GERD) is a the circumstance of the reflux acid of stomach contents through into the esophagus which cause troublesome symptoms or complication. The typical symptoms of GERD are heartburn and regurgitation. It is divided into two major groups: (RE) esophagitis and (NERD) non erosive disease. The prevalence of gerd in 20% in the united States and Europe population (Sonnenberg, 1999) and 2 % 0r 5% in Asia(Locke, 1997) it is one of the most common gastrointestinal diseases in the Western countries Recently the frequency and severity of symptoms in GERD has been increasing in approximately of the adults population (Nilsson, 2004) (Bollschweiler, 2007). GERD is correlate with extraesophageal symptoms, chronic cough chest pain, globus and sore throat (Ronkainen J, 2006). GERD included into of esophageal and extraesophageal diseases, and more association between laryngopharyngeal reflux (Vakil, 2006), (Marzo, 2002).The Montreal consensus definition of GERD as “a condition which develops when the reflux acid of the stomach contents causes troublesome symptoms and complications. The GERDQ questionnaire was developed and using of GERD definition based on symptoms frequency and severity its capability to identify GERD patients ((Jones, 2010). Abnormal reflux acid of the stomach contents through in the esophagus by caused specific symptoms such of GERD

as heartburn and regurgitation(Howard,1991). The clinical characters and pathophysiological mechanism response to acid suppression including Erosive disease and non Erosive disease (Savarino, 2012). Furthermore, and some factors contributing to the pathophysiology of gastroesophageal reflux diseases, included both the EGJ, hiatus hernia ineffective esophageal motility and excessive Reflux acid, injury of the esophageal mucosal(Castell, 2004). The manifestation of endoscopy finding with erosive esophagitis moderate and severity of gerd patients used to describe the different grades of esophagitis according to LA. Classification (Lundell, 1999).The more common types of hernia and varieties of paraesophageal hernias for most 5-15% are associated with gastroesophageal reflux disease(Skinner, 1985).The novel technology approved of high resolution manometry represent a major advance in differentiate and characterize of esophageal disorders in GERD patients (Savarino E, 2007) These factors may aggravate symptoms of gerd overweight and dietary related to higher risk of gastroesophageal reflux disease and esophagitis (El-Serag, 2005). Alcohol consumption excessively long period is a risk factor of gerd and associated complication increases esophageal mucosal injuries Its reduces LES pressure and esophageal motility disorder(Akiyama, 2008). Smoking increases risk factor of gastroesophageal reflux disease (Kahrilas, 1990).The aim in this present study was evaluate to compare the characteristics of GERD patients had typical symptoms into two subgroups (RE) and NERD on esophageal motility or pathophysiological acid exposure underwent high resolution manometry and 24-hours-pHmonitoring with normal control groups to determine the difference of esophageal motility between three groups.

2. Material and Methods

2.1 Selection of the Patients

A Retrospective study analysis was conducted at the Gastroenterology motility department and outpatient of Union Hospital, Tongji Medical College of Huazhong University of Science and technology, Wuhan, China for a period of 1 year from July 2014 to June 201. A total of **239** GERD patients with Typical symptoms heartburn/regurgitation, and 17 healthy control volunteers enrolled in similar period for study, the normal control subjects conditions are no Reflux symptoms undergo 24-hours pHmonitoring, and high resolution manometry finding. The patients was collected as Consecutives GERD from **2012 still 2014** and managed at the department were recruited. and were confirmed cases of GERD. Every one completed and valided GERDQ Questionnaire scale signed and consent before study. In this study observed strict ethical value of Tongji Medical College and was approved by the institution and ethical committee as well verbal informed consent was obtained from All participants for the study.

2.2 Data Recording

Data was obtained from patients history of the records room. Demographic details were included along with significant clinical information, A total of 293 patients of GERD and enrolled 17 subjects normal control were available for the study. the medical records of the patients, including age, gender height, body weight and body mass index (BMI),frequency and severity of symptoms, style of life, smoking history, alcohol consumption history, pHmonitoring, esophageal manometry, and upper endoscopy; GERD with Typical symptoms

underwent Upper endoscopy were divided into two subgroups: Erosive esophagitis,(RE) and non Erosive reflux disease(NERD) the characteristics of esophageal motility of GERD patients compared Between three groups. All participants were evaluated by reviewing medical chart and clinical characteristics records.

2.3 Data Analysis

Dynamics factors related to GERD and some outcome variable were adjusted Chi-square test was used to calculate the trend impacts influencing Gerd characteristics. The categorical variables were described by using logistic regression to compare the data and analyzed the incidence of GERD among the studies population. Different groups were compared by multinomial logistics regression and were expressed in terms of confidence interval (CI)95% and p-value. All Data was analyzed by using SPSS version19.0 software (Inc. Chicago, Illinois. U.S.) and SAS 9.2, a P-value < 0.05 was considered significant for statistical analysis the three groups showed normal distribution of measurement indicators were compared and analysis of variance of the normal distribution. the index does not measure for multiple groups; as a result using the Kruskal-Wallis H test, and showed a statistically significant indicators and using LSD multiple comparison test, the results were recorded as the mean ± standard deviation; between the two groups; between the groups using measurable indicators expressed t test or Wilcoxon rank and assessment; and classification. Inter Index groups using $\chi 2$ test, and the conclusions showed statistically significant differences in indicators of multiple comparisons between groups, the number of records as an example (percentage). Take $\alpha = 0.05$ for the statistical significance level, P <0.05 when considered statistically significant differences between groups performed CMH Chi-square test.

3. Results

Table 1. Demographic and characteristics of GERD patients (Total number n =256) (%)

	RE（N=134）	NERD（N=105）	Normal（N=17）	CMH-$\chi 2$	P
Gender					
Male	88（65.67）[b]	43（40.95）	6（35.29）	16.891	<0.01
Female	46（34.33）	62（59.05）	11（64.71）		
Smoking history					
N0	101（75.37）	90（85.71）	-	3.922	0.05
Yes	33（24.63）	15（14.29）	-		
Drinking history					
N0	107（79.85）	92（87.62）	-	2.550	0.11
Yes	27（20.15）	13（12.38）	-		

Note: Comparison between normal group, P < 0.05; with NERD group, P <0.05).

About the gender of the three groups of patients performed CMH Chi-square A comparative analysis between specific groups. (See table1 and table2)

Results in table1 show that. Demographic and characteristics of GERD patients including. 239 cases of patients with typical symptoms, and 17 healthy controls volunteers were enrolled in this study. the General Information group A total of 256 cases collected from patients; 134 patients with RE, male 88 cases, account for 65.70%, female 46 patients, account for 34.30%; 105 patients with NERD, male 43 cases, account for 41.00%, female patients 62 cases, account for 59.00%, and 17 Normal control groups Male have 6 cases, accounting for 35.30% , female 11 cases, account for 64.70%, three groups of gender, sex were compared using CMH-$\chi 2$ revealed the significant differences were observed between the three groups respectively above gender, sex ($\chi 2$ = 16.891, P <0.01). The patients in RE group, the proportion of males was significantly higher than NERD group, the difference statistically significant 88 (65.70%) vs. 43（41.00%）(P<0.05) among others groups constitute no significant of gender differences in sex, smoking history and drinking history proportions compared the results of $\chi 2$ test found that gender, smoking history, among groups represent significant difference, the difference was statistically significant P<0.05 between the groups but no significant difference of drinking history.

Table 2. Comparison between difference of ages among three groups (Mean±SD)

	RE（N=134）	NERD（N=105）	Normal（N=17）		P
Age of					
Mean±SD	49.77±11.81[a]	47.75±13.57[a]	34.65±11.10[b]	11.026	<0.01
95%CI	47.75,51.79	45.12,50.39	28.94,40.35		
Min~Max	16.00~78.00	16.00~78.00	22.00~54.00		
Heigh (m）					
Mean±SD	1.67±0.73	1.65±0.77	1.66±0.84	1.957	0.14
95%CI	1.65,1.68	1.63,1.66	1.62,1.70		
Min~Max	1.53~1.83	1.47~1.81	1.55~1.80		
Body mass（kg）					
Mean±SD	65.72±12.08	62.61±12.62	-	1.932	0.06
95%CI	63.65,67.78	60.17,65.06			
Min~Max	36.00~114.00	33.00~103.00			
BMI(kg/m2)					
Mean±SD	23.61±3.99	22.99±4.01	-	1.20	0.23
95%CI	22.93,24.30	22.21,23.76			
Min~Max	15.18~41.86	13.22~37.38			

by ANOVA

Table 2 shows In the Age among the three groups were analyzed by ANOVA, the RE patients at the age of the mean (49.77 ± 11.81) vs..NERD patients the age of the mean (47.75 ± 13.57) vs..Normal groups of age was mean (34.65 ± 11.10) (F = 11.026, P <0.01), were compared between three groups. There were significant differences in age, the difference was

statistically significant(P <0.01). And multiple comparison between the groups performed LSD show that in RE group and NERD group of Age, was significantly higher than the normal group, the difference was statistically significant (P <0.01), but there was no significant difference between RE and NERD of age. In RE group and NERD group of patients with greater body weight (kg) (65.72±12.08 vs. 62.61±12.62 kg) and (BMI body mass index(kg/m2).(23.61±3.99 vs. 22.99±4.01).The two groups were compared performed t test revealed there was no significant difference between the two groups; the difference was not statistically significant. The RE patients and NERD groups had comparable style of life.

Table 3. Typical and Atypical symptoms between RE and NERD patients n,(%)

		RE Typical symptoms		NERD Typical symptoms	
		Yes（N=116）	No（N=18）	Yes（N=95）	No（N=10）
Atypical symptoms	Yes	87（64.93）	18（13.43）	69（65.71）	10（9.53）
	No	29（21.64）	0（0.00）	26（24.76）	0（0.00）

RE patients, from the above analysis results, it also has the typical symptoms of esophagus and atypical symptoms of patients with 87 cases, accounting for 64.93% of the patients with RE, only has the typical symptoms of 29 patients with RE, accounted for 21.64%, only 18 cases of patients with atypical symptoms of RE, accounting for 13.43%. NERD patients, at the same time with patients with esophageal symptoms typical and atypical symptoms of 69 cases, accounting for 65.71% of the NERD patients, only has the typical symptoms of NERD patients, 26 cases (24.76%), only 10 cases of patients with atypical symptoms of NERD, accounting for 9.53%. shown in (table4) .

Table 4. The difference of 24 hours-pHmonitoring between three groups n,(%)

	RE	NERD	Normal	χ2	P
N（Missing）	134（105）	105（60）	17（0）		
DeMeester Scoring					
Normal (≤14.72)	13（44.83）^{a}	31（68.89）^{a}	17（100.00）^{b}	14.901	<0.01
Abnormal (>14.72)	16（55.17）	14（31.11）	0（0.00）		
Long Reflux number of cycles>5min					
Normal	16（55.17）^{a}	33（73.33）^{a}	17（100.00）^{b}	10.838	<0.01
Abnormal	13（44.83）	12（26.67）	0（0.00）		
a total of pH <4 times					
Normal	13（44.83）^{a}	31（68.89）^{a}	17（100.00）^{b}	14.901	<0.01
Abnormal	16（55.17）	14（31.11）	0（0.00）		
standing pH <4 Time					
Normal	14（48.28）^{ab}	36（80.00）	16（94.12）	13.798	<0.01
Abnormal	15（51.72）	9（20.00）	1（5.88）		
supine pH <4 times					

Normal	14（48.28）[a]	28（62.22）[a]	16（94.12）[b]	9.833	<0.01
Abnormal	15（51.72）	17（37.78）	1（5.88）		

Chi-square test showed that there are significant difference among three groups

Note: the measurement indicators do not obey the normal distribution, comparison between groups all use Kruskal Wallis test, multiple comparison between group using nonparametric test of LSD multiple comparison. Showed that significant difference among three groups. results: show of patients with RE, NERD and normal control groups. The difference of the pH value comparison between groups using chi-square test,, showed that significant difference among three groups. The difference was statistically significant p<0.01) RE groups and NERD groups with Demeester scoring Abnormal rate were significantly higher than normal control groups the difference was statistically significant(p<0.01).(See table5)

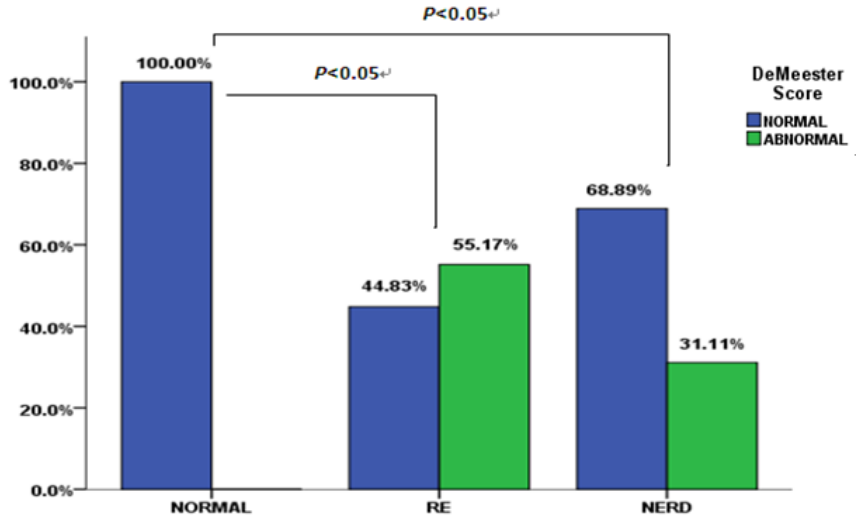

Fig.1. The difference of Demeester Score normal/Abnormal among groups （P<0.01）

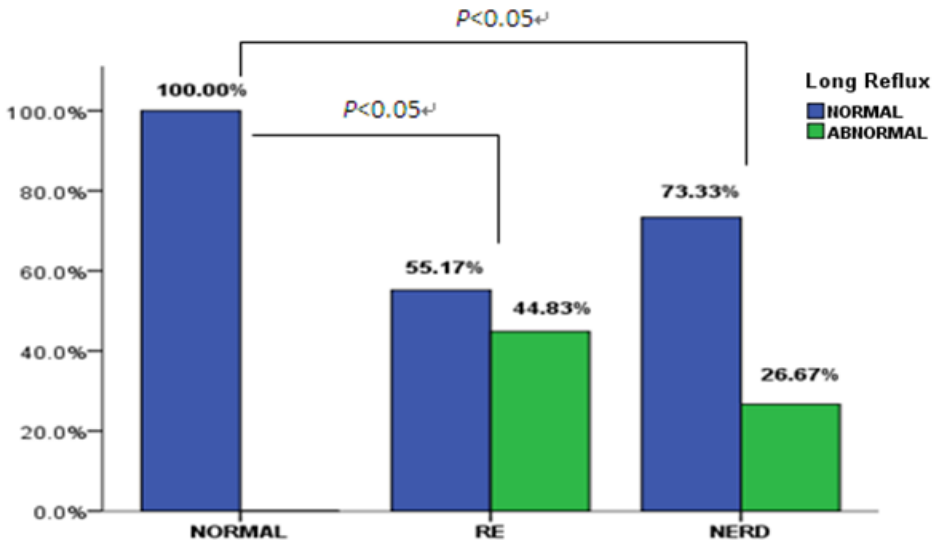

Fig.2 Long Reflux number of cycles> 5 min the difference among three groups（P<0.01）

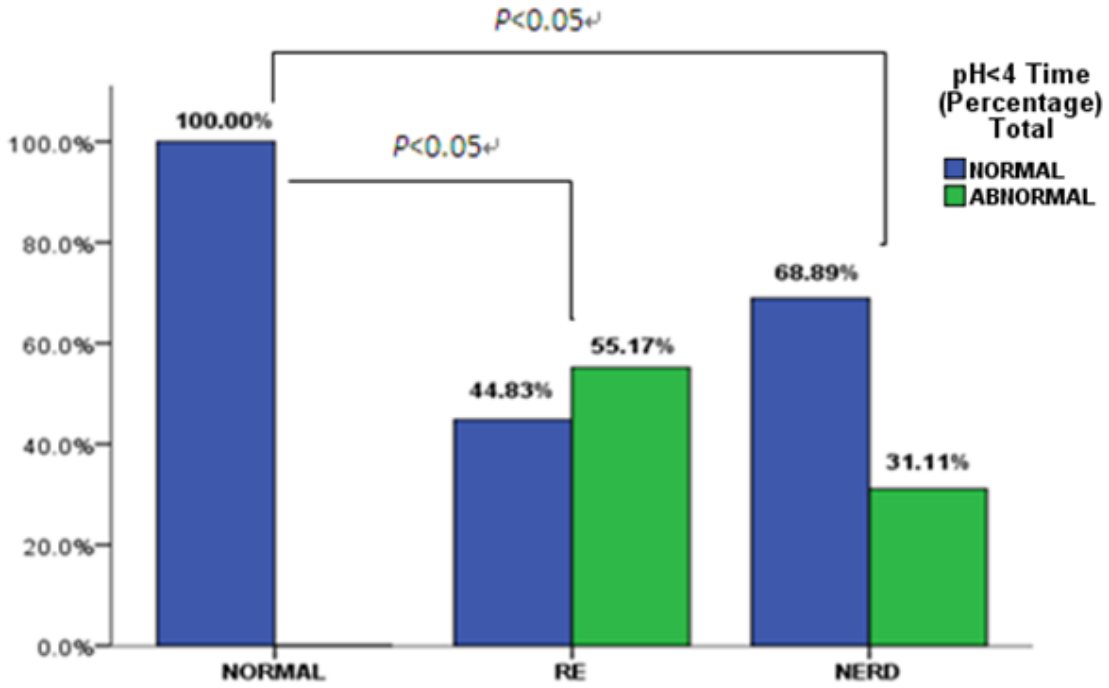

Fig.3 The difference of a total of pH <4 times among groups (P<0.01）

The results of DeMeester score, Long Reflux number of cycles> 5 min, a total of pH <4 times, standing pH <4 Time, supine pH <4 times; the proportion of abnormal (RE) and (NERD) groups significantly higher than normal control group the difference was statistically significant(P < 0.001). RE patients in standing pH <4 times significantly higher proportion of abnormal than NERD patients, the difference was statistically significant (P < 0.001).

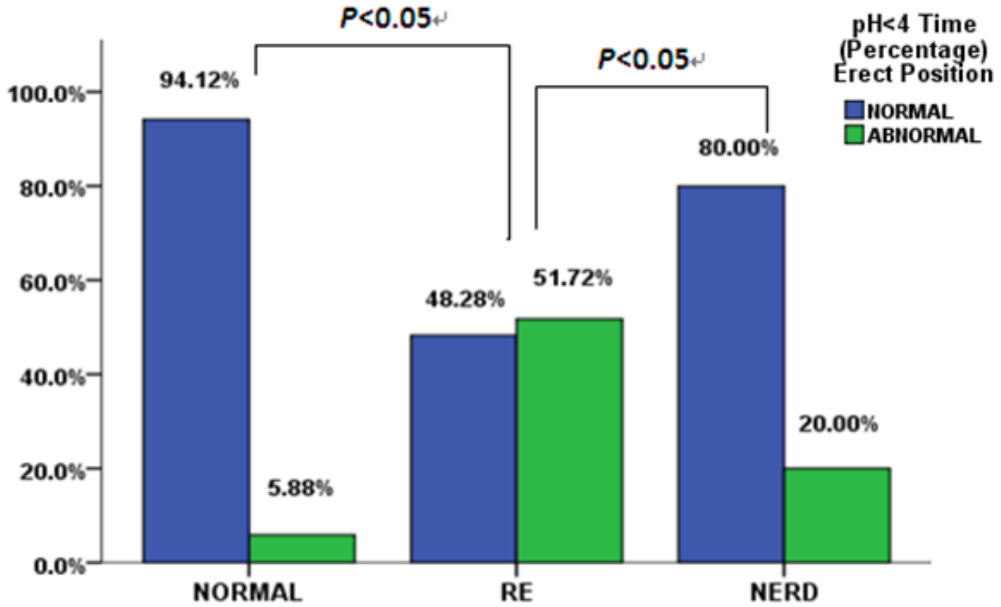

Fig.4 The difference of standing pH <4 Time Normal/Abnormal between groups (P<0.01)

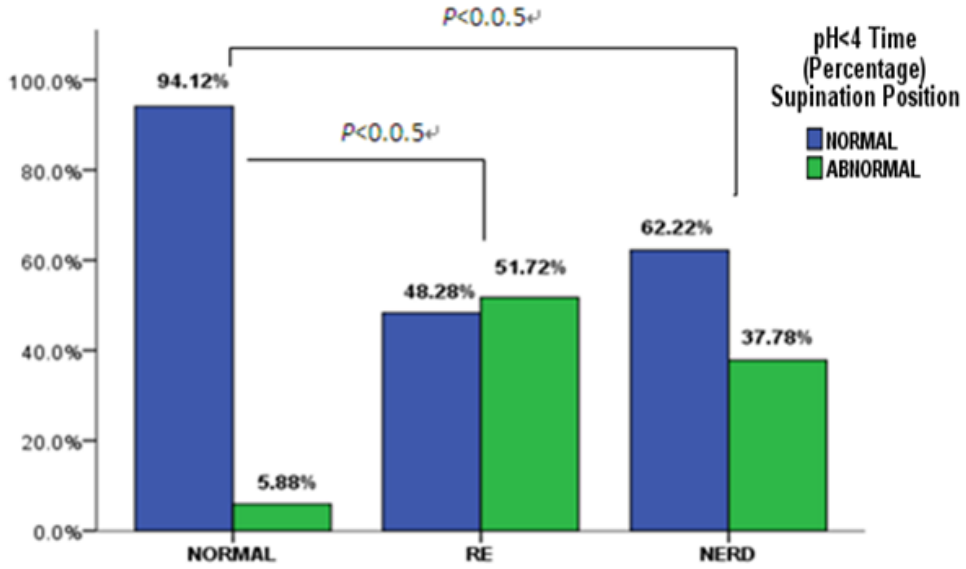

Fig.5. Compare: the difference of the supine pH<4timesNormal/Abnormal among three groups(P<0.01）

Table 5. The difference of Esophageal motility patters Among three groups with HRM Finding n,(%)

	RE	NERD	Normal	χ2	P
N（Missing）	134（51）	105（38）	17（0）		
LES Lengh (cm)					
Normal（2.7~4.8）	55（66.30）	49（73.13）	15（88.20）	3.518	0.17
Abnormal	28（33.70）	18（26.87）	2（11.80）		
LES Pressure (eSleeve,IRP),mmHg					
Normal 13~43）	46（55.42）	33（49.25）	13（76.50）	4.067	0.13
Abnormal	37（44.58）	34（50.75）	4（23.50）		
Hiatal hernia					
No	59（71.08）[a]	47（70.15）[a]	17（100.00）[b]	6.788	0.03
Yes	24（28.92）	20（29.85）	0（0.00）		
Decelaration contractile integrale (DCI) (mmHg)					
Normal (500~4300）	57（68.67）	38（56.72）	9（52.90）	2.959	0.23
Abnormal	26（31.33）	29（43.28）	8（47.10）		
the percentage of the relaxation rate (eSleeve,IRP),%					
Normal（>40）	65（78.31）[a]	54（80.60）	17（100.00）	4.442	0.11
Abnormal (<40)	18（21.69）	13（19.40）	0（0.00）		
integral relaxation pressure (IRP) eSleeve,IRP),mmHg					
Normal（<15）	77（92.77）	63（94.03）	17（100.00）	1.310	0.52
Abnormal（>15）	6（7.23）	4（5.97）	0（0.00）		

χ2 test

Note: LES pressure in the measurement indicators, the DCI, relaxation rate, integral relaxation pressure (IRP) does not mind the normal distribution, comparison between groups all using Kruskal Wallis test, the LES length, intra abdominal LESLengh , compared using analysis of variance between groups, the statistical significant difference between groups Show: of the mean

Compare: the Three groups of the (Mean±SD) LES Lengh. (3.12±0.96 vs. 3.11±0.88 vs. 3.49±0.69 p=0.20);LESP (15.34±8.30 vs. 15.02±10.16 vs. 20.65±8.17 p = 0.02) . DCI(885.25±737.90 vs. 902.00±915.18 vs.1312.91±1569.21 p=0.713). Relaxation rate, (54.23±30.65 .vs. 58.98±35.31 vs. 68.24±12.28 p<0.01).Integral relaxation pressure (IRP).(8.46±5.28 vs. 7.73±7.87 vs.7.52±3.41 p=0.242). Intra abdominal LES Length (1.38±1.07 vs. 1.30±1.11 vs. 2.59±0.67 p<0.01). In the difference situations groups index of HRM results Compare: between three groups and using $\chi 2$ test revealed in which the proportion of patients in RE with a hiatal hernia the relaxation rate, abnormalities was significantly higher than the normal control groups the difference was statistically significant (P <0.01). RE groups and NERD with lower LESpressure than normal control groups the difference was statistically significant (p=0.02) The rest of the index with LESLengh, Integral relaxation pressure(IRP), Deceleration contractile integral (DCI) between RE, NERD and normal control groups no significant difference the difference was not statistically significant.

Table. 6. Tthe difference of Esophageal motility Among Two groups with HRM Finding n,(%)

	RE	NERD	$\chi 2$	P
N(Missing)	134（51）	105（38）		
HRM Results				
Normal	20（24.10）	23（34.33）	1.898	0.17
Abnormal	63（75.90）	44（65.67）		
Synchronous contraction (≥ 6.25cm/s)				
Normal	73（87.95）	54（80.60）	1.545	0.21
Abnormal	10（12.05）	13（19.40）		
Ineffective esophageal motility (IEM)				
Normal	47（56.63）	25（37.31）	5.540	0.02
Abnormal	36（43.37）	42（62.69）		
Amplitude (LES above11.0cm)				
Normal	36（43.37）	38（56.72）	2.641	0.10
Abnormal	47（56.63）	29（43.28）		
Amplitude with (LES above 3.0cm),				
Normal	54（65.06）	44（65.67）	0.006	0.94
Abnormal	29（34.94）	23（34.33）		
Amplitude (LES above 7. 0cm),				
Normal	52（62.65）	47（70.15）	0.929	0.34
Abnormal	31（37.35）	20（29.85）		

Chi-square test revealed statistically significant difference.

Note: the peristalsis amplitude, the LES-CD separation index of group comparison between using t test, statistic or other do not observe the normal distribution index using Wilcoxon test is compared between groups.

The results in table 6 showed that the difference of dynamics indicators and parameters of HRM results with Ineffective esophageal motility (IEM),synchronous contraction, and peristalsis amplitude. Compared between NERD patients and RE groups, expressed of $\chi 2$ test revealed which NERD patients with Ineffective esophageal motility significantly higher than those in the RE groups; the difference was statistically significant (p=0.02). The Mean between two groups compare: (RE) and (NERD)with LES and diaphragm separation(LES-CD) the Mean:(2.04±1.06 vs.1.84±1.22);Synchronous contraction (≥6.25cm/s) (8.12±19.43 vs. 11.61±23.54 p=0.32). Ineffective esophageal motility(IEM)(13.59±19.97 vs. 21.82±29.83 p=0.04). Amplitude (LES above11.0cm),(33.28±22.69vs. 46.07±24.55 p<0.01) Amplitude (LES above 3.0cm (61.90±38.68vs. 65.35±41.33 p=0.60) Amplitude (LES above 7. 0cm), (48.87±25.60vs. 53.40±29.30 p=0.31) Intra-abdominal LES length, (1.38±1.07 vs. 1.30±1.11) With contraction, and amplitude, in both two groups, no significant difference between RE and NERD the difference was not statistically significant.

Table. 7. The difference of EJG between RE and NERD patients with HRM of results

EGJ Types	RE	NERD	$\chi 2$	P
N(Missing)	83（0）	67（0）		
Type I n,(%)	59（71.08）	47（70.15）	0.896	0.64
Type II n,(%)	11（13.25）	12（17.91）		
Type III n,(%)	13（15.66）	8（11.94）		

The results in table7 show that three types and categories of EGJ can be evaluated between RE groups and NERD groups of the means of HRM finding the two groups categorized into three types of EGJ. In patients with RE type I have 59 cases, accounted for 71.08%; 11 patients with type II, accounted for 13.25%, 13 cases of patients with type III, accounting for 15.66%;, NERD in type I, 47 cases (70.15%), type II in 12 cases, accounted for 17.91%,; 8 cases of type III ,accounting for 11.94%. EGJ composition between the two groups have no obvious difference, there was no statistically significant difference(p=0.64).

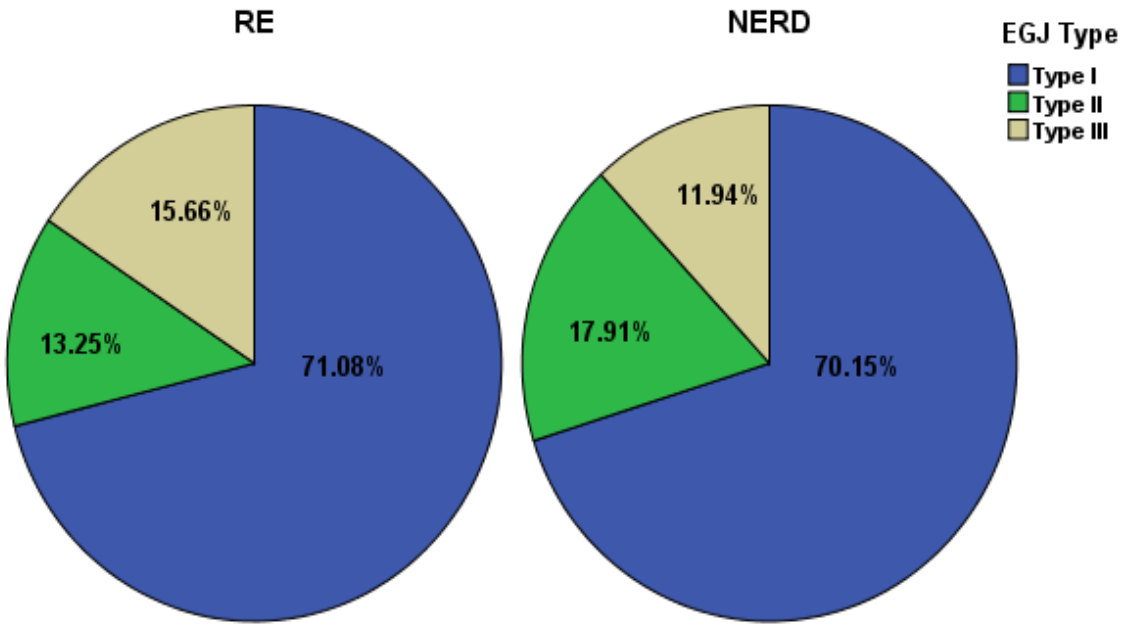

Fig.6. RE groups and NERD patients of EJG types

Percentage of Hiatal hernia between RE Patients and NERD patients

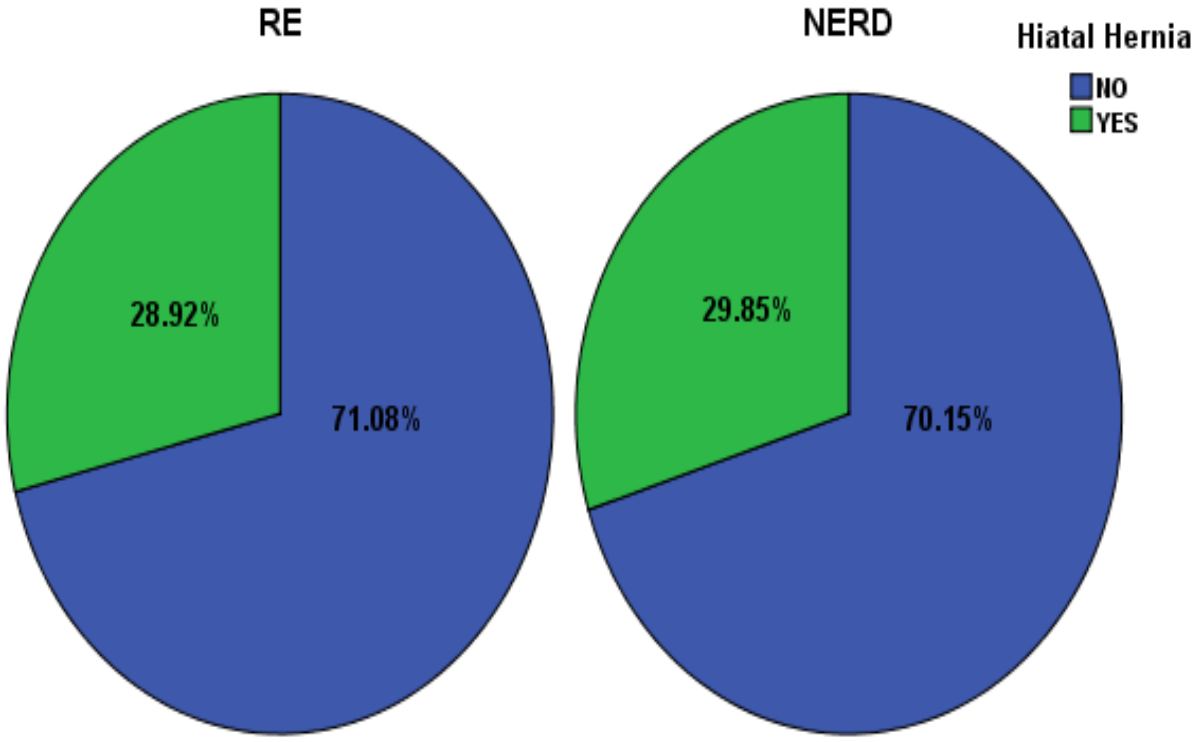

Fig.7. The percentage of patients, RE groups and NERD groups with hiatal hernia

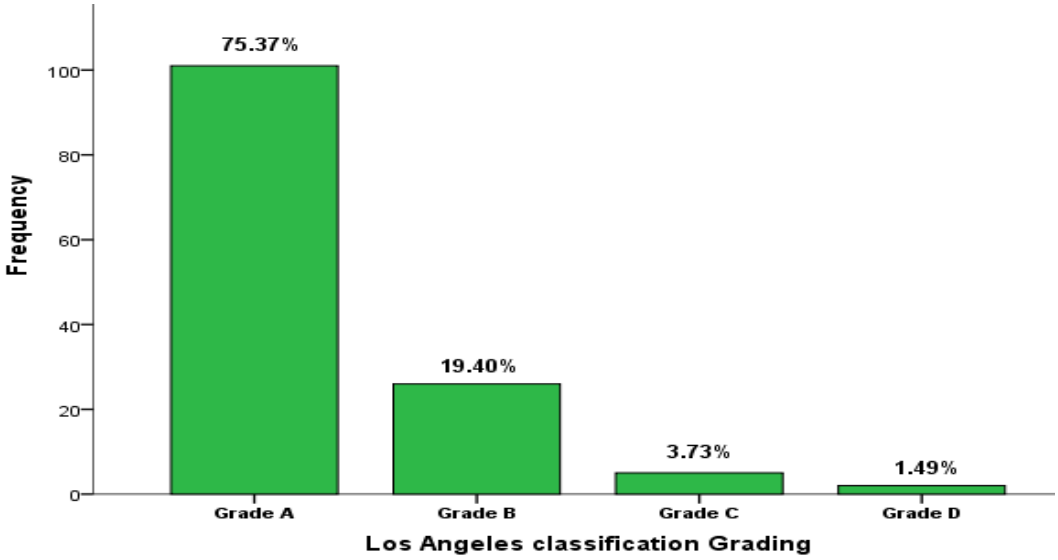

Fig 8. Shows L.A classification of esophagitis grading under Upper endoscopy.

In this study we evaluated and analyzed from 134 cases of patients have erosive esophagitis; with typical and atypical symptoms of GERD the moderate and severity of the erosive esophagitis including 101 cases of patients with grade A accounted for75.37%; and 26 cases with B grade accounting for 19.40%; patients with grade C 5 cases account for 3.73% with grade D-2 cases account for 1.49%; were classified as four grades in (RE). The Upper Endoscopy under examination Specified the severity of the esophagitis characteristics grading; According to the Los -Angeles classification criteria, it will be divided into A To D, four grades. RE: GradeA a mucosal defect length <5 mm GradeB; at least one mucosal defect length> 5 mm, but not fusion; C Grade: mucous membrane fusion defect, but no time to ring 75%; Grade D; fusion defect ≥ 75% circumferential.

4. Discussion

The severity and frequency of symptoms heartburn and regurgitation were comparable in RE patients and NERD groups the degree of symptoms heartburn and regurgitation with two subgroups RE and NERD were similar may differential pathophysiological mechanism between gender on the presentation of typical symptoms of GERD patients as previous reports (Lippmann, 2009). In our study in(RE) patients who had the Severity and frequency of heartburn about 70 cases account for 52.24% in RE with regurgitation 77 cases accounting for 57.46%; with reflux acid was 35 cases account for26.12%, with chest pain has 54 cases for 40.30%. In NERD groups who had typical symptoms, with heartburn 57 cases account for 54.29%, with reflux acid 68 cases account for 64.76%, with regurgitation 36 cases account for 34.29% with chest pain has 45cases accounted for 42.90%; in the RE patients compared in those NERD groups were are similar typical symptoms. The proportion of hiatal hernia in (RE) groups and NERD they were similar as previous reports (Du, 2007). Our study, in RE patients with hiatus hernia, 24cases accounting for 28.92%.The hiatus hernia in NERD groups 20 cases, account for 29.85% had HH. Between two groups compared (RE)groups in those NERD groups were similar prevalence of hiatal hernia. Several studies reports show

that there are similar correlation with older of age predominance male, and greater body and Body Weigh Index(BMI), hiatus hernia in RE, lifestyle .and symptoms duration, different pathogenesis of GERD patients, between two groups were comparable(Du, 2007). In our study The patients in RE group, the proportion of males was significantly higher than those NERD group, in (RE) 88 cases of male, (65.70%); in NERD 43cases of male patients for 41.00%; the difference was statistically significant ($P<0.05$) in sex male smoking history and drinking history proportions the results found that gender, smoking history, among groups represent significant difference in RE patients than those in NERD groups with lifestyle, and clinical symptoms presentation were comparable. In RE group of patients with more greater body weight performed t test revealed that there was no significant difference between the two groups; the difference was not statistically significant The RE patients and NERD have Similar lifestyle (Carlsson et al). Compared the clinical characteristics of patients with erosive esophagitis to those NERD patients. In RE groups was comparable in to mean of age, smoking history and alcohol consumption, the prevalence and duration of heatburn there were less male patients (59%) In patients with Erosive esophagitis increased prevalence of hiatal hernia (56%) and body weight in male and female patients (86%). In our study these finding were similar In (RE) patients with more greater body weight (kg) (65.72±12.08 kg) (95%CI 63.65,67.78;) and (BMI body mass index(kg/m2).(23.61±3.99) (95%CI 22.93,24.30). In NERD groups with body weigh(kg) (62.61±12.62), (95%CI (60.17,65.06); and BMI (22.99±4.01) (95%CI 22.21,23.76).in this results show that in the (RE) patients with more greater body weight and BMI than those NERD patients. Several studies suggest that body weight is the risk factor for developing erosive esophagitis in the western countries. There is a controversy and over indices of obesity as a risk factor for developing erosive esophagitis in Asia countries In the metaanalysis by (Corley et al). There are association between body mass index and GERD in the United states but not in Asia (Carlsson, 1998), (Corley, 2007) Nevertheless the style of life in Koreans is increasing in Western,the recent wide multicenter in Korea show that the significant risk factor for developing erosive esophagitis including male gender, alcohol consumption BMI > 25, and hiatal hernia. In this study ,the RE patients 33 cases account 24.63% have smoking history , and 27 cases account for 20.15% had alcohol consumption. With more greater body weight and (BMI body mass index(kg/m2). In the NERD patients 15 cases account for 14.29% have smoking history and alcohol consumption 13 cases account for12.38% with body weight (kg) (62.61±12.62 kg) and (BMI body mass index(kg/m2) (22.99±4.01). In RE Patients who had hiatal hernia 24 cases account for 28.92% in the NERD patients with hiatal hernia have 20 cases account29.85%. in this result showed that similar lifestyle in Korea with GERD in those comparable in China. The presence of hiatal hernia was found significantly associated and increased risk factor for developing erosive esophagitis (Kim, 2008). On others hand, in different risk factor for developing erosive esophagitis and NERD have been reported in Japan these hypothesis and pathogenesis of two categories in GERD is different by Fujiwara et al. Show that female gender, low BMI, no smoking, and erosive gastric atrophic were associated with NERD compared to erosive esophagitis among Japanese patients (Fujiwara, 2005) In our study the result showed that in RE patients had (75.37%); and NERD (85.71%) were no smoking history. In the NERD patients with BMI was lower than those RE patients.

In the RE 46cases account for 34.33% was female; and NERD patients 62cases account for 59.05% was female in this hypothesis was comparable RE and NERD,the pathogenesis of two subgroups of GERD is different previous reports (Pandolfino et al). 2006 showed that obesity may supposed to modify esophagogastric junction and morphology with function in reality obesity generates a mechanical disruption of EJG by promoting an axial separation between the lower esophageal sphincter (LES) and crural diaphragm (Pandolfino, 2006). On other hand the defection of mechanism in lower esophageal sphincter can be found in 60% to 70% of the patients with GERD (Zaninotto, 1988). Our study on the defect of EGJ and determine the morphology of EGJ in GERD patients, and the presence of hiatus hernia when by separation between LES and crural diaphragm were compared (RE) groups than in those NERD groups; three types of EGJ constitute no significant difference between the two groups the difference was not statistically significant. Sliding hiatal hernia and mixed esophageal hiatal hernia pressure can see two high pressure zone, under which the high pressure zone above is appropriate to esophageal sphincter pressure, which is formed by the high pressure zone for hiatal hernia under the oppression of stomach tissue formation. Pandolfino et.al. reported that reduced inspiratory EJG pressure increase an indicator of impaired CD function, was a frequent finding in GERD patients and improved predictor of GERD prevalence and LESpressure or LES-CD separation indice of hiatus hernia through means of HRM (Pandolfino, 2007). Bredenoord et al showed that in patients with a small hiatal hernia temporal reduction of the hernia occurs frequently during spatial separation of the crural diaphragm and LES, reflux events occurred more often than during reduction of the hernia (Bredenoord, 2006). In our study the two groups categorized into three types of EGJ. in patients with (RE) type I have 59cases account for 71.08%; 11cases of patients with type II account for 13.25%; and 13cases account for 15.66% with type III; in NERD with type I 47cases (70.15%); with type II 12cases accounted for 17.91%; and 8cases account for 11.94% with type III of EJG. CD-LES separation; in both two groups compared: (RE)in than those NERD as no statistically significant ($p=0.64$) ; on the other hand the transient relaxation of the lower esophageal sphincter moreover important to study areas in esophageal physiology (Mittal RK 1988). McNally et al. revealed and discussed the mechanism of eructation in the transient relaxations of the lower esophageal sphincter was not caused with swallowing but through the distention of the gastric with air abnormally, the relationship between this phenomenon and GERD that suggested more explanation with association of GERD and normal LES pressure at still HRM (McNally, 1964). In our study in patients with (RE) with EJG type II (13.25%); and (15.66%) with type III; in NERD with type II (17.91%); and (11.94%), with type III of EJG;. CD-LES separation; in both two groups EGJ type II and type III have CD- LES separation; The Demeester score for 24-hourpH monitoring according to authors; Johnson and Demeester in 90.3% sensitivity and 90.0% specificity to identify of GERD (Johnson, 1986).When the diagnosis is established under upper endoscopy of esophagitis in patients with suggestive symptoms of GERD, PHmonitoring could be measured unnecessary (Mittal, 1988). Our study In accordance with this hypothesis We observed with esophageal pHmonitoring, of the difference indicator between the RE groups , NERD patients, in those normal controls groups in this study, showed that the significant difference between three groups. the proportion of abnormal (RE) and (NERD) groups

significantly higher than those normal control group the difference was statistically significant (P < 0.001). In the (RE) patients in standing pH <4 times significantly higher proportion of abnormal than those NERD patients, the difference was statistically significant (p<0.001) The same propensity have been observed by Jamiesson et al showed that, the long time of reflux acid in 24 –hour pHmonitoring as a rule sensitive and specific examination for the diagnostics of GERD (Jamieson. 1992). Our study these observation we recorded from patients with RE and NERD have typical symptoms of gerd and positive correlation of esophageal pHmonitoring and long time of reflux acid were observed in both two groups RE and NERD.

List of abbreviations

CI: Confidence interval, DCI: Deceleration contractile integral, IRP: Integral relaxation pressure, LES: Lower esophageal sphincter, HRM: high resolution manometry, IEM: ineffective esophageal motility, GERD: Gastroesophageal reflux disease, RE: Reflux esophagitis, NERD: Non erosive reflux disease.

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Conflict of Interests

There are no conflicts of interests to declare.

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