



Characteristics of lower esophageal sphincter function and esophageal motility noted on High Resolution Esophageal Manometry in patients with reflux disease

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ABSTRACT

Aim- To study the characteristics of esophageal motility and LES function in patients with RE and NERD using high resolution esophageal manometry. Materials and methods- Twin Centre study which recruited all patients who underwent esophageal manometry for reflux symptoms from April 2014 to June 2016. They were divided into two groups -RE and NERD. Age and sex distribution and manometry parameters were analysed in the two groups. Results-A total of 98 patients (70 males, mean age 44 years) formed the study group. Thirty two patients (32.6%) had NERD. RE was significantly commoner in males and older individuals. The basal LES pressures and median IRP were significantly lower in the RE group (p<0.05). There was no significant difference in the EGJ morphology or peristaltic abnormalities in the two groups Conclusion-Patients with RE are commonly males, older than NERD patients and have significantly lower LES pressure and median IRP. Majority of the cases have normal peristalsis. The commonest peristaltic abnormality noted is ineffective esophageal motility

KEYWORDS : reflux, manometry, esophageal

Introduction

Gastroesophageal reflux disease is defined as pathological retrograde movement of gastric contents into the esophagus. Reflux esophagitis (RE), non erosive reflux disease (NERD) and complicated GERD are subtypes of gastroesophageal reflux disease. [1] LES function and esophageal motility play an important role in prevention of reflux. The present study was undertaken to study the characteristics of esophageal motility and LES function as noted on High Resolution Esophageal Manometry (HREM) in patients with RE and NERD.

Materials and methods

This retrospective study was done at two centers – Pushpawati Singhanian Hospital and Research Institute, New Delhi and Choithram Hospital and Research Centre, Indore. All patients who underwent esophageal manometry for reflux symptoms from April 2014 to June 2016 formed the study group. They were divided into two groups based on the esophagogastroduodenoscopy (EGD) reports- RE and NERD. HREM was done in right lateral position using 16-channel water perfusion systems (Ready Stock, Australia). Basal LES pressures were recorded for 1 minute. Esophageal peristalsis was recorded for ten swallows of 5mL water each. Analysis was done using Chicago classification version 3.0 [2]

Age and sex distribution, basal LES pressures, Integrated relaxation pressure (IRP), esophagogastric junction (EGJ-CI) morphology and esophageal peristaltic pattern were analysed in the two groups. All values were expressed as median and range. Comparison between the two groups was made using Chi square test and Mann Whitney's test was done to compare continuous variables between the two groups. p values of <0.05 were considered significant.

Results

A total of 98 patients (70 males, mean age 44 years) formed the study group. Thirty two patients (32.6%) had NERD while 66 had RE. RE was significantly commoner in males and older individuals. The basal LES pressures and median IRP were significantly lower in the RE group (p<0.05). There was no significant difference in the EGJ morphology in the two groups.

Majority of the patients in the two groups had normal esophageal motility. However, ineffective esophageal motility was noted in 31.25% and 24.24 % of cases in NERD and RE groups respectively. The details of manometric findings are shown in table 1.

Discussion

GERD is associated with motor disorder, mainly ineffective esophageal peristalsis (IEM), in 20- 50% of patients. [3] Frazzoni et al observed no significant difference in LES pressures in RE, NERD and complicated GERD groups in their study [4]. They noted significantly lower esophageal body contraction amplitude in the esophagitis group. Lemme et al and Matrinek et al noted no significant difference in the LES pressures and frequency of IEM in esophagitis and NERD groups in their studies [5,6]. In a study from Lucknow, it was noted that higher endoscopic grades of esophagitis are associated with lower amplitude of contraction in distal esophagus. Lower LES pressure and distal esophageal contraction amplitude are associated with greater area under curve for pH below 4 [7]. Sun et al have reported that in patients with reflux esophagitis, the lower esophageal sphincter length and LES pressures were significantly lower when compared to patients with NERD [8].

The present study is a twin centre experience over two years. The study makes an attempt to identify factors in esophageal manometry that might predispose patients to esophageal injury. The study results are similar to other studies described above. However, there are a few pitfalls in the study. The sample size is small and life style and dietary factors have not been included. 24 hour pH testing was not done in all cases of NERD to prove significant acidic reflux.

To conclude, it is observed that patients with RE are commonly males, older than NERD patients and have significantly lower LES pressure and median IRP. Majority of the cases have normal peristalsis. The commonest peristaltic abnormality noted is ineffective esophageal motility.

Table 1- comparison between RE and NERD groups RE-median(range) NERD-median

	NERD(n=32)	RE(n=66)	P value
Male: Female	1.9:1	2.88:1	<0.05
Mean age (years)	42	46	0.01
Median LES pressure (mm Hg)	12	8.4	0.01
Median IRP (mmHg)	9.94	6.90	0.01

EGJ morphology	8(25%)	23(34.84%)	NS
Type 1	16(50%)	23(34.84%)	
Type 2	4(12.5%)	9(13.63%)	
Type3a	4(12.5%)	11(16.66%)	
Type3b			
Peristalsis	20(62.5%)	38(57.57%)	NS
Normal	0	2(3.03%)	
Hypertensive	10(31.25%)	16(24.24%)	
Ineffective esophageal motility	1(3.125%)	4(6.06%)	
Fragmented peristalsis			
Absent peristalsis	1(3.125%)	6(9.09%)	

References

1. Richter JE. Gastroesophageal reflux disease in the older patient: presentation, treatment, and complications. *Am J Gastroenterol* 2000; 95: 368-373 Kahrilas PJ
2. Bredenoord AJ, Fox M, Gyawali CP, Roman S, Smout AJ, Pandolfino JE; International High Resolution Manometry Working Group. The Chicago Classification of esophageal motility disorders, v3.0. *Neurogastroenterol Motil*. 2015 Feb; 27(2): 160-74
3. Kahrilas PJ, Pandolfino JE. Ineffective esophageal motility does not equate to GERD. *Am J Gastroenterol* 2003; 98: 715-717
4. Frazzoni M, De Micheli E, Savarino V. Different patterns of oesophageal acid exposure distinguish complicated reflux disease from either erosive reflux oesophagitis or non-erosive reflux disease. *Aliment Pharmacol Ther* 2003; 18: 1091-1098
5. Lemme EM, Abrahao-Junior LJ, Manhaes Y, Shechter R, Carvalho BB, Alvariz A. Ineffective esophageal motility in gastroesophageal erosive reflux disease and in nonerosive reflux disease: are they different? *J Clin Gastroenterol* 2005; 39: 224-227
6. Martinek J, Benes M, Hucl T, Drastich P, Stirand P, Spicak J. Non-erosive and erosive gastroesophageal reflux diseases: No difference with regard to reflux pattern and motility abnormalities. *Scand J Gastroenterol* 2008; 43: 794-800
7. Somani SK, Ghoshal UC, Saraswat V.A, Aggarwal R, Misra A, Krishnani N, Naik SR. Correlation of esophageal pH and motor abnormalities with endoscopic severity of reflux esophagitis. *Dis Eso*. 2004; 17(1): 58-64
8. X H Sun, MW Song, ZF Wang, XC Fang, LM Zhu, MY Ke. The characters of esophageal motility in patients with reflux esophagitis. Poster presentation. ANMA, Penang 2013 pg 73