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RESEARCH ARTICLE

ROLE OF ESOPHAGEAL MANOMETRY IN PATIENTS WITH REFLUX SYMPTOMS, DYSPHAGIA AND NONCARDIAC CHEST PAIN

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ABSTRACT

The aim of our study was to evaluate the importance of esophageal manometry in case of patients with reflux symptoms, non organic dysphagia and noncardiac chest pain (NCP). Our study included 255 patients, of which 155 were with reflux symptoms, 38 patients with dysphagia and 62 with NCP. The patients with reflux symptoms, presented with heart burn with regurgitation (61.29%), heart burn with dysphagia (7.74%), only heart burn (19.35%) and atypical symptoms (11.61%).After exclusion of organic diseases related to esophagus and heart esophageal manometry were done. Manometry showed abnormalities in 54.83%, 68.42% and 38.70% of patients with reflux, dysphagia and NCP respectively. In reflux group, most common were Hypoperistalsis (22%) followed by Hypotensive LES (29.67%). In dysphagia group, most common were achalasia cardia (55.26%), whereas, in case of NCP, Hypotensive LES (24.19%). So esophageal manometry should be first order of choice in patients with reflux symptoms, dysphagia and NCP after exclusion of all esophageal and cardiac organic disease to detect abnormalities in esophageal muscles as well as lower esophageal sphincter pressure, so that the patients can try to modify their life style.

INTRODUCTION

Esophageal manometries is an important method of investigation for measuring motility functions of upper and lower esophageal sphincters as well as body of esophagus[1,2]. A number of disorders which may be intrinsic to esophagus or secondary to other pathologic procedures affect esophageal wall. The diseases are achalasia cardia, diffuse esophageal spasm, nutcracker esophagus, gastroesophageal reflux disease. The patients usually present with retrosternal pain, regurgitation of food, dysphagia. These symptoms are not pathognomonic of to specific problem, so specific diagnosis will be difficult. Even, detail history taking along with physical examinations cannot orient the clinicians towards right directions. Hence, further tests including esophageal manometry are necessary to establish the diagnosis. According to American Gastroenterology Association, esophageal manometry detects esophageal motor disorders associated with systemic diseases, like, connective tissue diseases.

It is also helpful for placement intraluminal pH monitoring devices as well as preoperative assessment of peristaltic function just prior to antireflux surgery. In 1883, first attempt was performed to measure the esophageal function. But one has to wait till 1970, when technology was modified enough to properly measure the esophageal pressure dynamics, thus can identify the most common cause of noncardiac chest pain (NCP), nutcracker esophagus[3,4,5,6]. So, aim of our study was to determine the esophageal manometry as diagnostic gold standard in the diagnosis causes related to reflux symptoms, dysphagia or noncardiac chest pain.

MATERIALS AND METHODS

This study was conducted only after getting permission from local ethical committee of our institute. Before starting the study, written consent were taken from the patients' parties. Total 255 patients (male=142, females=113) were studied. After getting proper history (reflux symptoms, dysphagia and noncardiac chest pain) and thorough clinical examinations, endoscopy as well as barium swallow of esophagus were performed to exclude any organic disease, like, mass lesion, candidiasis, ulcers.

To exclude any cardiac disease E.C.G, cardiac enzymes, trop T, and echocardiography were performed. Then, these patients were undergone esophageal manometry to specify different disorders. According to symptoms provided by the patients, they were classified into three major groups.

Group 1: patients with reflux symptoms (n=155)
Group 2: Patients with dysphagia (n=38)
Group 3: Patients with NCP (n=62)

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Amongst 255 patients, males and females were 142 and 113 respectively. Among patients with reflux symptoms 4 subgroups were observed. There were: [table 1]

1. Heart burn with regurgitation: (n=95, 61.29%).
2. Heart burn with dysphagia: (n=12, 7.74%).
3. Heart burn only: (n=30, 19.35%).
4. Atypical symptoms:: (n=18. These were again classified into :
   i. Nocturnal asthma: (n=1, 77.77% of patients with atypical symptoms)
   ii. Hoarseness of voice: (n=4, 22.22% of patients with atypical symptoms).

Again, among 155 patients, 70 (45.16%) patients had normal study. In rest 85 patients, number of patients with Hypotensive lower esophageal sphincter (LES) with LES pressure <15 mm of Hg, nutcracker esophagus and Hypoperistalsis were 46 (29.67%), 6 (3.87%), and 33 (22%) respectively. Again, in patients with Hypoperistalsis, evidences of lax LES seen in 13 (39.39% of Hypotensive LES) patients and normal LES in 20 (60.60% of Hypotensive patients) patients [table 2].

Again, in 38 patients with dysphagia, the number of patients with normal study, nutcracker esophagus and achalasia cardia were 12 (31.66%), 5 (13.23%) and 21 (55.26%) respectively. In patients with achalasia, evidences of no LES relaxation an partial relaxation of LES were seen in 9 (34.61%) and 12 (46.15%) respectively [table 3].

Among 62 patients with NCP, evidences of normal findings, nutcracker esophagus, Hypotensive LES and ineffective peristalsis were seen 38 (61.29%), 3 (4.83%), 15 (24.19%) and 6 (9.67%) respectively [table 4].

No significant differences in normal and abnormal findings were found in three types of patients [table 5].

Total patients: 255
Males: 142 (55.68%)
Females: 113 (44.31%)

Table 1 Patients with reflux symptoms: 155

Symptoms		Patients involved	Percentage
Heart burn + Regurgitation		95	61.29
Heart burn + Dysphagia		12	7.74
Heart burn		30	19.35
Atypical symptoms (18)	Nocturnal asthma	14	77.77
	Hoarseness of voice	4	22.22

Patients with Dysphagia: 38
Patients with chest pain: 62

Table 2 Manometric findings in patients with reflux symptoms (n=155)

Manometric study			Patients involved	Percentage
Normal study			70	45.16
Abnormal study (85)	Hypotensive LES		46	29.67
	Nut cracker esophagus		6	3.87
	Hypoperistalsis (33, 22%)	Lax LES	13	39.39
		Normal LES	20	60.60

DISCUSSIONS

According to some studies, esophageal motor disorders, like, achalasia and diffuse esophageal spasm are only be diagnosed by esophageal manometry, whereas, other studies demoed that Manometric findings were helpful in 60% patients with dysphagia and 20% patients with NCP[7,8]. In our study, Manometric abnormalities were found in 54.83% patients with reflux symptoms, 68.42% patients with dysphagia and 38.70% patients with NCP, which was consistent with later studies[8, 9].

Table 3 Manometric findings in patients with dysphagia (n=38)

Manometric study		Patients involved	Percentage
Normal study		12	31.66
Nutcracker esophagus		5	13.15
Achalsia cardia (21,55.26%)	No relaxation	9	42.85
	Partial relaxation	12	57.14

Table 4 Manometric findings in patients with non cardiac chest pain (n=38)

Manometric study	Patients involved	Percentage
Normal study	38	61.29
Nut cracker esophagus	3	4.83
Hypotensive LES	15	24.19
Ineffective peristalsis	6	9.67

Table 5 Comparison between normal and abnormal manometric findings

Group	Normal	Abnormal	P value
Reflux symptoms	70 (45.16%)	85 (54.83%)	0.3757 (NS)
Dysphagia	12 (31.57%)	26 (68.42%)	0.0734 (NS)
Noncardiac chest pain	38 (61.29%)	24 (38.70%)	0.1624 (NS)

In achalasia group, LES were not relaxed in 34.61% patients and partially relaxed in 46.15% of patients. Again, in case of NCP, when heart disease was excluded by the related investigations, and esophageal manometry diagnosed it as esophageal related, then the patients can alleviate these symptoms by modification of their life style[10]. In Western countries, most common cause of NCP is nutcracker esophagus[5, 6], but in our countries, most common is non-specific motor findings[11, 12]. In our study, according to the Manometric findings in NCP, 24.19% presented as Hypotensive LES and 4.83% as nutcracker esophagus which is to the similar study done by Ciriza *et al*[9], where the incidence of hypertensive LES was 53.8% as compared to nutcracker esophagus incidence was 19.2%.

Multiple factors act as common pathway of pathological process which ultimately leads to development of esophageal reflux, some of these factors can be diagnosed manometrically as evidenced in the study Kahrilas *et al*[7]. The Manometric abnormalities are Hypotensive lower esophageal sphincter, small intraabdominal part of LES, impaired esophageal peristalsis, increased low amplitude wave[11], and increase in transient relaxation[13], triggering defect in secondary peristalsis[14]. Leite *et al*. demoed low amplitude contraction (<30 mm of Hg) or non transmitted contraction in 30% or more of water swallows in non-esophageal esophageal motor disorders[15]. In recent classification of esophageal motor disorders, ineffective esophageal peristalsis has been included in hypercontractile pattern, which was previously categorized as non-specific motor disorders. LES has been shown in some other studies to be prognostically important in case of gastroesophageal reflux diseases, because, baseline LES pressure <6 mm of Hg or length of LES <2 cm. correlated with severity of the diseases as well as worsening of response to medical treatment[16]. In our study, Manometric abnormalities

were evidenced in 54.83% of patients with reflux symptoms, of which Hypotensive LES were 29.67% and Hypoperistalsis 33.22%, which is similar to the study done by Ciriza *et al*[9]. These manometric alterations are of prognostic and therapeutic value.

According to the study done by Ciriza *et al*. most number patients with motor dysphagia showed Manometric alterations in the form of achalasia cardia (53.7%), which was similar to our study in which, 55.26% patients showed evidence of achalasia cardia[9]. Other manometric findings in patients with dysphagia were closely related to achalasia though it did not meet the achalasia criteria. So, esophageal manometry should be routinely performed in non organic form of dysphagia.

CONCLUSIONS

In absence of any organic disease in case of dysphagia, noncardiac chest pain or reflux symptoms, esophageal manometry should be 1st order of choice of investigations to detect different types of esophageal motor disorders as well as pressure in lower esophageal sphincter. The affected patients also try to change their life style, so that they can try to get relief from these symptoms.

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