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Multicentre Spectrum of Esophageal Motility Disorders in the Indian Subcontinent

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Abstract

Background *- Motor disorders of the esophagus are rare and regional variations in their occurrence have not been studied in India.*

Aim and objectives *- To study the spectrum of major and minor motor disorders in patients with motor dysphagia at three centres across India.*

Materials and Methods *- This prospective data collection was done over a period of one year at three centres in India. Demographic details, symptoms at presentation and manometric diagnosis were recorded. The data was analysed using appropriate statistical tests.*

Results *- Motor dysphagia is commoner in males and median age of presentation is the fifth decade. Dysphagia and regurgitation are the commonest symptoms. Achalsia is the commonest disorder, though the predominant subtype varies from centre to centre. Ineffective motility is the second commonest cause across all centres. Distal esophageal spasm and hypertensive peristalsis were only reported from Central India*

Conclusion *- There is regional variation in clinical presentation and manometric diagnosis of motor dysphagia in India.*

Introduction

Gastrointestinal disorders are known to have wide regional variations in the Indian subcontinent. These differences are attributed to significant differences in ethnicity, social customs, religious taboos, dietary patterns and several more. Primary motor disorders of the esophagus are rare and regional variations in their occurrence have not been reported from India.

The aim of the present study was to determine the spectrum of major and minor motor disorders at 3 different centres, Indore, New Delhi and Chennai.

Material and Methods

This prospective data collection was done over a period of one year at three centres in India- Pushpavati Singhania Research Institute, New Delhi (RB); Choithram Hospital and Research Centre, Indore(MJ) and Gleneagles Global Health City, Chennai(MS, VJ, PB). Demographic data included age, gender and indications for referral. Manometry procedure was performed and reported by authors who had more than 2 year experience with high resolution manometry (HREM). The procedure was done in the supine position using 16 channel water perfusion system (Ready Stock, Australia). Basal lower esophageal sphincter pressure was recorded for a minute. Ten swallows with 5 mL water were recorded. The data was reported as per Chicago Classification v 3.0.[1]

The final reporting was classified as major and minor motor disorders and esophagogastric outflow obstruction (EGJ) (Table 1). Post-operative patients and children below 18 years were excluded.

Results

Table 2 shows the demography and indications for referral across the 3 centres. Male patients accounted for 55.9% of cases with predominance at all the three centres. The median age of presentation was in the fifth decade. The most common referrals were dysphagia, GERD, noncardiac chest pain and belch phenomenon. Referral for chest pain was more frequent from South.

Achalasia cardia was the commonest cause for motor dysphagia across all the 3 centres. However, the frequency of achalasia subtypes varied among the centres (Table 3). In effective esophageal motility was the second common motor disorder. Distal esophageal spasm and hypertensive peristalsis were rare and reported from only Central India.

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Discussion

Motor abnormalities of the esophagus are characterized by a chronic impairment of the neuromuscular structures that coordinate esophageal function. The best-defined entity is achalasia, while the other motor disorders with clinical relevance include diffuse esophageal spasm, esophageal dysmotility associated with scleroderma, and ineffective esophageal motility.[2] The Chicago classification of esophageal motility was developed to facilitate the interpretation of clinical high resolution esophageal pressure topography studies. The classification includes criteria for subtyping achalasia, esophagogastric junction outflow obstruction; motility disorders not observed in normal subjects and statistically defined peristaltic abnormalities.[3] This has led to standardisation of reporting. We used the Chicago Classification v.3.0 for analysis.

In our study, the primary motor disorder was achalasia (50.3%). In a study of 305 patients with primary esophageal motor dysphagia, Patti et al. reported that 77 % had achalasia, 12 % had distal esophageal spasm, and 10 % had nutcracker esophagus.[4] Misra et al. from Lucknow, North India, in their study of 250 patients over 5 years, reported that achalasia cardia, distal esophageal spasm, and hypertensive LES were present in 77 %, 4.4 %, and 3.8 %, respectively.[5] In a study from Brazil, ineffective esophageal motility was the commonest motor disorder, followed by nutcracker esophagus, diffuse spasm and achalasia cardia.[6] These studies were done prior to Chicago Classification V.3.0 and amply display that regional variation in type of motor dysphagia does exist.

Our study also confirms that in the Indian subcontinent, achalasia cardia is the commonest cause for motor dysphagia (84/167, 50.3%). Achalasia type 1 is the commonest subtype in Central India, followed by type 2 and 3 respectively while Type 2 and Type 3 achalasia subtypes predominated in south and north India respectively. Other major motor disorders like distal esophageal spasm and jackhammer esophagus were reported from central India. Among the minor motor abnormalities, ineffective motility was present in a third of all patients and was the second common cause of motor dysphagia across the three centres.

The study concludes that regional variations in pattern of motor disorders do exist in our country. The reasons for these differences may be related to several factors -genetic and ethnic variations, social customs and may also be predetermined genetically. It would be fascinating to have further prospective studies involving multiple centres across India to know the regional variations of esophageal motility disorders.

Table 1: Classification of peristaltic abnormalities used in the study

Achalasia and EGJ outflow obstruction	Criteria
Type I achalasia (classic achalasia)	Elevated median IRP (>15 mmHg*), 100% failed peristalsis (DCI <100 mmHg•s•cm)
Type II achalasia (with esophageal compression)	Elevated median IRP (>15 mmHg*), 100% failed peristalsis, panesophageal pressurization with ≥20% of swallows
Type III achalasia (spastic achalasia)	Elevated median IRP (>15 mmHg*), no normal peristalsis, premature (spastic) contractions with DCI >450 mmHg•s•cm with ≥20% of swallows
EGJ outflow obstruction	Elevated median IRP (>15 mmHg*), sufficient evidence of peristalsis such that criteria for types I-III achalasia are not met†
Major disorders of peristalsis	(Not encountered in normal subjects)
Absent contractility	Normal median IRP, 100% failed peristalsis
Distal esophageal spasm	Normal median IRP, ≥20% premature contractions with DCI >450 mmHg•s•cm*. Some normal peristalsis may be present.
Hypercontractile esophagus (jackhammer)	At least two swallows with DCI >8000 mmHg•s•cm*,‡
Minor disorders of peristalsis	(Characterized by contractile vigour and contraction pattern)
Ineffective esophageal motility (IEM)	≥50% ineffective swallows[failed or weak with DCI<450 mmHg•s•cm]
Fragmented peristalsis	≥50% fragmented contractions with DCI > 450 mmHg•s•cm
Normal esophageal motility	Not fulfilling any of the above classifications

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Table 2: Symptom profile of patients with motor dysphagia across the three centres

SYMPTOMS	NORTH (N=51)	SOUTH(N=46)	Central (n=70)	P VALUE
Dysphagia	23(45.1%)	28(60.86%)	56(80%)	0.36
Regurgitation	13(25.5%)	27(58.7%)	33(47.1%)	
Weight loss	6(11.8%)	13(28.2%)	9(12.85%)	
Chest pain	6(11.8%)	16(34.8%)	8(11.4%)	
Recurrent burping	6(11.8%)	03(6.52%)	3(4.3%)	
Retrosternal burning	2(3.8%)	10(21.7%)	3(4.3%)	

Table 3: Diagnosis at manometry in motor dysphagia across the three centres

	North (n=51)	South(n=46)	Central (n=70)	P value
Age (median and range)	48.7	46.4	43.1	<0.0001
Male: Female	30:21	24:22	39:21	NS
Disorders with EGJ Outflow Obstruction				
Achalasia cardia type 1	5(9.8%)	5(10.9%)	20(28.6%)	NS
Achalsia cardia type2	4(7.8%)	14(30.4%)	14(20.0%)	
Achalsia cardia type 3	16(31.4%)	2(4.3%)	4(5.7%)	
EGJ outflow obstruction	1(2.0%)	2(4.3%)	3(4.3%)	
Major peristaltic abnormalities				
Distal esophageal spasm	-	-	6(8.6%)	NS
Jackhammer esophagus	-	-	5(7.1%)	
Absent contractility	3(5.9%)	5(10.9%)	-	
Minor peristaltic abnormalities				
Ineffective motility	20(39.21%)	17(36.94%)	17(24.3%)	NS
Fragmented peristalsis	2(3.9%)	1(2.17%)	1(1.42%)	

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