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Contribution of High Resolution Manometry in Dysphagia with Normal Endoscopy

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ABSTRACT

Dysphagia is a frequent reason for consultation. High-resolution esophageal manometry (HREM) is the current reference examination for the exploration of dysphagia when endoscopy is normal with negative esophageal biopsies. This is a retrospective single-center study including 231 patients presenting dysphagia with normal upper digestive endoscopy and negative esophageal biopsies benefited from HRM. The diagnosis was retained based on the Chicago 3.0 classification. We used a HRM unisensor catheter and the MMS 9.5 sofware for interpretation. Our study included 231 patients, 126 (54.54%) of whom were women. Mean age was 43.9 years (extremes 18- 94 years). MHR was pathological in 186 cases (80.51%). It revealed achalasia in 121 patients (65.05%): achalasia type I in 25 patients (20.66%), type II in 86 patients (71.07%) and type III in 10 cases (8.26%). HRM showed others esophageal motility disorders corresponding to scleroderma in 20 patients (10.75%), ineffective motricity in 33 patients (17,7%), oesogastric junction obstruction in 7 cases (3.7%), jackhammer oesophagus in 2 cases (1,07%), oesophageal spasm in 3 cases (1.61%). HRM was normal in 45 patients (19.48%).High-resolution esophageal manometry represents an undeniable advance in the diagnosis of esophageal motor disorders in patients with dysphagia and normal endoscopy. The most common primary motor disorder is achalasia type II.

Introduction

The esophagus is a complex muscular tube that uses coordinated peristalsis and deglutitive relaxation of the upper and lower esophageal sphincter to transport bolus from the pharynx into the stomach. Any disruption in these processes, such as impaired peristalsis in the esophageal body or inadequate relaxation of the lower esophageal sphincter, can result in obstructive symptoms, notably dysphagia [1,2].

Upper endoscopy accompanied by biopsy serves as the initial diagnostic test recommended. If a mechanical or mucosal origin is excluded, the subsequent evaluation typically involves esophageal motility testing [3].

The aim of this study was to identify the type of esophageal motility disorders (EMD) and their frequencies in dysphagic patients with normal endoscopy.

Materials and Methods

This is a single-center study including 231 patients presenting dysphagia with normal upper digestive endoscopy and negative esophageal biopsies benefited from HRM between Mai 2018 and January 2023.The diagnosis was retained based on the Chicago 3.0 classification. We used a HRM unisensor catheter and the MMS 9.5 sofware for interpretation.

Results

Our study included 231 patients, 126 (54.54%) of whom were women. Mean age was 43.9 years (extremes 18-94 years).

MHR was pathological in 186 cases (80.51%). It revealed achalasia in 121 patients (65.05%): achalasia type I (figure1) in 25 patients (20.66%), type II (figure2) in 86 patients (71.07%) and type III (figure3) in 10 cases (8.26%).

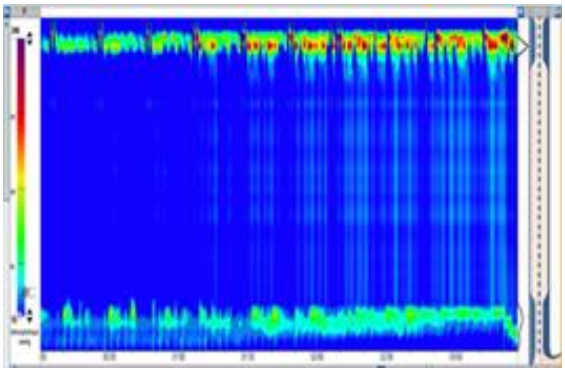

Figure 1. Achalasia type I

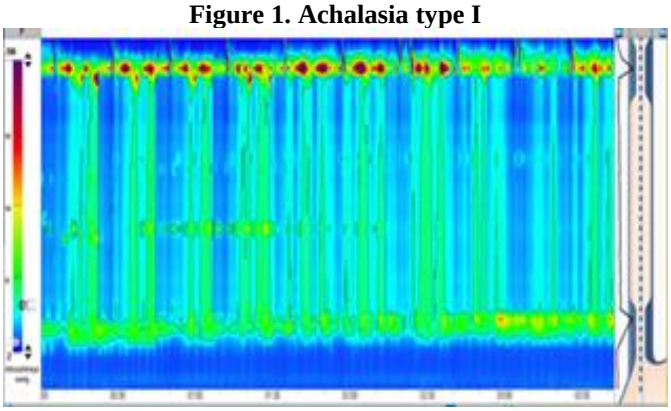

Figure 2. Achalasia type II

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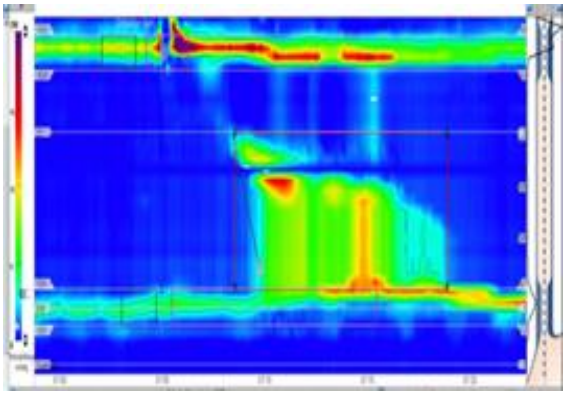

Figure 3. Achalasia type III

HRM showed others esophageal motility disorders corresponding to scleroderma in 20 patients (10.75%) (figure4), ineffective motricity (figure5) in 33 patients (17,7%) , esophago-gastric junction obstruction in 7 cases (3.7%), jackhammer oesophagus (figure 6) in 2 cases (1, 07%), oesophageal spasm in 3 cases (1.61%). HRM was normal in 45 patients (19.48%).

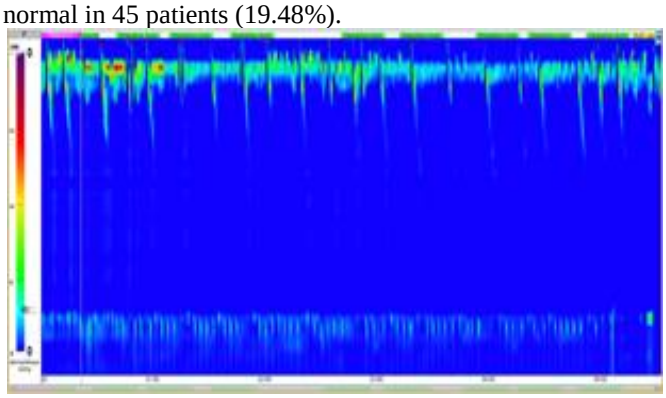

Figure 4. Absence of esophageal contractility suggestive of scleroderma

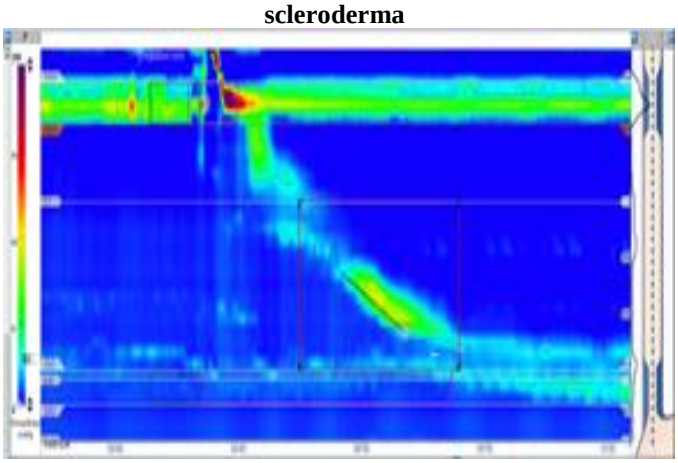

Figure 5. Ineffective motricity

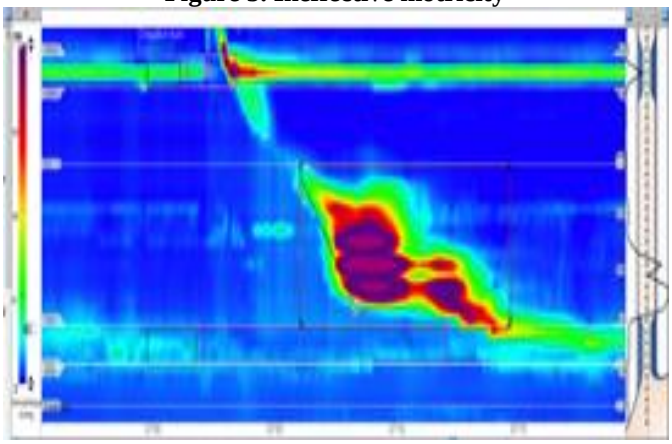

Figure 6. Jackhammer oesophagus

Discussion

High-resolution manometry (HRM) is recommended for patients with symptoms of dysphagia when there is no apparent mechanical obstruction or mucosal abnormality to explain these symptoms. HRM is currently the gold standard for the assessment of esophageal motor dysfunction [4].

Achalasia represents the classic esophageal motility disorder thought to result from a selective loss of inhibitory neurons in the myenteric plexus of the distal esophagus and lower esophageal sphincter (LES), leading to a neuronal imbalance with unopposed excitatory activity and a localized decrease in inhibitory activity, resulting in failure of LES relaxation and disruption of esophageal peristalsis [5]. The incidence is relatively low [1], equally distributed between the sexes. The probability of developing achalasia tends to increase with age, peaking between the ages of 30 and 60 [6,7]. In the various studies on achalasia, the average age at diagnosis is around 50, which is similar to the results of the current study.

In a study was carried out by alvand et al. of 62 patients recently diagnosed with achalasia, dysphagia was the most frequently reported symptom (95%), followed by weight loss, regurgitation, reflux, chest pain, nocturnal cough and nocturnal dyspnea [8]. in our study the main symptom was dysphagia.

The diagnosis of achalasia is confirmed when the Integrated Relaxation Pressure (IRP) of the lower esophageal sphincter exceeds 15 mmHg, and 100% of esophageal contractions are deemed pathological.

There are three sub-types of achalasia. Type I achalasia is conclusively diagnosed when there is an elevated median IRP and absent contractility, indicative of 100% failed peristalsis. Type II achalasia is characterized by an abnormal median IRP and absent contractility (100% failed peristalsis), with panesophageal pressurization observed in 20% or more swallows. Type III achalasia is identified by an abnormal IRP and evidence of spasm (20% or more swallows with premature contraction), without any evidence of peristalsis [9,10].

In our study, the dominant type, according to the Chicago classification criteria, was type II, accounting for 71%. It was followed by type I and type III, accounting for 20.66% and 8.26% respectively. Our results are consistent with the American College of Gastroenterology's 2020 report, which also identifies type II as the most prevalent, followed by type I and type III [11].

Sjogren's syndrome (SS) and systemic sclerosis (SSc) stand as the predominant connective tissue disorders linked to esophageal motility disorders. Symptoms related to GERD are the most common in patients with SSc with a prevalence of around 35%, whereas dysphagia occurs rarer in about 4% of patients[12,13]. In our study 10% of cases had dysphagia. In scleroderma, esophageal involvement is marked by hypotonic esophageal motor disorders, with absent peristalsis being the most common manifestation, accounting for approximately 40% of manometries in scleroderma cases. This condition is defined by the complete absence of esophageal contractions, encompassing 100% of instances [14-16].

In earlier versions of the Chicago Classification, ineffective esophageal motility (IEM) and fragmented peristalsis were classified as minor motility disorders. However, in CCv4.0, fragmented peristalsis, previously outlined in prior versions, is now encompassed within the IEM definition. Consequently, with these revisions regarding

IEM and fragmented peristalsis, Chicago Classification v4.0 no longer differentiates between major and minor motility disorders [4]. A conclusive diagnosis of IEM requires more than 70% ineffective swallows or at least 50% failed peristalsis [17,18].

Shetler and al study showed that among patients with IEM, heartburn and regurgitation were more commonly reported symptoms than dysphagia [19]. 17% cases were diagnosed in the present study.

Hypercontractile motility disorders mainly encompass distal esophageal spasm and jackhammer esophagus. These disorders are relatively uncommon, even in reference populations, and occur mainly in people aged 60 and over. jackhammer esophagus is characterized by hypercontractile peristalsis that occurs at the right time but with unusual force [20]. the results of our study were similar to those of Rehman et al, who found 2% of cases of jackhammer esophagus [21].

Conclusion

Over the past three decades, significant progress has been made in our understanding of the various esophageal motility disorders, thanks to improved diagnostics with high-resolution esophageal manometry. Achalasia remains the most studied motility disorder, with highly effective treatment options to palliate symptoms. However, the study of treatments for motility disorders other than achalasia has not progressed, which should be a priority for the next decade.

References

[1]Delshad SD, Almario CV, Chey WD, et al. Prevalence of Gastroesophageal Reflux Disease and Proton Pump Inhibitor-Refractory Symptoms. Gastroenterology 2020; 158: 1250–1261 e2. [PubMed: 31866243]

[2]Adkins C, Takakura W, Spiegel BMR, et al. Prevalence and Characteristics of Dysphagia Based on a Population-Based Survey. Clin Gastroenterol Hepatol 2020; 18: 1970–1979 e2. [PubMed: 31669055]

[3] Gyawali CP, Carlson DA, Chen JW, et al. ACG Clinical Guidelines: Clinical Use of Esophageal Physiologic Testing. Am J Gastroenterol 2020; 115: 1412–1428. [PubMed: 32769426]

[4]Yadlapati R, Kahrilas PJ, Fox MR, et al. Esophageal motility disorders on high-resolution manometry: Chicago classification version 4.0((c)). Neurogastroenterol Motil 2021;33:e14058. [PubMed: 33373111]

[5] Guillaumot, M.-A., Barret, M., Leblanc, S., Leconte, M., Dousset, B., Oudjit, A., ...Chaussade, S. (2018). Prise en charge de l'achalasie. La Presse Médicale, 47(1), 11–18. doi:10.1016/j.lpm.2017.08.010

[6] Sonnenberg A. Hospitalization for achalasia in the United States 1997–2006. Dig Dis Sci 2009; 54: 1680–5.

[7] Tanaka, S., Abe, H., Sato, H., Shiwaku, H., Minami, H., Sato, C., Ogawa, R., Shimamura, Y.,Yokomichi, H., & Inoue, H. (2021). Frequency and clinical characteristics of special types of achalasia in Japan: A large-scale, multicenter database study. Journal of Gastroenterology and Hepatology, 36(10), 2828–2833. Portico. https://doi.org/10.1111/jgh.15557

[8]Alvand S, Aghaee B, Momayez Sanat Z. Characteristics of Achalasia Subtypes: Result of a Study in a Tertiary Hospital. Caspian J Intern Med. 2022 Winter; 13(1):100-106. doi:10.22088/cjim.13.1.100. PMID: 35178214; PMCID: PMC8797810.

[9] Kahrilas PJ, 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. doi: 10.1111/nmo.12477. Epub 2014 Dec 3. PMID: 25469569; PMCID: PMC4308501.

[10]Patel DA, Yadlapati R, Vaezi MF. Esophageal Motility Disorders: Current Approach to Diagnostics and Therapeutics. Gastroenterology. 2022 May; 162(6):1617-1634. doi: 10.1053/j.gastro.2021.12.289. Epub 2022 Feb 25. PMID: 35227779; PMCID: PMC9405585.

[11]Vaezi MF, Pandolfino JE, Yadlapati RH, Greer KB, Kavitt RT. ACG Clinical Guidelines: Diagnosis and Management of Achalasia. Am J Gastroenterol 2020; 115: 1393-411.

[12]Alastal Y, Hammad TA, Renno A, Khalil B, Pierre J, Kwaah B, Khuder SA, Nawras A. Gastrointestinal manifestations associated with systemic sclerosis: results from the nationwide inpatient sample. Ann Gastroenterol. 2017; 30: 498–503.

[13]Voulgaris TA, Karamanolis GP. Esophageal manifestation in patients with scleroderma. World J Clin Cases. 2021;9(20):5408-5419. doi:10.12998/wjcc.v9.i20.5408

[14] Leandri, C., Guillaumot, M.-A., Dohan, A., Leconte, M., Coriat, R., Chaussade, S., & Barret, M. (2019). Le syndrome de motricité œsophagienne inefficace. La Presse Médicale. doi:10.1016/j.lpm.2019.07.012

[15] Aggarwal N, Lopez R, Gabbard S, Wadhwa N, Devaki P, Thota PN.Spectrum of esophageal dysmotility in systemic sclerosis on high-resolution esophageal manometry as defined by Chicago classification. Dis Esophagus 2017; 30 (12):1–6.

[16] Crowell MD, Umar SB, Griffing WL, DiBaise JK, Lacy BE, Vela MF. Esophageal motor abnormalities in patients with scleroderma: heterogeneity, risk factors, and effects on quality of life. Clin Gastroenterol Hepatol 2017; 15(2). 207. e1–213.e1.

[17]Zerbib F, Marin I, Cisternas D, et al. Ineffective esophageal motility and bolus clearance. A study with combined high-resolution manometry and impedance in asymptomatic controls and patients. Neurogastroenterol Motil 2020; 32: e13876

[18]Jain A, Baker JR, Chen JW. In ineffective esophageal motility, failed swallows are more functionally relevant than weak swallows. Neurogastroenterol Motil 2018; 30: e13297. [PubMed: 29368366]

[19]Shetler, K. P., Bikhtii, S., & Triadafilopoulos, G. (2017). Ineffective esophageal motility: clinical, manometric, and outcome characteristics in patients with and without abnormal esophageal acid exposure. Diseases of the Esophagus, 30(6), 1–8. doi:10.1093/dote/dox012

[20]Wilkinson JM, Halland M. Esophageal Motility Disorders. Am Fam Physician. 2020 Sep 1; 102(5):291-296. PMID: 32866357.

[21]Rehman H, Abid A, Awan S, et al. (December 14, 2020) Spectrum and Clinical Outcome of Motility Disorders on High-Resolution Esophageal Manometry: A Study from a Tertiary Center on Patients with Dysphagia in Pakistan. Cureus 12(12): e12088. DOI 10.7759/cureus.12088.