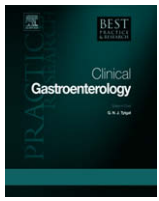
Best Practice & Research Clinical Gastroenterology 23 (2009) 369–386

Contents lists available at ScienceDirect

Best Practice & Research Clinical Gastroenterology



7

Utility of non-endoscopic investigations in the practical management of oesophageal disorders

Daniel Sifrim, MD, PhD, Professor of Gastrointestinal Physiology [a,b,*],
Kathleen Blondeau, PhD, Postdoctoral Fellow [a],
Lidia Mantillla, MD, Research Fellow [a]

[a] *Center for Gastroenterological Research, Catholic University of Leuven, Belgium*
[b] *The Wingate Institute of Neurogastroenterology, Barts and The London School of Medicine and Dentistry, Queen Mary, University of London, UK*

Keywords:
gastro-oesophageal reflux
heartburn
pH-metry
oesophageal impedance oesophageal motility
dysphagia
non-cardiac chest pain
high-resolution manometry
oesophageal ultrasound

The current available methods for diagnosis of GORD are symptom questionnaires, catheter and wireless pH-metry, impedance-pH monitoring and Bilitec®. Osophageal pH monitoring allows both quantitative analysis of acid reflux and assessment of reflux-symptom association. Impedance-pH monitoring detects all types of reflux (acid and non-acid) and allows assessment of proximal extent of reflux, a relevant parameter for understanding symptoms perception and extraoesophageal symptoms. Bilitec provides a quantitative assessment of duodeno-gastro-oesophageal reflux. Oesophageal motor abnormalities have been associated with GORD symptoms as well as chest pain and dysphagia. High-resolution manometry contributed to re-classify oesphageal motor disorders. However, barium swallows are still essential for evaluation of oesophageal anatomy and combined oesophageal manometry-impedance can assess oesophageal motility and bolus transit simultaneously in a non-radiological way. Still in experimental phase, high-frequency ultrasound allows monitoring of the oesophageal wall thickness and exaggerated longitudinal muscle contraction that might be associated to chest pain and dysphagia. This chapter provides a critical evaluation of the clinical application of these techniques.

* Corresponding author. Faculty of Medicine K.U.Leuven, Lab G-I Physiopathology, Gasthuisberg, O&N 1, 7th floor, Herestraat 49, 3000 Leuven, Belgium. Tel.: +32 16 345752; Fax: +32 16 345939.
E-mail address: daniel.sifrim@med.kuleuven.ac.be (D. Sifrim).

1521-6918/$ – see front matter © 2009 Elsevier Ltd. All rights reserved.
doi:10.1016/j.bpg.2009.03.005

Gastro-oesophageal reflux disease

Introduction

Gastro-oesophageal reflux disease (GORD) is defined as the presence of troublesome symptoms or lesions that can be attributed to the reflux of gastric contents into the oesophagus [1]. GORD is one of the most common conditions that affect the gastrointestinal tract [2]. Various techniques are used to diagnose, characterise and classify GORD. Reflux episodes can be detected using stationary techniques like barium swallows and video-fluoroscopy or scintigraphy. Although these techniques provide interesting anatomical and functional information related to GORD (hiatal hernia, oesophageal clearance or gastric emptying), they are not sensitive enough and are usually performed in non-physiological conditions. To overcome these limitations, ambulatory techniques for GER monitoring have been developed and have been in use since 1974. The current available diagnostic methods, apart from symptom questionnaires are catheter and wireless pH-metry, impedance-pH monitoring and Bilitec®.

Acid reflux is considered the key factor in the pathophysiology of GORD. In patients that improve symptoms with anti-acid treatment, there is generally no need for reflux testing. With the advent of proton pump inhibitors (PPI) the approach of the patient with reflux disease has changed as the type of patient been evaluated by gastroenterologists are predominantly patients with persistent GORD symptoms in spite of acid suppressive therapy. Especially patients without oesophageal lesions during upper endoscopy show a low response rate to proton pump inhibitor (PPI) therapy. In these patients oesophageal testing, aiming to quantify the amount of gastro-oesophageal reflux and to evaluate whether symptoms are related to reflux episodes, may be mandatory.

In patients with GORD, the occurrence of both reflux episodes and symptoms can be intermittent, unpredictable in time or related to type or intensity of physical activities and/or quantity and nature of meals. Furthermore, many patients show a significant day-to-day variability in reflux and symptoms. Therefore, an ideal GER monitoring technique should be ambulatory. It should consist of a long-lasting continuous recording at an adequate sampling frequency to detect both slow long-lasting and fast short-lasting reflux events that might eventually be associated with symptoms during the study period. The ambulatory technique should allow for normal physical activities and patients should be able to have their habitual meals.

As above mentioned, GORD patients with typical symptoms (heartburn/regurgitation) that respond to PPI do not require further investigations. This chapter will review the clinical application of different non-endoscopic methods for evaluation of GORD, particularly for patients not responding to PPI.

Symptom questionnaires

In a proportion of GORD patients (approximately 30%), symptoms are accompanied by erosive oesophagitis, diagnosed at endoscopy, and it is this physical manifestation which is most easily identified and monitored in response to treatment. However, a higher proportion of GORD patients do not have erosive oesophagitis and, even if they do, there is limited correlation between the severity of endoscopic oesophagitis and the severity or frequency of reflux symptoms [3]. It is, therefore, important to have a validated, reliable and sensitive instrument to document the burden of patients' reflux symptoms, their quality of life and well-being, and their response to treatment. This is especially important for patients with Non-Erosive Reflux Disease (NERD) as their response to treatment cannot be monitored endoscopically.

Heartburn and acid regurgitation have long been considered as the cardinal symptoms of GORD and have been necessary inclusion criteria in most therapeutic trials. However, the clinical manifestations of GORD are now recognised to be considerably broader, including not only these typical symptoms but also many atypical and extra-oesophageal symptoms such as laryngitis, non-cardiac chest pain, asthma and cough as well as a broad array of associated symptoms such as nausea, lower gastrointestinal complaints, and sleep disturbance.

Many of the scales proposed for the evaluation of GORD are not sufficiently specific and have not been rigorously validated. Moreover, many symptom scales used to evaluate the therapeutic efficacy of a treatment for reflux focus on 'classic' GORD symptoms (i.e. heartburn and regurgitation) without