Utilization of Esophageal Function Testing for the Diagnosis of the Rumination Syndrome and Belching Disorders

Caroline M.G. Saleh, MS, Albert J. Bredenoord, MD*

KEYWORDS

• Rumination • Belching • Manometry • pH impedance • Diagnosis

KEY POINTS

- The underlying mechanism of rumination is characterized by an increase in intragastric pressure.
- Combined manometry and pH impedance are preferred to distinguish rumination and belching disorders from other esophageal pathologies.
- In supragastric belches air is expelled immediately after ingestion; it is often caused by contraction of the diaphragm, creating negative pressures in the thoracic cavity and esophagus.
- On impedance supragastric belches are observed as an increase in impedance, starting in the proximal channel, and progressing to a distal channel, followed by a return to baseline starting in the distal channel.
- Manometry is crucial for identification of rumination and other esophageal pathologies; however typical patterns of supragastric belches are better observed on impedance.

INTRODUCTION

Rumination is a phenomenon characterized by retrograde flow of gastric contents into the mouth, otherwise known as regurgitation.[1] Repetitive excessive occurrence of rumination is considered pathologic and is known as the rumination syndrome[2]; this is a behavioral disorder, first thought to be only present in children and mentally disabled but currently increasingly recognized in otherwise healthy adult patients as well.

Belching occurs occasionally in everyone and is often not related to a disease or a pathologic condition.[3] There are 2 types of belches: gastric belches and supragastric belches.[4] Gastric belches are physiologic events caused by retrograde flow of air into

Department of Gastroenterology and Hepatology, Academic Medical Center Amsterdam, Meibergdreef 9, Amsterdam 1105 AZ, The Netherlands
* Corresponding author.
E-mail address: a.j.bredenoord@amc.uva.nl

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the esophagus and mouth; however supragastric belching is associated with belching disorders and is considered pathologic behavior.[3]

Clinical diagnosis of the rumination syndrome and belching disorders are based on the ROME III criteria, which strangely enough defines both diseases as functional gastroduodenal disorders.[5–7] Unfortunately, patients frequently suffer several years and often consult many different physicians before being diagnosed correctly[1,8]; this is partly because other diseases such as gastroesophageal reflux disease (GERD) show many similarities in symptomatology with the rumination syndrome and the excessive belching disorder.[5,9]

Fortunately, recent technological advances, such as high-resolution manometry (HRM) combined with impedance, have allowed us to facilitate the detection and diagnosis of the rumination syndrome and supragastric belching.

In this article, the authors aim to provide an overview of the current diagnostic tools to improve the recognition and diagnostic approach of the rumination syndrome and belching disorders. For better understanding, both disorders will be discussed separately.

THE RUMINATION SYNDROME

Pathophysiology

Rumination is the voluntary, albeit unconscious, contraction of the abdominal muscles forcing return of food into the mouth, followed by rechewing, swallowing, or spitting.[1,10] The underlying mechanism is characterized by an increase in intragastric pressure, as a result of gastric straining.[11,12] When the intragastric pressure overcomes the pressure of the lower esophageal sphincter (LES), gastric content can flow into the esophagus. As a result, relaxation of the upper esophageal sphincter (UES) occurs and gastric content can subsequently flow from the esophagus into the pharynx and mouth.[13] The reason for the relatively "lower" LES pressure is still unclear, but could be caused by a prolonged low LES pressure postprandially or a temporary lowering during transient LES relaxations (TLESRs), which are sensed by the subject.[14,15] A third hypothesis is a learned, voluntary relaxation of the diaphragmatic crura that allows the normal postprandial increase in intragastric pressure to overcome the resistance to retrograde flow provided by the LES.[15]

The reason for gastric straining in patients suffering from rumination is still unclear. A study conducted by Tucker and colleagues[1] has shown that rumination is often seen as a behavioral response to abdominal pain or other unpleasant digestive symptoms. However, other studies have also suggested that psychological factors, such as stressful life events, lead to rumination.[16]

Clinical Evaluation and Diagnostic Approach

Clinical evaluation of the rumination syndrome is based on the ROME III criteria and is defined as persistent or recurrent regurgitation of recently ingested food into the mouth with subsequent spitting or remastication and swallowing.[7] Patients suffering from rumination syndrome typically present themselves with regurgitation, starting during the meal or in the immediate postprandial period. Regurgitation of gastric contents may occur several times per minute and is often described as having the same taste and consistency as the consumed food.[8] Another commonly seen symptom is weight loss, which can occur in up to 83% of patients with the rumination syndrome.[17] Furthermore, the response to acid suppression is often limited or absent.[9]

Experienced clinicians can recognize patients with rumination syndrome by clinical observation alone. However, only a few physicians have significant experience because of the low prevalence of the syndrome. Thus, patients with rumination