South African Journal of Gastroenterology and Hepatology. 2024;01(2):52-54
https://doi.org/10.36303/SAJGH.0929
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SAJGH
ISSN 3078-1779
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REVIEW

A clinical revision of gastro-oesophageal reflux disease (GORD)

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Keywords: gastro-oesophageal reflux disease, oesophageal mucosa, proton pump inhibitor

Introduction

Gastro-oesophageal reflux disease (GORD) is a common problem in the adult population with an increasing prevalence of 30–40%. There is geographical variation but increasing prevalence across all populations with North America and Europe leading the burden of the disease.[1,2] Most humans are predisposed to at least one reflux episode per week of which the majority will be symptomatic, but not require any intervention. The Montreal Consensus Group defines the condition as when stomach refluxate causes troublesome symptoms and/or complications.[3,4]

The presentation may be typical, due to direct injury of the ◦□_◦≺ℏ↦□□↦ℓ ∓_⇳◦_⊥↦, with the cardinal symptoms of heartburn, epigastric/retrosternal pain, and water brash which is described by patients as a sour taste in the mouth.[2] There are also many atypical – also labelled extra-oesophageal – symptoms which are usually because of micro-aspiration and vagal mediated events, which mimic other diseases and therefor require investigation.[2,4] Atypical symptoms can be grouped according to ear, nose and throat (ENT) (laryngitis, sinusitis, otitis, vocal cord ulcers and granulomas), pulmonary (asthma, recurrent pneumonia, chronic cough, interstitial fibrosis), cardiac (chest pain and sinus arrhythmias), and other (dental caries, halitosis and tongue ulcers).[4,6]

There are alarm signs or red flags which should prompt a clinician to further investigate a patient presenting with GORD. These include age more than 50 years, symptoms present for > five years, no improvement of symptoms on proton pump inhibitor (PPI) treatment, significant weight loss, persistent vomiting, iron deficiency anaemia, and dysphagia/odynophagia with or without a choking sensation.[6] At minimum, if a patient has any of these symptoms, an upper endoscopy is mandatory.

Mechanism of reflux disease, in a nutshell

Most symptomatic patients have no anatomical abnormality. Their symptoms are because of a failure of endogenous mechanisms designed to prevent reflux. The lower oesophageal sphincter (LES) has sling/clasp fibres, which are arranged in an oblique fashion, with contraction resulting in a mechanical barrier.[7] The sphincter also has circular muscle fibres which are in constant tonic contraction, thereby increasing the pressure at the oesophago-gastric junction.[7] The length of the intra-abdominal oesophagus is very important because of the difference in intra-abdominal and mediastinal pressure.[7] Furthermore, the stomach's angle of His acts as a mechanical barrier to reflux. The most common anatomical abnormalities are hiatal hernias which disrupt these mechanisms, thereby predisposing patients to GORD.[8]

There are four types of hiatus hernia according to the Hill's classification:

- Type 1 called a sliding hiatal hernia: the most common type whereby the gastro-oesophageal junction slides cranially into the mediastinum.
- Type 2 called a rolling hiatal hernia (a true para-oesophageal hernia): the fundus of the stomach herniates alongside the left side of the oesophagus with the gastro-oesophageal junction maintaining its normal anatomical position.
- Type 3 is a combination of Types 1 and 2.
- Type 4 can be any of the preceding three types but includes the simultaneous herniation of any intra-abdominal organs (i.e. colon, spleen, small bowel, and, rarely, left lobe of the liver).[7,8'11]

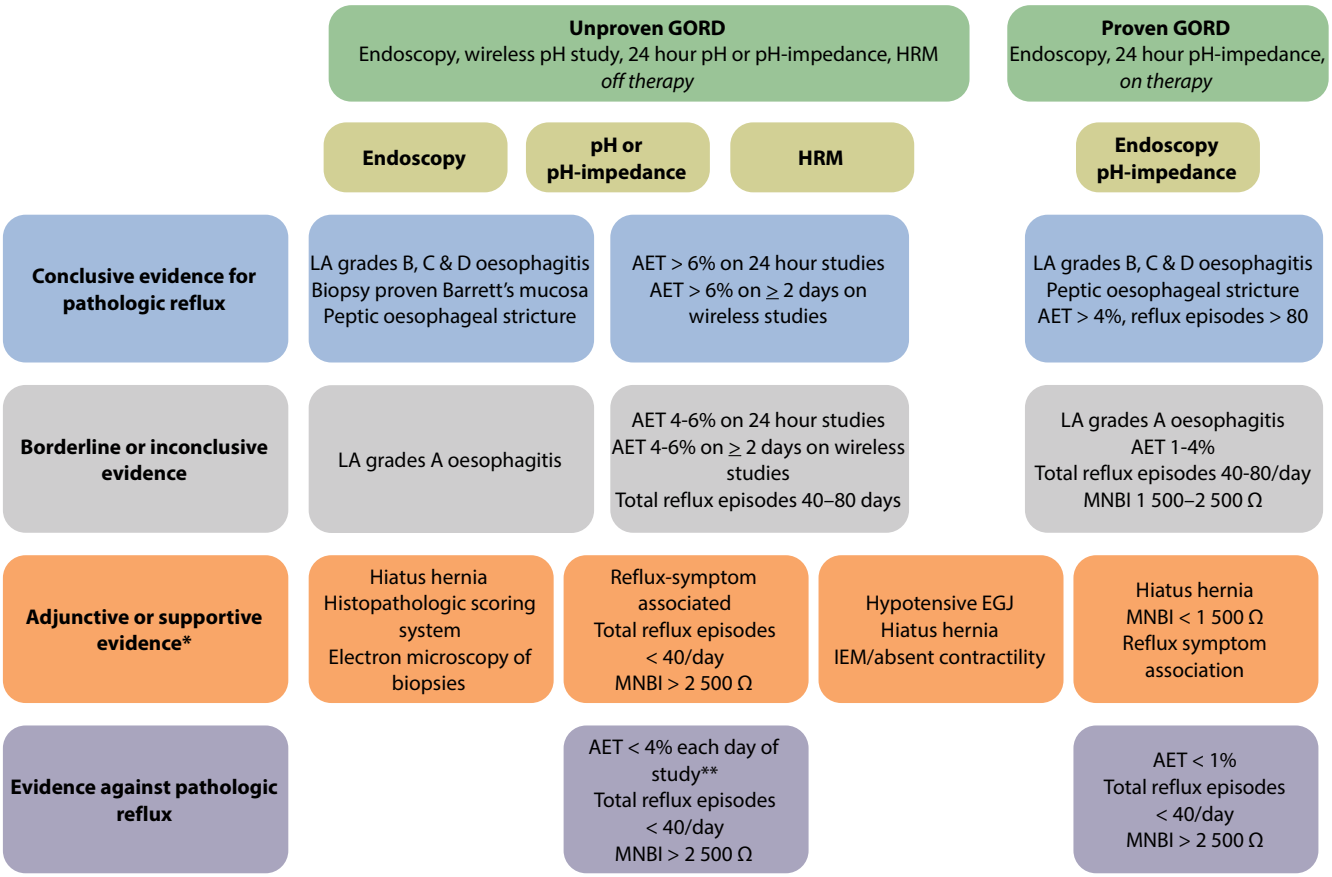
Risk factors for GORD

The list is extensive, the following being some of the more common factors:

- Presence of a hiatus hernia, regardless of type.
- Diet, typically consisting of large, fatty, heavy meals.
- Obesity, especially when associated with obstructive sleep apnoea.
- Smoking.
- Ingestion of alcohol and/or caffeine.
- Pregnancy.
- Chronic medication use, some commonly prescribed ones include, amongst others, calcium channel blockers, theophylline and corticosteroids.
- Advancing age.

Diagnosis

GORD diagnosis starts with a typical history and must be excluded by an atypical history. However, it must be noted that there is poor correlation of symptoms to objective findings which makes it difficult to diagnose and widens the spectrum of the disease.[1] The Lyon Consensus guidelines subdivided the spectrum into



* factors that increase confidence for presence of pathologic reflux when evidence is otherwise borderline or inconclusive
** wireless pH monitoring < 4% on all days; pH-impedance: all criteria should be met

Figure 1: Oesophageal tests to diagnose GORD based on the updated Lyon consensus 2.0 [12]
LA grade = Los Angeles classification, AET = acid exposure time, SAP = reflux-symptom association, MNBI = mean nocturnal baseline impedance, PSPWI = post reflux swallow-induced peristaltic wave index

four groups based on objective clinical evaluation.[9,] The three recommended tests include endoscopy, 24-hour ambulatory Ph monitoring with/without impedance, and high-resolution manometry.[9] The use of a barium swallow in diagnosis is limited but may be used as an adjunct. In our setting, upper endoscopy is the first-line investigation followed by judicious use of Ph manometry and manometry.

Keeping in mind of the GORD differential diagnosis, amongst others includes acute coronary artery syndrome, oesophageal and gastric malignancy, peptic ulcer disease, non-ulcer dyspepsia, achalasia, eosinophilic oesophagitis, oesophageal diverticula, gastroparesis and rumination syndrome. Hence, it is important that the workup includes basic investigations to exclude these diagnoses.

Management

There are three pillars for the management of this disease. Most patients will resolve their symptoms with lifestyle and dietary modifications, some will require medication, and the minority will qualify for surgical intervention.

1. **Lifestyle and diet modification**. Patients should be counselled to:
   - Lose weight and exercise regularly.
   - Avoid eating 1–2 hours before bedtime.
   - Eat frequent smaller meal portions.
   - Avoid large fatty meals.
   - Avoid tight-fitting clothes.
   - Stop smoking and excessive alcohol ingestion.
   - Avoid caffeine, dark chocolate and mint.
   - Modify medication following discussion with the prescribing doctor.
   - Elevate bed or pillows when sleeping.[2]
2. **Medical therapy**
   - PPIs, once daily, are the mainstay of treatment (esomeprazole, pantoprazole, omeprazole, lansoprazole, dexlansoprazole, etc).
   - Twice-daily PPI is more effective for patients who don't respond to single daily PPI.
   - The American Gastroenterological Association (AGA) recommends PPI for eight weeks and symptom reassessment thereafter.
   - In those who respond to PPI therapy, tapering the degree of acid suppression to a minimum is the next step.
   - H_2-receptor antagonists if there is a contraindication for PPIs (cimetidine, ranitidine, loratadine).
   - *H. pylori* eradication, if indicated.[2,5]

3. Surgical management

Indications for surgery

- Failure of appropriate medical therapy.
- Young patients unwilling to take lifelong medication.
- Structurally defective LES and hiatal hernias.
- Complications despite adequate medical therapy e.g. severe oesophagitis, stricture and Barrett's with volume reflux symptoms.[2,5]
  - Patients with atypical symptoms should be thoroughly investigated.
  - Stricture should be dilated to > 50 Fr bougie and dysphagia resolved before anti-reflux procedure is performed.
  - Barrett's should be thoroughly assessed for dysplasia and adenocarcinoma before anti-reflux.

Surgical options

- Laparoscopic Nissen fundoplication = 360^0 posterior wrap.
- Laparoscopic Toupet fundoplication = 270^0 posterior wrap.

Studies have shown there are no differences in terms of symptom resolution and recurrence for the two above operations. Therefore both are considered to be the gold standard.[1,2,10]

Procedures no longer routinely performed include Laparoscopic Dor fundoplication (180° anterior wrap, Watson's and Thal fundoplications).

Patients with a hiatus hernia should have their hernia repaired before anti-reflux operation.

Common morbidities following anti-reflux procedure

- Inability to belch or vomit (all patients).
- Dysphagia (25% of these patients will require balloon dilatation).
- Gas-bloat syndrome (affects 19% of patients).
- Increased flatulence.
- Recurrence of symptoms (10–15% after 10 years will require repeat surgery).[5]

Take home messages

- Presence of red flag symptoms must prompt a clinician to further investigate a patient presenting with GORD with at least an upper endoscopy. These include age more than 50 years, symptoms present for > five years, no improvement of symptoms on PPI treatment, significant weight loss, persistent vomiting, iron deficiency anaemia, and dysphagia/odynophagia.
- The majority of patients with symptoms of GORD will respond to lifestyle and dietary modifications.
- Empiric therapy is currently the most specific tool to determine whether reflux disease is playing a significant role in a patient's extra-oesophageal symptoms.
- In patients unresponsive to PPI therapy, causes other than GORD should be sought.

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