



## Gastroesophageal Reflux Disease: Diagnosis and Management Approach, Literature Review

Ahmad Hussain Aldhairyan<sup>1</sup>, Saeed Saleh Hadhrami Alyami<sup>1</sup>, Anoud Mubarak Saad Alsaad<sup>1</sup>, Nawaf Ibrahim Al Shuqayfah<sup>2</sup>, Najd Awwadh Alotaibi<sup>3</sup>, Nojoud Mohammed Mujammami<sup>3</sup>, Jabbar Faleh Alkhathami<sup>3</sup>, Yasser Ahmed AlZahrani<sup>3</sup>, Abdulrahman Yousef Ashaari<sup>4</sup>, Manal Ali Alshehri<sup>5\*</sup>

<sup>1</sup>Faculty of Medicine, Najran University, Najran, KSA.

<sup>2</sup>Faculty of Medicine, King Khalid University, Abha, KSA.

<sup>3</sup>Department of Medicine, Prince Sultan Cardiac Center, Riyadh, KSA.

<sup>4</sup>Department of Emergency, Eradah Complex Psychiatric Services Hospital, Jeddah, KSA.

<sup>5</sup>Faculty of Medicine, Wroclaw Medical University, Wroclaw, Poland.

### ABSTRACT

Gastroesophageal reflux disease (GERD) occurs when the acid-containing contents reflux into the esophagus or the mouth, manifesting as a persistent burning sensation in the esophagus and regurgitation. Moreover, the long-term disease can lead to serious complications such as Barrett's esophagus and strictures. It is considered a disease of the developed countries, although it is rising in developing countries. This is due to the increasing presence of the associated risk factors such as obesity, smoking, and comorbidities. We aimed to review the literature reviewing the etiology of gastroesophageal reflux disease, risk factors, clinical presentation, diagnosis, and management of this disease. PubMed database was used for articles selection, gathered papers had underwent a thorough review. Gastroesophageal reflux disease (GERD) is a common disease in this millennia, owing to numerous factors including comorbidities, use of medications, and sedentary lifestyle. It is caused by impaired gastric motility that results in gastric contents refluxing into the esophagus or oral cavity. The treatment has a significant impact on many people's lives as well as the health care system. Many options are available and new alternatives are emerging. By far, the most common treatment remains the PPIs; however, it obligates frequent monitoring and re-evaluation for potential side effects.

**Keywords:** Gastroesophageal reflux disease, Proton pump inhibitors, Endoscopy, Heartburn

**Corresponding author:** Manal Ali Alshehri

**e-mail** ✉ [dr.manala.sh@gmail.com](mailto:dr.manala.sh@gmail.com)

**Received:** 03 October 2021

**Accepted:** 09 December 2021

up to date in dealing with this, increasingly growing, issue to provide the best care to the patient abruptly.

### INTRODUCTION

Gastroesophageal reflux disease (GERD) can be defined by its main symptoms; long-lasting burning sensation in the esophagus, regurgitation, and possible sequelae of much worst conditions such as Barrett esophagus, stricture, and esophagitis (Vakil *et al.*, 2006; Parhizkar *et al.*, 2022). GERD is fairly common in the developed countries when it compares to the developing ones, as the former has a prevalence close to 15% to 25% while the latter has a prevalence of less than 10% (Richter *et al.*, 2018). In Saudi Arabia the situation is concurrent with other developed countries' rates, with a prevalence of 28.7% (Alsuwat *et al.*, 2018). This can be explained, somehow, by the associated risk factors that can be present in both communities; such as obesity (Haghighi-Morad *et al.*, 2019; Mahassni & Bashanfar, 2019) and smoking (Eusebi *et al.*, 2018). This paper is meant to explore this condition from every possible angle that would help the doctors at every level to be

### MATERIALS AND METHODS

PubMed database was used for the selection process of relevant articles, and the following keys used in the mesh (["Gastroesophageal reflux disease"[Mesh]] AND ["Diagnosis"[Mesh] OR "Management"[Mesh] OR "Etiology"[Mesh] OR "Clinical presentation"[Mesh] OR "Risk factors"[Mesh]]). For the inclusion criteria, the articles were selected based on including one of the following: Gastroesophageal reflux disease or Gastroesophageal reflux disease risk factors, evaluation, management, and diagnosis. Exclusion criteria were all other articles that did not meet the criteria by not having any of the inclusion criteria results' in their topic.

#### Review

#### Etiology and risk factors

Gastroesophageal reflux disease (GERD) occurs when the lower esophageal sphincter fails to prevent the gastric, acidic, content

from flowing back to the esophagus. Normally there is on and off lower esophageal sphincter relaxation to allow belching, however, being relaxed for most of the time is pathological and causes GERD symptoms. What has been just mentioned is the physiological irregularity that can contribute to developing GERD, less commonly some anatomical changes can also play a role in developing such a disease. Hiatal hernia; where the proximal stomach has herniated through the diaphragm lead to the weakening of the lower esophageal sphincter (Mikami & Murayama, 2015; Savarino *et al.*, 2017; Maghami *et al.*, 2021). When it comes to risk factors of developing GERD, obesity and increasing intraabdominal pressure is highly associated with developing GERD with an increased odds ratio of 1.73 (Eusebi *et al.*, 2018). Smoking is also showed increased association of developing GERD, as the tobacco hinder the acid clearance time from the esophagus and decrease the pressure of the lower esophageal sphincter (Kaltenbach *et al.*, 2006; Eusebi *et al.*, 2018). Unlike the common knowledge among people, dietary factors including alcohol and spicy food do not directly cause GERD it is rather precipitate an episode if the patient is susceptible in the first place (Eusebi *et al.*, 2018; Abulhamael *et al.*, 2022).

#### Clinical presentation

The most common presentation of gastroesophageal reflux disease (GERD) is heartburn regurgitation; chest pain is fairly common as well. Other symptoms that the patients may present with, less commonly, are laryngitis, asthma, belching, dysphagia, and chronic cough. When the patient is assessed for their clinical symptoms the doctor should be aware of red flags, such as unintentional weight loss and progressive dysphagia, upper gastrointestinal bleeding, and those who did not respond to the initial trial of proton pump inhibitor treatment (Katz *et al.*, 2013; Mikami & Murayama, 2015; Sidwa *et al.*, 2017).

#### Diagnosis

A thorough history taking of the patient's condition is essential to establish a diagnosis of gastroesophageal disease reflux (GERD). Doctors should always rule out other non-gastrointestinal causes that present with a similar presentation for example myocardial infarction by running the related tests. An initial trial of treatment is sufficient to make a diagnosis (diagnosing by treating). Moreover, those who do not respond to initial treatment with proton pump inhibitors (PPI) should also be investigated to other causes and more for the same cause by endoscopy, esophageal manometry, and esophageal pH monitoring (Katz *et al.*, 2013; Patel *et al.*, 2018). According to American Gastroenterology Association, a diagnosis is made based on "presence of a condition that developed when the reflux of a gastric contents leads to bothersome symptoms with or without complications" (Vakil *et al.*, 2006; Kahrilas *et al.*, 2008). In the same guidelines, the recommendation of using endoscopy with biopsy is preserved for those who have GERD with dysphagia and those who are not responding to PPI twice daily. Manometry is used for those who did not respond to PPI twice daily and unremarkable endoscopy results. Ambulatory PH monitoring is used for the patients with GERD who did not respond to PPI and unremarkable endoscopy and manometry results (Kahrilas *et al.*, 2008).

#### Management

The management of gastroesophageal reflux disease (GERD) should be addressed in different aspects of a patient's life. Managing the modifiable risk factors is essential to control GERD symptoms, weight reduction, smoking cessation, and dietary changes are cornerstones before even starting the pharmacological agents. Proton pump inhibitors (PPI) are the mainstay drug of choice when it comes to managing GERD patients. PPI works by irreversibly inhibiting hydrogen-potassium ATPase in the gastric parietal cells, hence reducing the acidity of the stomach contents. The initial regimen is to prescribe PPI for four weeks in a patient with typical GERD symptoms, while 8 weeks regime are for those who underwent endoscopy that confirmed erosive esophagitis. After the initial regimen, consideration is made for the continuation of using PPI. For those who have no signs of esophagitis or Barrett esophagus, the usage is based on patients' clinical demands, while if the patients have the aforementioned conditions, given a once-daily dose life-long is indicated to prevent further progression of this sequelae into malignancies. Patients should be educated regarding the importance of adherence to their medications even if the symptoms subsided before the end of the treatment course. Also, the patient should be informed about the timing of they should ingest those tablets; before the first meal each day. Surgical intervention is rarely done, it is well-kept-up for those who have refractory GERD despite adequate pharmacological management. The most common procedure in use is laparoscopic fundoplication, which enhances the esophagogastric junction's ability to stand against the reflux of gastric contents. Before proceeding with such surgeries, a thorough evaluation to exclude other possible causes is mandatory. This evaluation includes endoscopy to rule out other pathologies like malignancies, manometry to rule out motility disorder like achalasia, and gold-standard 24-hours PH monitoring to accurately settle on the diagnosis of GERD (Badillo & Francis, 2014; MacFarlane, 2018; Sandhu & Fass, 2018).

#### CONCLUSION

Gastroesophageal reflux disease (GERD) is a gastrointestinal motility illness caused by gastric contents refluxing into the esophagus or the mouth, leading to symptoms and/or complications. The treatment of GERD has a significant impact on many people's lives as well as health care and resources. Lifestyle changes, PPI medication, and fundoplication are all alternatives for treatment. Endoscopic and minimally invasive surgical interventions are emerging more common. PPIs are still the most common medication used, although long-term therapy necessitates monitoring and re-assessment for possible adverse effects.

**ACKNOWLEDGMENTS:** None

**CONFLICT OF INTEREST:** None

**FINANCIAL SUPPORT:** None

**ETHICS STATEMENT:** None

## REFERENCES

- Abulhamael, A., Lim, D., Chiang, K., Alghamdi, F., & Roges, R. (2022). The prevalence of cases with apical sealer extrusion published in recent articles of the endodontic literature. *Annals of Dental Specialty*, 10(1), 62-64.
- Alsawat, O. B., Alzahrani, A. A., Alzhrani, M. A., Alkhathami, A. M., & Mahfouz, M. E. M. (2018). Prevalence of gastroesophageal reflux disease in Saudi Arabia. *Journal of Clinical Medicine Research*, 10(3), 221-225. doi:10.14740/jocmr3292w
- Badillo, R., & Francis, D. (2014). Diagnosis and treatment of gastroesophageal reflux disease. *World Journal of Gastrointestinal Pharmacology and Therapeutics*, 5(3), 105-112. doi:10.4292/wjgpt.v5.i3.105
- Eusebi, L. H., Ratnakumaran, R., Yuan, Y., Solaymani-Dodaran, M., Bazzoli, F., & Ford, A. C. (2018). Global prevalence of, and risk factors for, gastro-oesophageal reflux symptoms: A meta-analysis. *Gut*, 67(3), 430-440. doi:10.1136/gutjnl-2016-313589
- Haghighi-Morad, M., Shakoobi, A., & Salevatipour, B. (2019). Evaluation of abdominal obesity using ultrasound and its correlation with intima media thickness in carotid arteries. *International Journal of Pharmaceutical and Phytopharmacological Research*, 9(5), 43-47.
- Kahrilas, P. J., Shaheen, N. J., & Vaezi, M. F. (2008). American gastroenterological association medical position statement on the management of gastroesophageal reflux disease. *Gastroenterology*, 135(4), 1383-1391. doi:10.1053/j.gastro.2008.08.045
- Kaltenbach, T., Crockett, S., & Gerson, L. B. (2006). Are lifestyle measures effective in patients with gastroesophageal reflux disease? An evidence-based approach. *Archives of Internal Medicine*, 166(9), 965-971. doi:10.1001/archinte.166.9.965
- Katz, P. O., Gerson, L. B., & Vela, M. F. (2013). Guidelines for the diagnosis and management of gastroesophageal reflux disease. *The American Journal of Gastroenterology*, 108(3), 308-328. doi:10.1038/ajg.2012.444
- MacFarlane, B. (2018). Management of gastroesophageal reflux disease in adults: A pharmacist's perspective. *Integrated Pharmacy Research & Practice*, 7, 41-52. doi:10.2147/IPRP.S142932
- Maghami, H., Parhizkar, H., Riasaty, A., Banani, A., Poustfroosh, M., & Hasehmpour-Sadeghian, M. (2022). Identifying the parenting style of students' parents of an school at Shiraz University of medical sciences. *Journal of Advanced Pharmacy Education and Research*, 12(1), 91-96.
- Mahassni, S. H., & Bashanfar, N. O. (2019). High levels of inflammatory adipokines and c-reactive protein, and minimal changes in immune cells in overweight and obese Saudi female university students. *International Journal of Pharmaceutical Research & Allied Sciences*, 8(1), 171-183.
- Mikami, D. J., & Murayama, K. M. (2015). Physiology and pathogenesis of gastroesophageal reflux disease. *Surgical Clinics*, 95(3), 515-525. doi:10.1016/j.suc.2015.02.006
- Parhizkar, H., Riasaty, A., Maghami, H., Banani, A., & Hoseini, R. (2022). Internet addiction and its relationship with some of the social-demographic determinants. *Journal of Advanced Pharmacy Education and Research*, 12(1), 97-103.
- Patel, A., Posner, S., & Gyawali, C. P. (2018). Esophageal high-resolution manometry in gastroesophageal reflux disease. *JAMA*, 320(12), 1279-1280. doi:10.1001/jama.2018.8694
- Richter, J. E., & Rubenstein, J. H. (2018). Presentation and epidemiology of gastroesophageal reflux disease. *Gastroenterology*, 154(2), 267-276. doi:10.1053/j.gastro.2017.07.045
- Sandhu, D. S., & Fass, R. (2018). Current trends in the management of gastroesophageal reflux disease. *Gut and Liver*, 12(1), 7-16. doi:10.5009/gnl16615
- Savarino, E., Bredenoord, A. J., Fox, M., Pandolfino, J. E., Roman, S., & Gyawali, C. P. (2017). Advances in the physiological assessment and diagnosis of GERD. *Nature Reviews Gastroenterology & Hepatology*, 14(11), 665-676. doi:10.1038/nrgastro.2017.130
- Sidwa, F., Moore, A., Alligood, E., & Fisichella, P. M. (2017). Diagnosis and treatment of the extraesophageal manifestations of gastroesophageal reflux disease. *Annals of Surgery*, 265(1), 63-67. doi:10.1097/SLA.0000000000001907
- Vakil, N., Van Zanten, S. V., Kahrilas, P., Dent, J., & Jones, R. (2006). The montreal definition and classification of gastroesophageal reflux disease: A global evidence-based consensus. *Official Journal of the American College of Gastroenterology* *ACG*, 101(8), 1900-1920. doi:10.1111/j.1572-0241.2006.00630.x