

# ESOPHAGITIS, GASTROESOPHAGEAL REFLUX DISEASE AND HIATAL HERNIA

NUTRITIONAL ACUITY RANKING: LEVEL 2-3



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## DEFINITIONS AND BACKGROUND

**Esophagitis** results from gastric juice being forced into the esophagus from the stomach. Pill-induced esophageal injury may occur from use of aspirin, tetracycline, vitamin C, ferrous sulfate, potassium chloride, or nonsteroidal anti-inflammatory drugs (NSAIDs). Take these with plenty of liquid.

**Eosinophilic esophagitis (EoE or EE)** is a disorder characterized by a severe, isolated eosinophilic infiltration of the esophagus that is unresponsive to aggressive acid blockade but responsive to the removal of dietary antigens (Liacouras et al, 2005). Adult patients usually present with dysphagia, food impaction and reflux-like symptoms (Gupte and Draganov, 2009). Known causes of tissue eosinophilia include GE reflux disease (GERD), infections, malignancy, collagen vascular diseases, hypersensitivity, and IBD (Gupte and Draganov, 2009). It is highly associated with atopic disease.

**Barrett's esophagus** is a condition that affects men more than women, and length of impact is greater in men than in women (Falk et al, 2005). It is also more common in Caucasians and in persons older than age 50. Symptoms are similar to GERD, but Barrett's esophagus is more likely to precede esophageal adenocarcinoma. Upper endoscopy and surveillance biopsies may be needed (Liu and Saltzman, 2006). Antioxidants (vitamins C, E, and beta-carotene) are important protective factors (Kubo et al, 2008), whereas obesity and the western diet may be promoters of cancer.

**GERD** and peptic ulcer disease are common in elderly individuals. GERD affects approximately 19 million Americans; prevalence is as high as 80% among asthma patients. There is a significantly higher prevalence of RE in an *Helicobacter pylori*-infected individuals of any age or sex (Moon et al, 2009). Distal esophageal cancer is associated with symptomatic GI reflux disease and Barrett's esophagus; surveillance programs are identifying patients early for curable esophageal adenocarcinoma (Demester, 2006).

GERD may occur in infants but usually resolves by 6–12 months of age. Management involves thickened feedings and positioning. The recommended approach for infants with uncomplicated regurgitation is the reassurance of the parents about the physiological nature of excessive regurgitation and dietary recommendations for formula feeding. Symptoms of pediatric GERD include colic, inconsolable crying, frequent spitting up or vomiting, food refusal, failure to thrive, heartburn, stomach pains, chronic sore throat, chronic respiratory problems, asthma, and apnea. GERD diagnosis in older children warrants review for upper GI tract disorders, cow's milk allergy, or metabolic, infectious, renal, or central nervous system diseases.

Treatment guidelines address lifestyle changes, patient-directed (over the counter) therapy, acid suppression, pro-motility therapy, maintenance therapy, and antireflux surgery (DeVault and Castell, 2005). Intractable GERD may require minor surgery to strengthen a weak sphincter. Laparoscopic antireflux surgery is highly effective as a long-term treatment for severe GERD.

**Hiatal hernia** is caused by protrusion of part of the stomach through the diaphragm muscle, which separates the chest from the abdomen. This causes an enlarged diaphragm opening (hiatus) through which the esophagus passes to join the stomach. An increase in BMI is associated with the increased prevalence of hiatal hernia, esophageal mucosal injury, and complications because of increased intragastric pressure and increased GE pressure gradient (Fass, 2008). Hiatal hernia may show no symptoms or may contribute to heartburn, swallowing difficulty, reflux, or vomiting. Hiatal hernia surgery has evolved from anatomic repair to physiological restoration (Stylopoulos and Rattner, 2005).



ASSESSMENT, MONITORING, AND EVALUATION

CLINICAL INDICATORS

**Genetic Markers:** Proton pump inhibitors (PPIs), such as omeprazole, lansoprazole, and rabeprazole are metabolized by CYP2C19 in the liver; there are genetic differences in the activity of this enzyme (Furuta et al, 2010). These genotypic differences influence the healing and eradication rates for GERD and *H. pylori* infection (Furuta et al, 2010). The pathogenesis of EE involves multiple tissues, cell types, and genes, and derives from complex genetic and environmental factors (Blanchard and Rothenberg, 2008).

Clinical/History	Reactive airway disease or nocturnal asthma	<i>H. pylori</i> infection?
Height	Choking attacks	Cholesterol (Chol)
Weight	Dental erosion or caries	Triglycerides (Trig)
BMI		Transferrin
Diet history		Total iron-binding capacity (TIBC)
Weight changes		Bernstein test: HCl solution is dripped into the distal esophagus; positive test mimics patient symptoms
Upper GI endoscopy	<b>Lab Work</b>	
Esophagoscopy	H & H	
PillCAM (noninvasive visualization)	Mean cell volume (MCV)	
Manometry	Na <sup>+</sup> , K <sup>+</sup>	
Feeding difficulties in children	Ca <sup>++</sup> , Mg <sup>++</sup>	
Recurrent vomiting	Gluc	
	Gastrin	
	Alb, transthyretin	
	CRP	

INTERVENTION



OBJECTIVES

- In stage 1, simple lifestyle modifications may be successful: elevate head of the bed, decrease fat intake, stop smoking, lose excess weight, avoid eating large meals, and do not eat 3 hours before lying down. Large meals increase gastric pressure and alter pressure on the lower esophageal sphincter (LES), thereby allowing reflux or aspiration to occur. Avoid tightly fitted garments around the abdomen.
- In stage 2, add pharmacological treatments, such as histamine-receptor blockers or antacids.
- In stage 3 with erosive esophagitis, it may be necessary to add a PPI as first-line therapy.
- In stage 4, maintenance therapy, use the lowest possible dose of medications to manage symptoms.
- In severe stage 5, surgery may be needed. This may include laparoscopic Nissen fundoplication.



FOOD AND NUTRITION

- Provide an individual diet reflecting patient needs. Assess intake of fat, alcohol, spices, and caffeine.
- If needed, a reduced-energy diet should be used to promote weight loss.
- During acute episodes, provide small, frequent feedings of soft foods.
- Diet should be high in protein to stimulate gastrin secretion and to increase LES pressure. Avoid foods that decrease LES pressure, including chocolate, peppermint, onions, garlic, and spearmint.
- Use fewer fried foods, cream sauces, gravies, fatty meats, pastries, nuts, potato chips, butter, and margarine.
- Dietary fiber and physical exercise may be protective. Increased fiber intake benefits a number of GI disorders including GERD (Anderson et al, 2009). Dietary fiber intakes for children and adults should be calculated as 14 g/1000 kcal.
- Avoid foods that may irritate the esophagus, such as citrus juices, tomatoes, and tomato sauce. Other spicy foods are to be eliminated according to individual experience.
- If there is EoE, try a dietary elimination diet and add back foods one at a time to identify potential allergens (Liacouras et al, 2005).
- Fluids can be taken between meals to reduce abdominal distention and discomfort.
- Preterm infants may benefit from transpyloric feedings if they show signs suggestive of reflux and apnea (Malcolm et al, 2009).

SAMPLE NUTRITION CARE PROCESS STEPS

Gastroesophageal Reflux Disease (GERD)

**Assessment:** Knowledge about the role of diet in GERD; food diary; timing of meals and related symptoms. Use of antacids with every meal and at bedtime.

**Nutrition Diagnosis (PES):** Undesirable food choices related to lack of knowledge regarding role of diet in GERD symptoms and complications as evidenced by frequent consumption of large, high-fat meals and alcoholic beverages.

**Intervention:** Teach about dietary changes that will alleviate GERD symptoms and possibly prevent complications. Counsel about lifestyle changes, such as weight loss, loose clothing, and upright posture during and after eating.

**Monitoring and Evaluation:** Report of relief from symptoms. No complications from GERD. Gradual reduction in need for antacids and medication.

Common Drugs Used and Potential Side Effects

- Antacids neutralize gastric contents. They destroy thiamin and may provide excess sodium for the body; check labels carefully. If the antacid contains calcium (e.g., Tums, which contains calcium carbonate), excess calcium may decrease levels of magnesium and phosphorus. Aluminum hydroxide (Maalox) depletes phosphorus, which is acceptable for patients with certain types of renal diseases, but otherwise this is not desirable for the long term. When



used as an antacid, sodium bicarbonate can decrease iron absorption and causes sodium retention; use with caution.

- Calcium glycerophosphate (Prelief) is somewhat useful for relief of heartburn by neutralizing the acid in foods; it is available over the counter.
- PPIs, such as lansoprazole (Prevacid), omeprazole (Prilosec), and esomeprazole (Nexium) are popular treatments. When clarithromycin-resistant *H. pylori* (CRHP) occur, PPIs tend to inhibit the growth and motility of CRHP. Omeprazole is useful for refractory RE. Because CYP2C19 genotypes affect the recurrence rate of GERD symptoms during PPI maintenance therapy, genotype-based tailored therapy is needed (Furuta et al, 2010; Saitoh et al, 2009).

### Herbs, Botanicals, and Supplements

- Herbs and botanical supplements should not be used without discussing with the physician.
- Chamomile, fennel, cardamom, cinnamon, dill, and licorice have been recommended for this condition, but no clinical trials have proven efficacy.



### NUTRITION EDUCATION, COUNSELING, CARE MANAGEMENT

- Encourage the patient to avoid late evening meals and snacks and to avoid lying down or sleeping or swimming soon after a meal to guard against reflux.
- Teach the proper measures for controlling weight, including small, frequent feedings.
- Instruct the patient about lifestyle modifications listed in the Objectives. Patients with heartburn probably should not sleep in a waterbed.
- Chewing sugarless gum after meals may reduce reflux somewhat because of the saliva production.
- More effective communication and consumer education is required to enhance fiber consumption from foods or supplements (Anderson et al, 2009).

### Patient Education—Foodborne Illness

- Careful food handling and washing hands before eating are useful recommendations.

- If home TF is needed, teach appropriate sanitation and food-handling procedures.

### For More Information

- International Foundation for Gastrointestinal Disorders <http://www.aboutgerd.org/>
- Heartburn and Regurgitation Algorithm [http://www.uwgi.org/guidelines/ch\\_03/ch03.htm](http://www.uwgi.org/guidelines/ch_03/ch03.htm)
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) <http://digestive.niddk.nih.gov/ddiseases/pubs/gerd/>
- Prelief <http://www.akpharma.com/prelief/preliefindex.html>

### HIATAL HERNIA, ESOPHAGITIS, AND GERD—CITED REFERENCES

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