Diagnostic and Treatment Options for Gastroesophageal Reflux and Bronchiectasis

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Gastroesophageal Reflux and Bronchiectasis

How could they be related???
The Basics

• The Esophagus
  – Tubular structure
    • Major purpose: transport swallowed food from throat to stomach
    – Extends from the upper esophageal sphincter (UES) to the lower esophageal sphincter (LES)
Swallowing

Tongue
Pharynx
Glottis
Larynx
Trachea
Esophagus
Epiglottis

To lungs
To stomach

Bolus of food
Esophageal sphincter contracted
Epiglottis up
Glottis down
Glottis up and closed
Epiglottis down
Esophageal sphincter relaxed
Epiglottis up
glottis down and open
Esophageal sphincter contracted

Relaxed muscles
Contracted muscles
Relaxed muscles

Stomach
How Many Practitioners Are Involved?

- Many specialists and practitioners may be involved along with pulmonologists and primary care
  - Including but not limited to:
    - Oral specialists/dentistry
    - Otolaryngologists (ENT)
    - Swallow center specialists
    - Gastroenterologists
      - Esophageal/motility specialists
Background: Swallowing Disorders

• An oropharyngeal disorder
  – Could be due to a problem in throat or larynx, may need ENT practitioner involved
  – Could be due to a neuromuscular problem in this area, may need swallow therapist involved and particular swallow xrays

• An esophageal motility (neuromuscular) disorder: problem with pushing food and/or liquid through esophagus into stomach
  – Examples
    • Esophageal spasm, achalasia
  – Can result in contents ascending up into airway

• These problems may be mild and patient may not know there is a swallowing “problem”
Esophageal Disease

- **Gastroesophageal Reflux Disease (GERD)**
  - Definition: a condition that develops when the reflux of stomach contents causes troublesome symptoms and/or complications
Symptoms

• Typical symptoms
  – Postprandial heartburn
  – Effortless regurgitation

• Atypical symptoms
  – Potentially due to GERD
  – Includes trouble swallowing, chest pain, cough, hoarseness, excessive throat clearing, wheezing, feeling of a lump in the throat
Potential Complications from Esophageal Disease Proximal to the Esophagus

- Acid aspiration causes bronchospasm and inflammation
- Nerve stimulation causes reflex bronchospasm

- Acid reflux into the esophagus

- Sinusitis
- Laryngitis, laryngospasm
- Bronchitis, asthma
- Pneumonia
Current Knowledge

• Prevalence of GERD in bronchiectasis ranges from 26-75% in a review of several studies
  – This does not mean the GERD causes bronchiectasis each time

• There is a relative lack of clinical studies looking at treatment options for GERD in patients with bronchiectasis in terms of the pulmonary outcomes
  – One 2014 study of only 7 patients getting surgery for GERD showed that pulmonary function tended to improve
  – One 2016 study of over 250 patients treated with or without a proton pump inhibitor (PPI) for GERD did not show a clear improvement overall of lung function after PPI therapy 6 months later
    • Only 27 patients got PPIs, and a portion of them did do significantly better

McDonnell MJ et al. Respir Med 2018
Treating GERD

• Diet and lifestyle good habits

• Often a PPI is chosen

• Potential side effects of PPIs
  – Iron deficiency, vitamin B12 deficiency, *C difficile*-associated diarrhea, bacterial infections and SIBO are mechanistically plausible but risk estimates are low and they are treatable conditions
  – Evidence for the development of chronic kidney disease, myocardial infarction, bone fracture, and dementia is low quality and currently not compelling to alter management

• However
  – Understand if need to be on this type of drug long-term
  – *Weigh risks versus benefits*
Procedural GERD Treatment

• Generally → alternatives to chronic acid suppression
  – Outcome data being updated frequently

• Best prognosis: current data
  – Good symptomatic response to GERD medical treatment
  – Proven pathological GERD
  – Positive symptom correlation on ambulatory pH testing
  – Normal esophageal motility

• Future directions
  – Understanding exact phenotypes based on diagnostic testing to guide procedural decisions for individual patients
  – Need more outcome studies!
  – *Major priority for our esophageal program here at NYU*
Questions Often Needing Answers

• Does GERD predispose a patient to develop bronchiectasis?

• Can GERD make bronchiectasis worse?

• If GERD is involved, is the problem from acid, bile, or any type of reflux?

• How should we treat GERD in patients with bronchiectasis?

• Could an esophageal motility or swallowing problem complicate the picture?

• *The answers to these questions remain very individualized*
Procedures to Help

• Upper endoscopy
  – Procedure through mouth with anesthesia
  – Good for looking at lining of esophagus and excluding complications in the esophagus from GERD
  – Cannot disprove GERD
  – Minimally useful for motility of the esophagus
Procedures to Help

• pH study #1: wireless pH capsule
  
  – Small capsule placed on endoscopy
  
  – Transmits acid data to recorder on outside of body for 48-96 hours
  
  – Capsule falls off on own and does not need another procedure to retrieve
  
  – Recorder returned by patient when recording has stopped
  
  – Can determine in great detail the association between diet, lifestyle and the quantity of acid reflux over several days of a patient’s routine
  
  – Can determine if the symptoms are likely due to acid reflux
Procedures to Help

• pH study #2: pH-impedance testing
  – Catheter through nose and into stomach, attached to a recorder worn by patient
  – Records acid, bile and all liquid reflux for 20-24 hours
  – Recorder returned the next day by patient and data is then downloaded
  – Can detect how high up the reflux goes in the esophagus and also correlate that reflux to a patient’s symptoms
Procedures to Help

- Esophageal manometry
  - Deciphers if there is a motility problem in esophagus
  - Catheter placed through the nose and attached to computer on the outside of body
  - Study takes 10 to 15 minutes of swallowing liquids in different positions
  - Catheter is then removed and data is interpreted by physician
Our Approach

- Our understanding of the association between GERD as well as other esophageal conditions with pulmonary disease like bronchiectasis continues to evolve.

- When patients have an esophageal condition with bronchiectasis, it is still a very personalized field, and we typically have to use our advances in diagnostic testing to determine our best answers to:
  - Is the esophageal condition in that individual patient contributing to the pulmonary disease?
  - How best should the esophageal condition be treated, with a focus on a long-term approach?
  - How should we follow our treatment of the esophageal condition to determine if it is making a positive impact on the pulmonary disease?
Thank You

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