Non-Cardiac Chest Pain

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Case Study: Patient #5

- A 38-year-old woman is referred by the cardiologist for non-cardiac chest pain
- Over the past 3 months, she has had renewed onset of chest pressure while at rest several times per week

Case Study: Patient #5

- Chest pain was associated with shortness of breath; pain often woke her at night
- She had experienced infrequent heartburn and regurgitation during the past 2 years, occurring after over-eating

Case Study: Patient #5

- During one severe episode of chest pain, the patient presented to an emergency room worrying that she was having a heart attack
- Subsequent exercise stress test was performed and was normal

Focused Clinical Questions

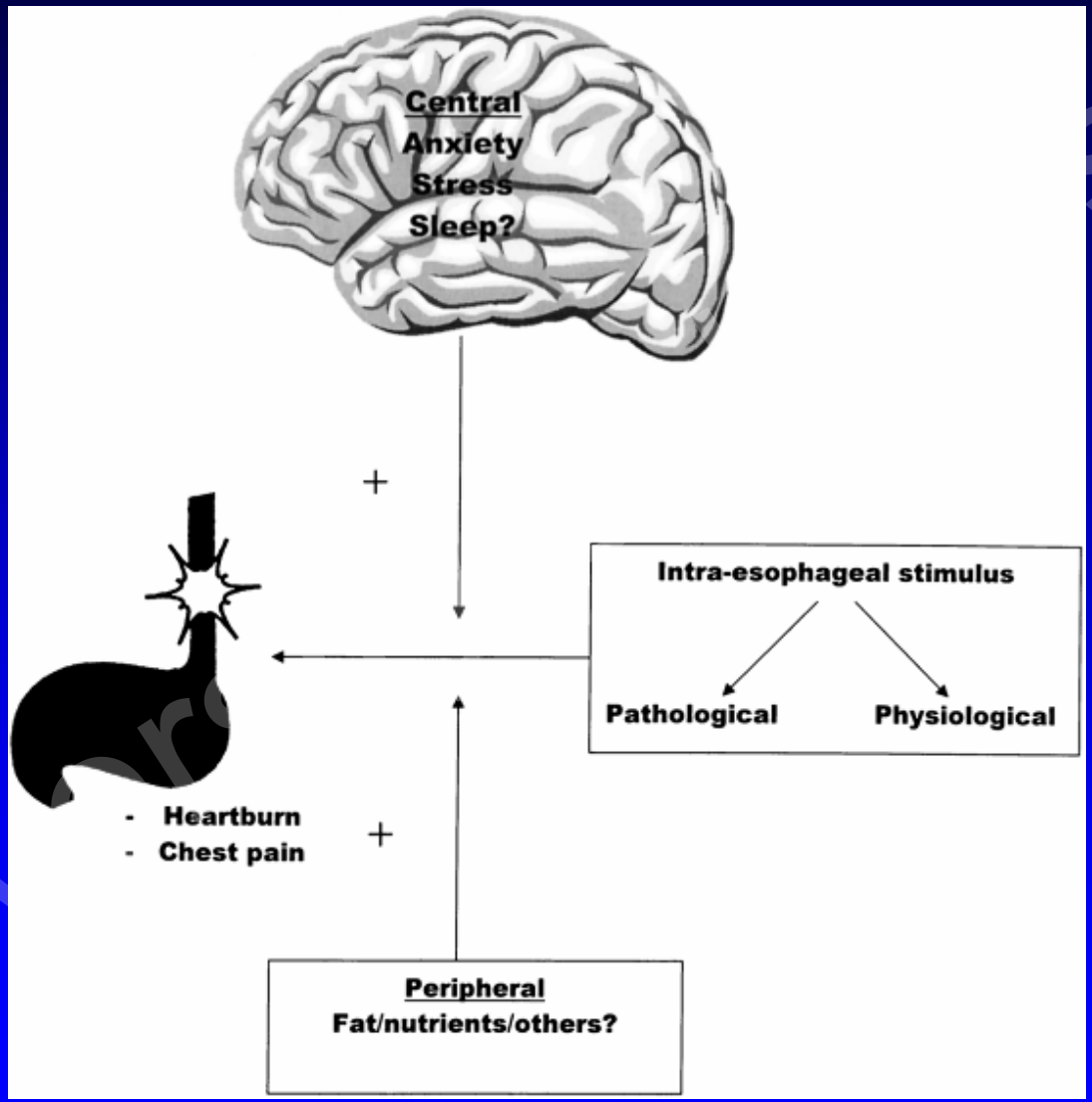
1. What is the most likely diagnosis?
2. What is the next step in the management in this patient?

Causes of Non-Cardiac Chest Pain Are Many

- Esophagus
  - **GERD**
  - Achalasia
  - Hypercontracting esophagus
  - Pill esophagitis
  - Esophageal perforation
- Pulmonary
  - Pulmonary embolism
  - Pneumothorax
  - Pleural inflammation
- Hematologic
  - Chest syndrome of sickle cell
- Vascular
  - Thoracic aortic dissection
  - Pericarditis
- Musculoskeletal
  - Costochondritis
  - Muscular pain
  - Pathologic fractures
  - Metastasis to chest wall
- Cutaneous
  - Herpes zoster
- Psychological
  - Panic attack

1. Richter JE, Bradley LA, Castell DO. Esophageal chest pain: current controversies in pathogenesis, diagnosis, and therapy. Ann Intern Med 1989;110:66-78. 2. Hatfield C, Wo JM. Management of patients with non-erosive reflux disease and esophageal chest pain. Hosp Phys 2006, accepted for publication.

Brain-Gut Axis for Esophageal Chest Pain



Fass 2004. J Clin Gastroenterol 2004;38:628.

Non-Cardiac Chest Pain

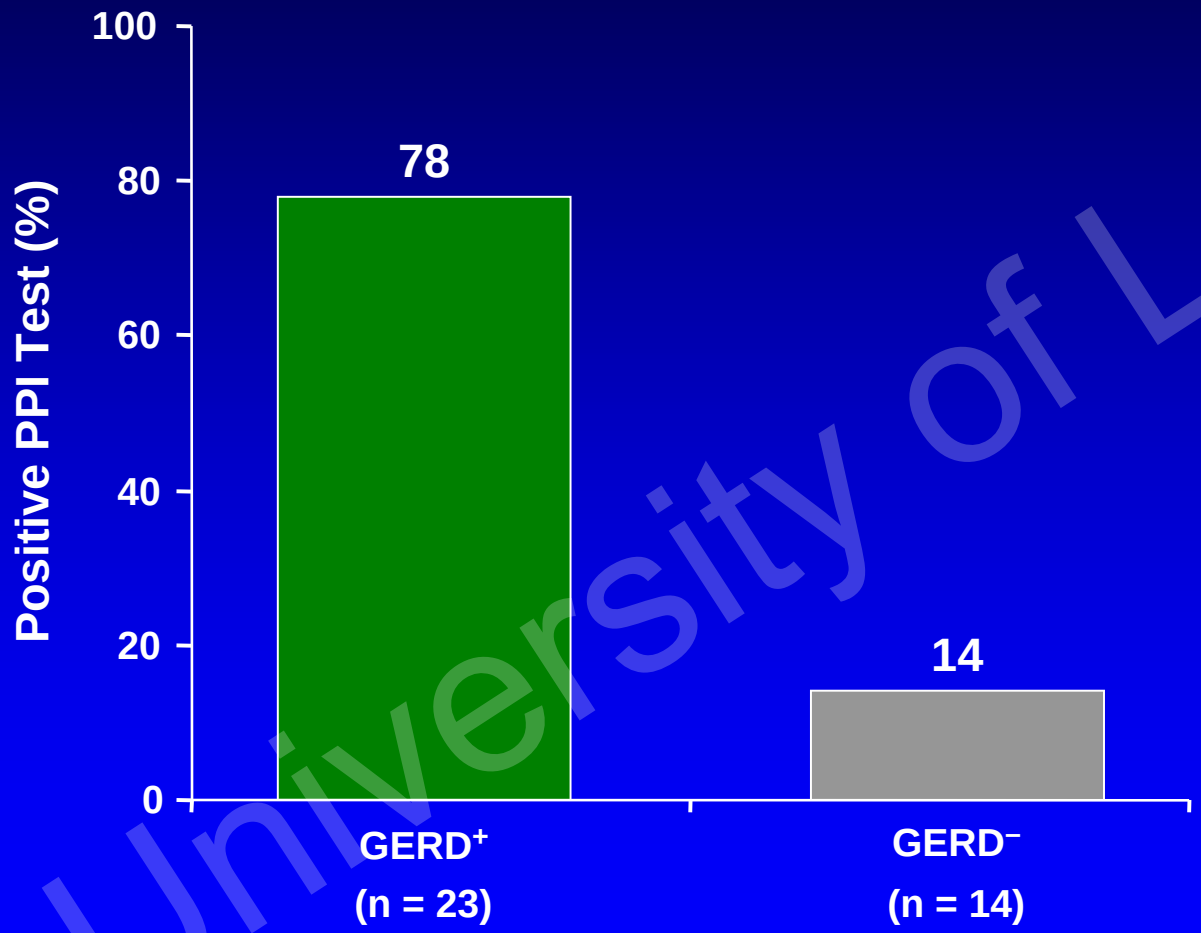
- It is often difficult to differentiate non-cardiac from cardiac chest pain.
- Patients may present with squeezing chest pain radiating to the back, left shoulder or jaw, mimicking myocardial ischemia.
- Chest pain can interrupt daily activity and increase work absenteeism.[1]

[1]Eslick et al. *Aliment Pharmacol Ther* 2004;20:909-15.

GERD and Non-Cardiac Chest Pain

- GERD is present in around 50% of patients with non-cardiac chest pain.
- Suspect an esophageal cause if heartburn, dysphagia or odynophagia are also present.
- An empiric trial of twice daily PPI should be tried first in patients with suspected esophageal or unexplained chest pain after exclusion of cardiac causes.

PPI Test for Non-Cardiac Chest Pain



PPI test for GERD

- Sensitivity 78%
- Specificity 86%

Omeprazole 40 mg in the morning and 20 mg at night.

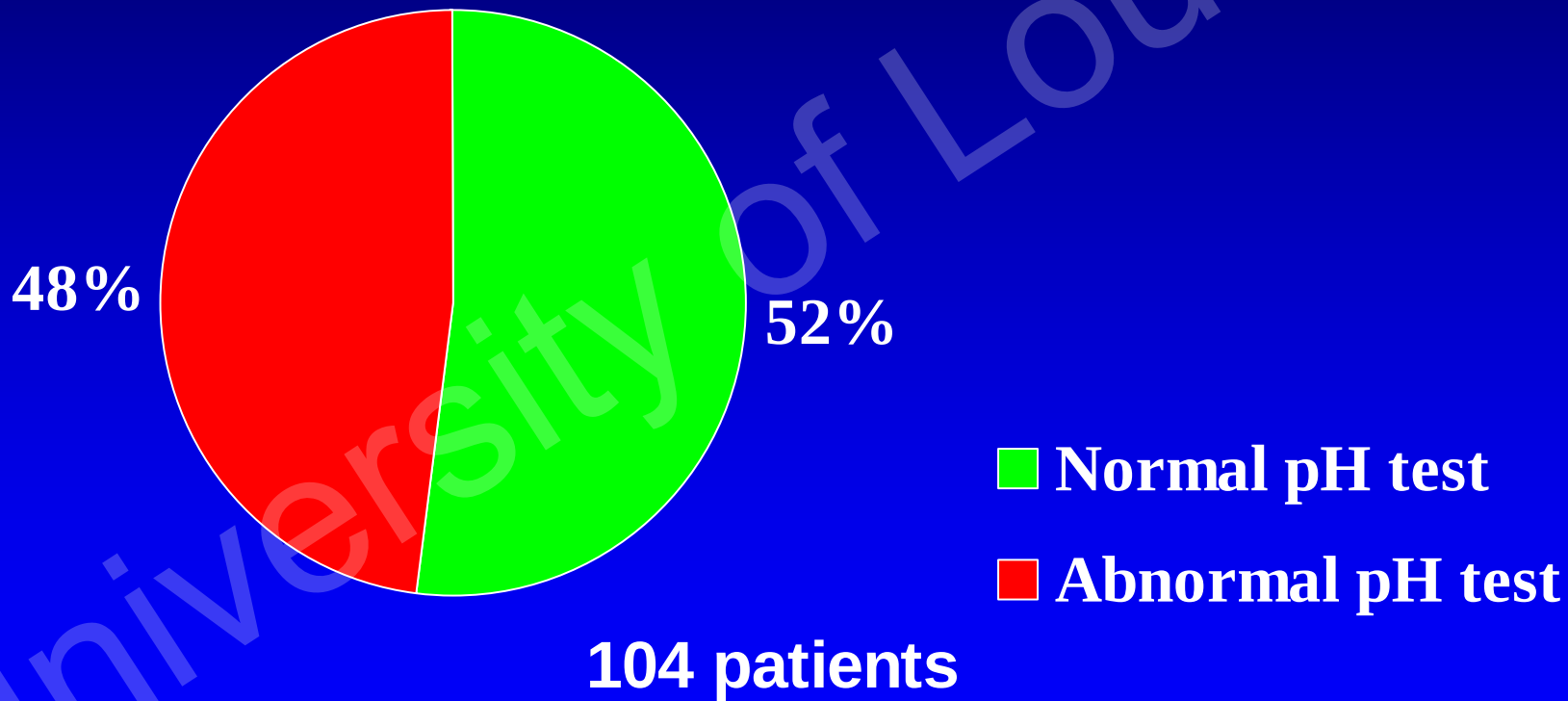
Fass et al. Gastroenterol 1998;115:42.

PPI Test for Non-Cardiac Chest Pain

- Computer decision analysis models find that starting with the PPI test reduces the need for diagnostic procedures by 43% - 59%. [1-2]
- Diagnostic testing should be reserved for non-responders to empiric PPI therapy.

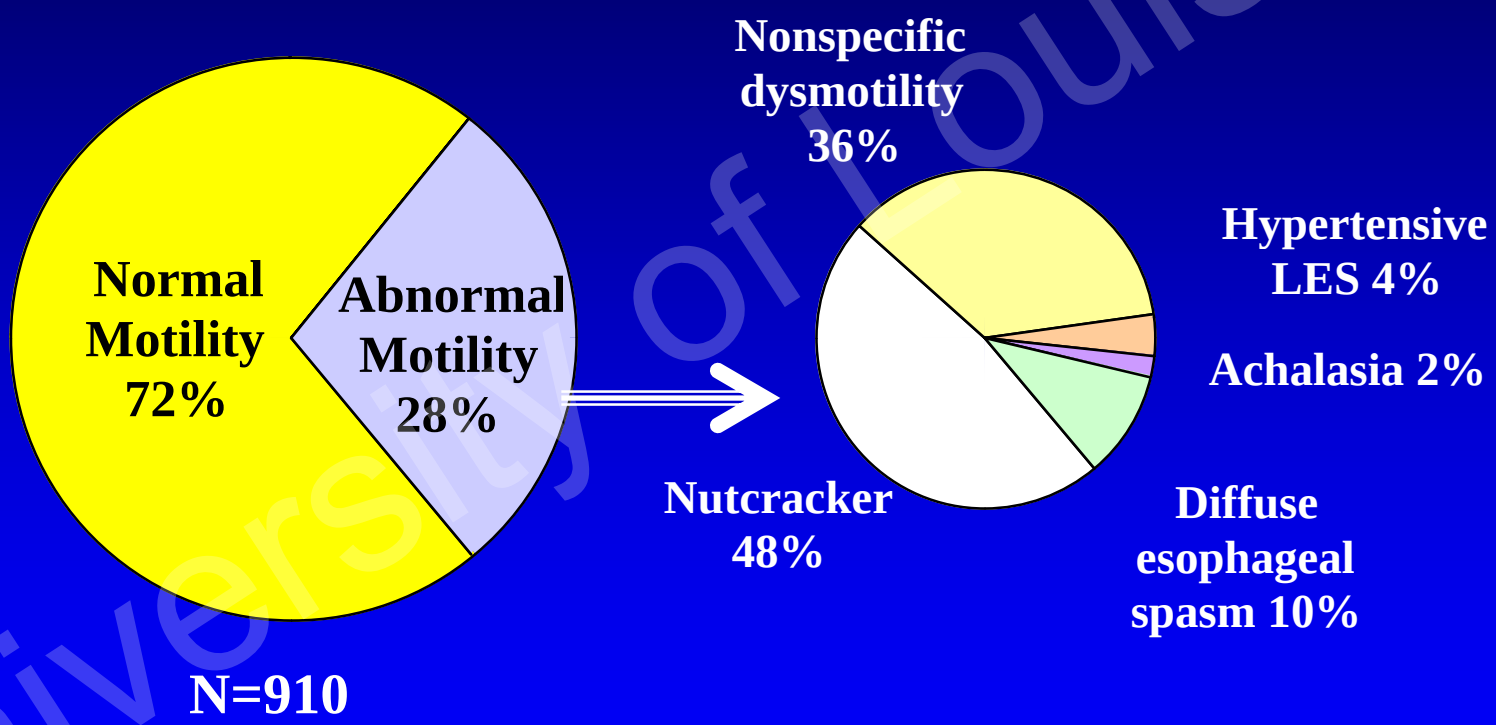
1. Fass et al. Gastroenterol 1998;115:42.
2. Ofman et al. Am J Med 1999;107:219.

Results of Ambulatory pH Testing in Patients With Non-Cardiac Chest Pain



Beedassy A, et al. *J Clin Gastroenterol.* 2000;31:121-124.

Esophageal Motility Abnormalities in Patients with Non-Cardiac Chest Pain



Katz PO et al. Ann Intern Med 1987;106:593-7.

Esophageal Spasm

Esophageal Motility Abnormalities are Mostly Non-Specific Phenomena from External Stimuli

- Stress can alter esophageal pressures. [1]
- Many patients with hypercontracting esophagus have GERD. [2]
- Manometry is generally not helpful, unless achalasia is suspected.

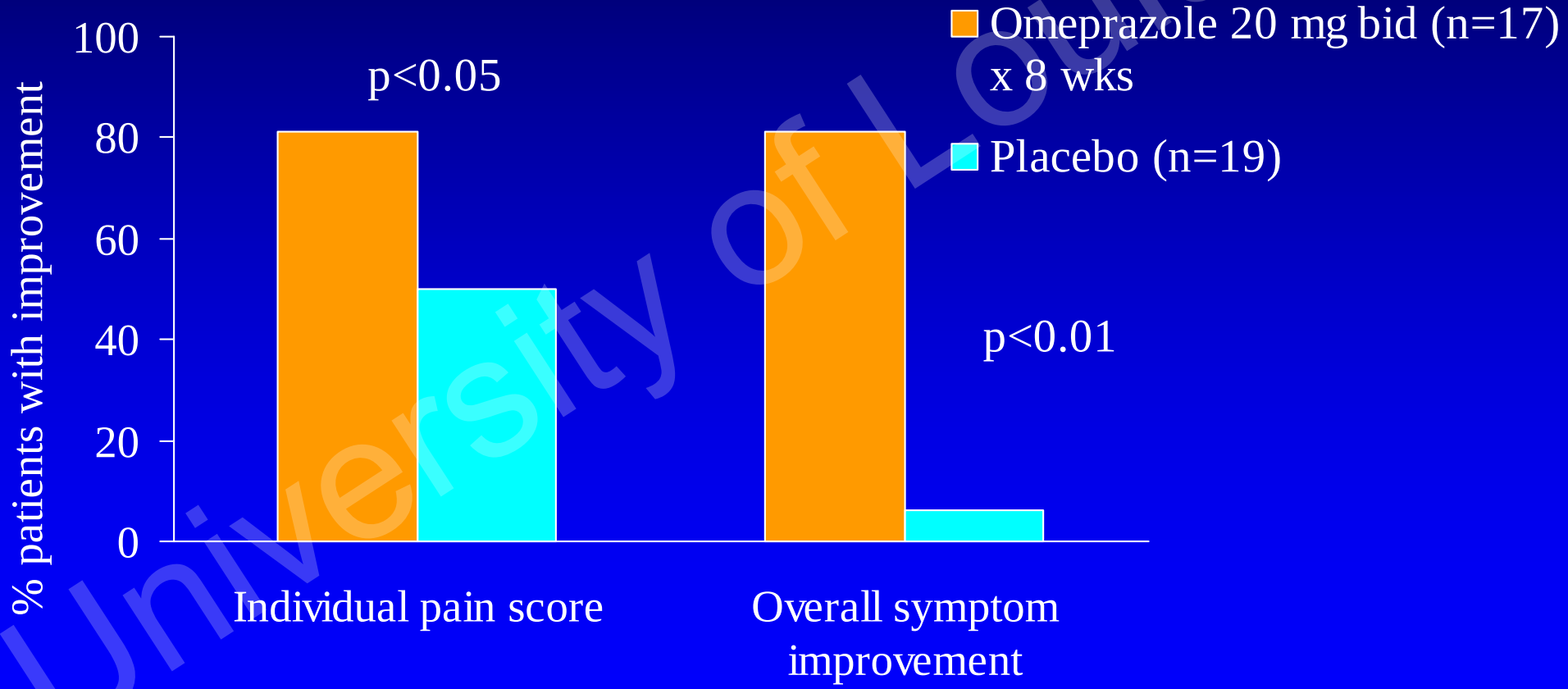
[1]Anderson KO et al. Dig Dis Sci 1989;34:83-91.
[2]Achem SR et al. Am J Gastroenterol 1993;88:187-92

Upper Endoscopy in Non-Cardiac Chest Pain

- Erosive esophagitis and Barrett's esophagus are found in only 10-25% of patients with non-cardiac chest pain.[1]
- Given its low yield, upper endoscopy is not recommended as part of the initial workup.

[1]Fang J et al. Am J Gastroenterol 2001;96:958-68.

PPI Treatment for Non-Cardiac Chest Pain



Patients with chest pain and +pH test

Achem et al. Dig Dis Sci 1997;42:2138.

PPI Treatment for Non-Cardiac Chest Pain

- Empiric treatment with a twice daily PPI for 2 to 3 months is a reasonable approach.
- PPI may also be effective in patients with hypercontracting dysmotility associated with GERD. [1]

[1]Borjesson M et al. Aliment Pharmacol Ther 2003;18:1129-35.

Other Treatment Options for Non-Cardiac Chest Pain

- Nitrates and calcium channel blockers were not better than placebo in randomized trials. [1-2]
- Low-dose tricyclic antidepressants and serotonin reuptake inhibitors may be helpful. [3-5]
- Cognitive behavioral therapy in selected patients can ease psychological distress and improve functional capacity. [6]

[1]Cattau EL et al. Am J Gastroenterol 1991;86:272-6.
[2]Richter JE et al. Gastroenterol 1987;93:21-8.
[3]Clouse RE et al. Gastroenterol 1987;92:1027-36.
[4]Cannon RO et al. N Engl J Med 1994;330:1411-7.
[5]Varia I et al. Am Heart J 2000;140:367-72.
[6]Klimes I et al. Psychol Med 1990;20:605-11.

Summary:
Non-Cardiac Chest Pain

- The most common cause is GERD, accounting for about 50% of the cases.
- Visceral hypersensitivity is suspected.
- Starting with the “PPI test” is cost-effective.
- Further testing should be reserved for PPI non-responders.

Case Study: Patient #5

- Patient was started on a PPI twice per day for 3 months
- Her chest pain and her heartburn resolved
- After weight loss and lifestyle modification for GERD, she eventually stopped her PPI without recurrence of her chest pain