



## Unexplained Chest Pain: It May Be In The Esophagus

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Unexplained chest pain (UCP) located in the mid-chest area behind the breastbone (substernal) is a common problem seen in clinical practice. UCP causes anxiety for both patient and physician because of the uncertainty regarding possible underlying coronary artery disease. This phenomenon is frequently called “non-cardiac” pain; however, the term “UCP” is preferred because even patients with normal coronary arteries will occasionally have evidence of reduced blood supply to the heart (myocardial ischemia).

Approximately 1,500,000 patients per year undergo cardiac tests or evaluation for recurring chest pain. Up to thirty percent or more of these results are normal. In the experience at our facility, most patients presenting to the emergency room complaining of chest pain receive a diagnosis that is non-cardiac. Nationwide, the cost of caring for these patients is exceptionally high, likely to be more than \$2 billion a year. A recent multicenter review of greater than 10,000 patients evaluated in Emergency Departments for mid-chest pain revealed that 55% had no evidence of any cardiac abnormality when followed for at least 6 months.

### Is the pain in the esophagus?

The clinical history and evaluation of patients with UCP often does not easily differentiate coronary from esophageal pain. Gastroesophageal reflux can be exercise induced and may present with pain that mimics chest pain due to coronary heart disease.

If a person’s history shows other esophageal symptoms including heartburn, difficulty swallowing (dysphagia), regurgitation, or pain during swallowing

(odynophagia), an esophageal cause should be suspected. Heartburn is strongly predictive of GERD. Features that suggest an esophageal origin include pain lasting more than 2 to 3 hours, pain that does not radiate to the side, meal-related pain, pain that is relieved by antacids, or pain that awakens the patient. None of these are specific, however, and further evaluation is always required – cardiac disease must be ruled out.

The absence of these esophageal symptoms decreases the likelihood of an esophageal cause of chest pain, though up to 50% of patients who have coronary artery disease will have one or more symptoms of typical esophageal disease and many will have concurrent coronary artery disease and GERD. It is well known that esophageal abnormalities may coexist with mitral valve prolapse (MVP), a disorder in which the valve between the upper chamber (atrium) and lower chamber (ventricle) on the left side of the heart billows out and does not close properly. Up to 80% of patients with MVP have been shown to have abnormal esophageal motility.

### Diagnosis

A cardiac evaluation is recommended as the initial approach in patients with unexplained chest pain. The diagnostic procedure is determined by numerous factors, including the patient’s age, family history, and cardiac risk factors such as smoking or high blood pressure. A noninvasive work up with an electrocardiogram, exercise testing, and perhaps echocardiography [a technique that uses sound waves to show shape, texture, and movement of heart valves as

well as size and function of heart chambers] may be reasonable in ruling out cardiac disease in a person younger than the age of 40. However, coronary angiography [a study of the arteries, veins, and heart chambers using an x-ray of contrast material injected into the body] remains the gold standard. Which procedure is used is a decision best left to cardiac specialists. Evaluation after cardiac disease has been excluded is centered on ruling out other disorders that may present with chest pain.

A normal coronary x-ray study to view blood vessels (angiogram) provides reassurance that recurring chest pains are not life threatening. Regardless of this reassurance, many patients continue to have recurring chest pain, compromised lifestyles, and still believe that they have heart disease even after coronary artery disease has been ruled out.

Ambulatory pH monitoring is the preferred diagnostic technique to document reflux and show a correlation between reflux and symptoms. Up to 50% of patients with UCP will have an acid induced esophageal abnormality, either increased esophageal acid exposure, a high symptom index (a correlation of reflux episodes with chest pain) without increased reflux frequency (an "acid sensitive" esophagus), or exercise-induced reflux.

## Treatment

Treatment begins with the reassurance that the heart is normal and that no life threatening illness is present. There are fewer worries or limitations on daily life from the pain associated with an esophageal abnormality as the cause of symptoms. It is common practice to treat unexplained chest pain secondary to GERD with anti-reflux therapy. A double-blind, randomized, placebo-controlled trial compared a twice per day dose of a proton pump inhibitor (PPI) and placebo in 36 patients with unexplained chest pain and gastroesophageal reflux documented by 24 hour ambulatory pH testing. This study confirmed clinical experience that the proton pump inhibitor reduced the number of days with chest pain and pain severity. The study supports the clinical impression that PPIs are needed in higher doses in

patients with unexplained chest pain than in patients with heartburn who normally respond to a single dose of a PPI daily. Others have suggested that a high dose of a PPI for a short period may be the most cost effective approach to patients experiencing chest pain. It is not clear what dosage of PPI is best to use. The physician's clinical experience is often the best available guide.

Patients with unexplained chest pain may not have GERD. If motility abnormalities are present, your physician may prescribe a medication to help decrease symptoms associated with abnormal esophageal contractions. Other medications act to alter sensitivity. Nonpharmacologic intervention may be of value in selected patients to help cope with symptoms or regain a sense of control over symptoms. Although time intensive, this method should not be ignored as definitive treatment.

## Summary

Unexplained chest pain is a difficult problem for physicians as well as patients. A systematic approach to ruling out coronary artery disease, followed by a careful search for an esophageal cause, principally GERD, will result in a satisfactory outcome for most patients.

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