Chest Pain

Dr. Amitesh Aggarwal
Department of Medicine

BACKGROUND

- Approx 5% of all ED visits
- 15 % - AMI
- 25-30 % - Unstable angina
- 50-55 % - Other conditions
- Atypical presentations – common
- 2% of patients with acute MI are unrecognized and discharged from the ED

Goals

1. Rapid recognition & management of true ACS
2. Recognition of other life-threatening causes of chest pain
   - Aortic dissection
   - Pulmonary embolism
   - Tension pneumothorax
3. Minimize cost and hospitalization in patients with chest pain of benign etiology

Overview

- Patient details
- Presenting Complaint
- History of Presenting Complaint
- Past Medical History
- Medications
- Family History

History of presenting complaint

- Need to find out more about the presenting complaint
- e.g. if patient presents with *chest pain* :

Where did you experience the chest pain? [Location]
What was the pain like? [Character]
How severe was the pain? [Severity]
How long did the pain last for? [Duration]
How often do you experience the pain? [Frequency]
Did the pain spread anywhere? [Radiation]
What makes the pain worse? [Exacerbating factors]
Does anything make it better? [Relieving factors]
Did you noticed any thing else at the time? Nausea? Sweating? [Associated symptoms]

Past medical history/ family history

DM
HTN
CAD
CVA
SCD

Ask if they smoke? If they do, ask *Type of tobacco – Cigarettes/cigar/pipe? Amount per day.*

Clinical Diagnosis of Chest Pain

- Location, quality of pain generally not predictive of cardiac cause
- Response to nitroglycerine not a reliable predictor
- Radiation and associated symptoms may be predictive, their sensitivity and specificity are quite low
- Pattern of pain may be most reliable
- Accurate diagnosis and management requires use of history, ECG, and other marker of ischemia
- Multiple problems can happen in the same patient!

Features Increasing Likelihood of AMI

Clinical Feature	Likelihood Ratio
Pain in chest or left arm	2.7
Chest pain radiation	
Right Shoulder	2.9
Left arm	2.3
Both left and right arm	**7.1**
Chest pain most important symptom	2.0
History of MI	**1.5-3.0**
Nausea or vomiting	1.9
Diaphoresis	2.0
Third heart sound	**3.2**
Hypotension (SBP<80)	**3.1**
Pulmonary rales on exam	2.1

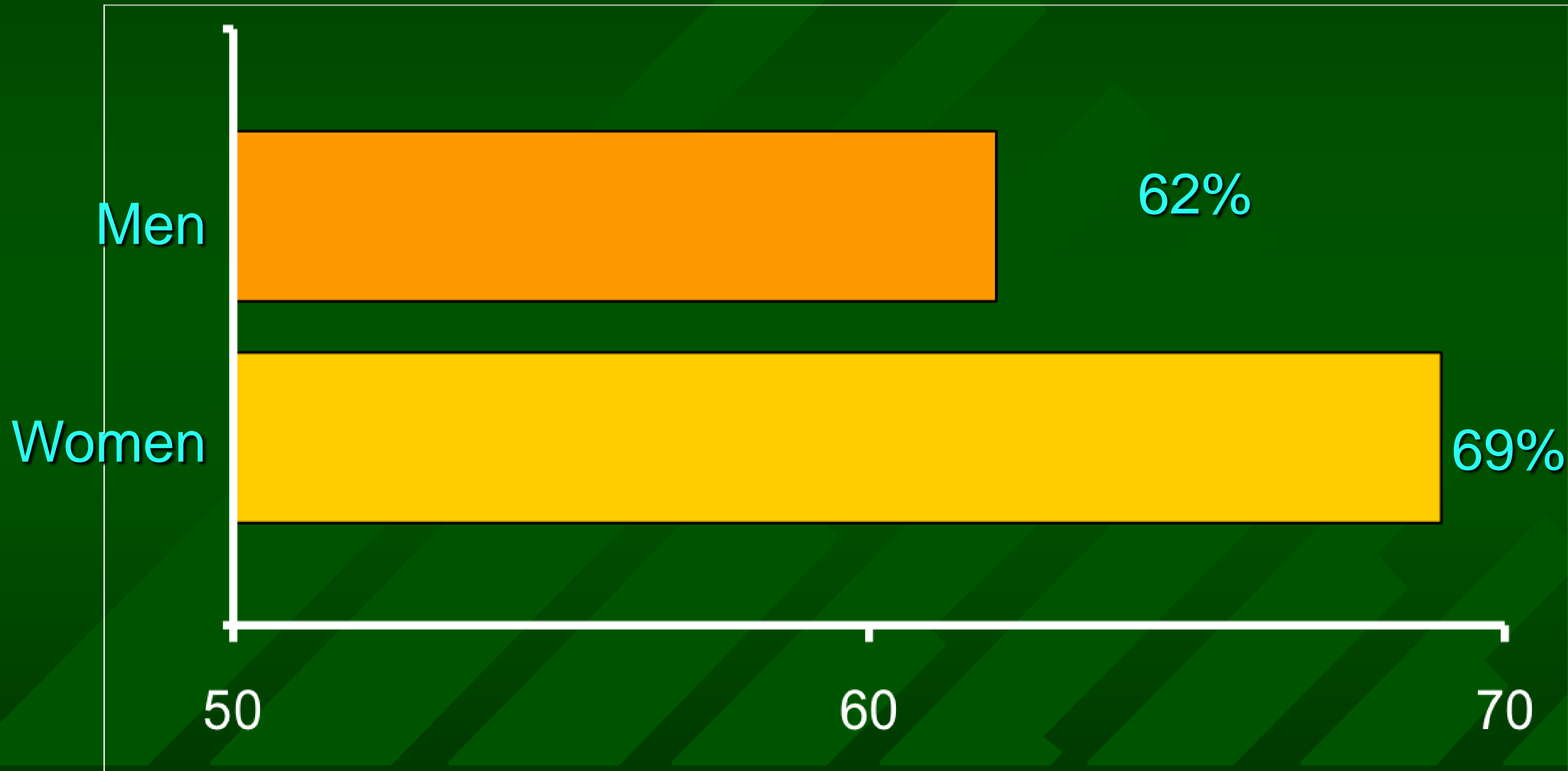
Aspects that lower likelihood of ischemia

- Reproducibility of pain with palpation or positional changes
- Pleuritic pain
- Stabbing pain
- Pain radiating to the lower extremities
- Even these negative predictors cannot reliably exclude MI

Factors Associated with Inappropriate Discharge of Chest Pain from ED

- Younger age
- Female sex
- Atypical symptoms
- No previous MI

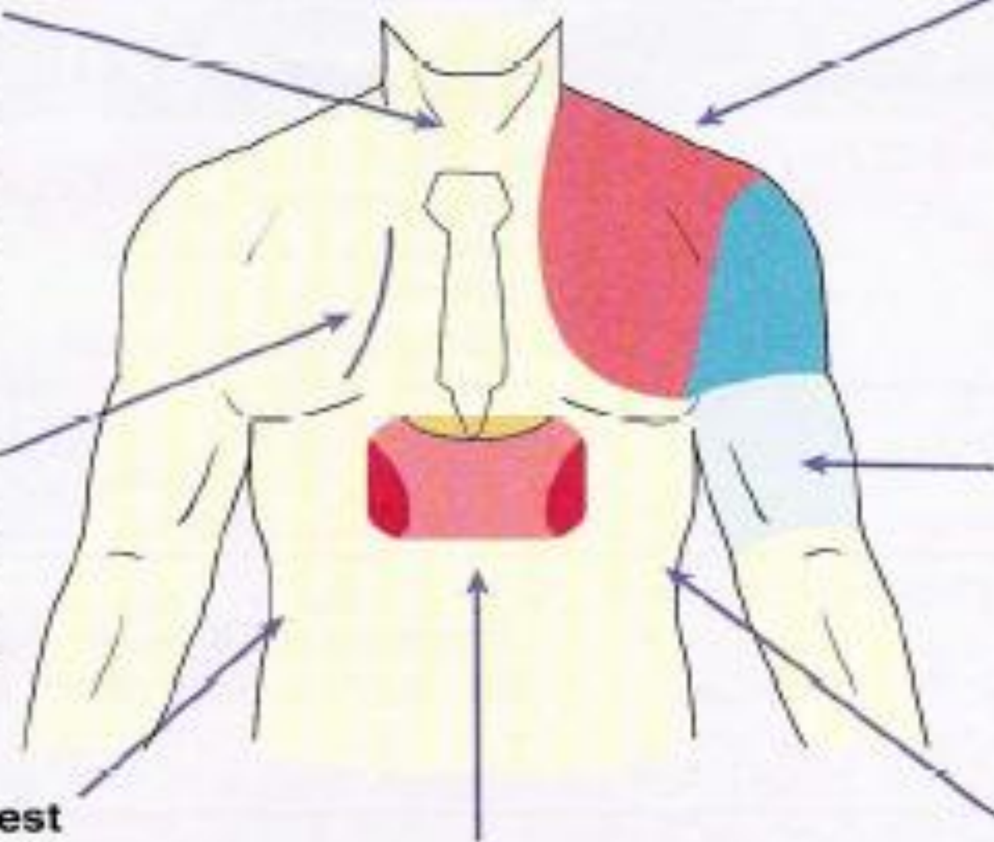
Most Coronary Events Occur in Persons With No Recorded History of MI



Rosamond et al. *N Engl J Med.* 1998;339:861-867.

Diagnoses among Chest Pain Patients Without Myocardial Infarction

Diagnosis	Percent
Gastroesophageal disease	42
Gastroesophageal reflux	
Esophageal motility disorders	
Peptic ulcer	
Gallstones	
Ischemic heart disease	31
Chest wall syndromes	28
Pericarditis	4
Pleuritis/pneumonia	2
Pulmonary embolism	2
Lung cancer	1.5
Aortic aneurysm	1
Aortic stenosis	1
Herpes zoster	1



Retrosternal
Myocardial ischemic pain
Pericardial pain
Esophageal pain
Aortic dissection
Mediastinal lesions
Pulmonary embolization
Interscapular
Myocardial ischemic pain
Musculoskeletal pain
Gallbladder pain
Pancreatic pain
Right Lower Anterior Chest
Gallbladder pain
Distention of the liver
Subdiaphragmatic abscess
Pneumonia/pleurisy
Gastric or duodenal
penetrating ulcer
Pulmonary embolization
Acute myositis
Injuries
Epigastric
Myocardial ischemic pain
Pericardial pain
Esophageal pain
Duodenal/gastric pain
Pancreatic pain
Gallbladder pain
Distention of the liver
Diaphragmatic pleurisy
Pneumonia
Shoulder
Myocardial ischemic pain
Pericarditis
Subdiaphragmatic abscess
Diaphragmatic pleurisy
Cervical spine disease
Acute musculoskeletal pain
Thoracic outlet syndrome
Arms
Myocardial ischemic pain
Cervical/dorsal spine pain
Thoracic outlet syndrome
Left Lower Anterior Chest
Intercostal neuralgia
Pulmonary embolization
Myositis
Pneumonia/pleurisy
Splenic infarction
Splenic flexure syndrome
Subdiaphragmatic abscess
Precordial catch syndrome
Injuries

Typical Clinical Features of Major Causes of Acute Chest Discomfort

Condition	Duration	Quality	Location	Associated Features
Angina	More than 2 and less than 10 min	Pressure, tightness, squeezing, heaviness, burning	Retrosternal, often with radiation to or isolated discomfort in neck, jaw, shoulders, or arms—frequently on left	Precipitated by exertion, exposure to cold, stress S_4 gallop or MR murmur during pain
Unstable angina	10–20 min	Similar to angina but often more severe	Similar to angina	Similar to angina, but occurs with low levels of exertion or even at rest
Acute myocardial infarction	Variable; often more than 30 min	Similar to angina but often more severe	Similar to angina	Unrelieved by nitroglycerin May be associated with evidence of heart failure or arrhythmia

Typical Clinical Features of Major Causes of Acute Chest Discomfort

Condition	Duration	Quality	Location	Associated Features
Aortic stenosis	Recurrent episodes as described for angina	As described for angina	As described for angina	Late-peaking systolic murmur radiating to carotid arteries
Pericarditis	Hours to days; may be episodic	Sharp	Retrosternal or toward cardiac apex; may radiate to left shoulder	May be relieved by sitting up and leaning forward Pericardial rub
Aortic dissection	Abrupt onset of unrelenting pain	Tearing or rippingsensation; knifelike	Anterior chest, often radiating to back, between shoulder blades	Associated with hypertension and/or underlying connective tissue disorder Murmur of AR, pericardial rub, or loss of peripheral pulses

Typical Clinical Features of Major Causes of Acute Chest Discomfort

Condition	Duration	Quality	Location	Associated Features
Pulmonary embolism	Abrupt onset; several minutes to a few hours	Pleuritic	Often lateral, on the side of the embolism	Dyspnea, tachypnea, tachycardia, and hypotension
Pulmonary hypertension	Variable	Pressure	Substernal	Dyspnea, signs of increased venous pressure including edema and jugular venous distention
Pneumonia or pleuritis	Variable	Pleuritic	Unilateral, often localized	Dyspnea, cough, fever, rales, occasional rub

Typical Clinical Features of Major Causes of Acute Chest Discomfort

Condition	Duration	Quality	Location	Associated Features
Spontaneous pneumothorax	Sudden onset; several hours	Pleuritic	Lateral to side of pneumothorax	Dyspnea, decreased breath sounds on side of pneumothorax
Esophageal reflux	10–60 min	Burning	Substernal, epigastric	Worsened by postprandial recumbency Relieved by antacids
Esophageal spasm	2–30 min	Pressure, tightness, burning	Retrosternal	Can closely mimic angina

Typical Clinical Features of Major Causes of Acute Chest Discomfort

Condition	Duration	Quality	Location	Associated Features
Peptic ulcer	Prolonged	Burning	Epigastric, substernal	Relieved with food or antacids
Gallbladder disease	Prolonged	Burning, pressure	Epigastric, right upper quadrant, substernal	May follow meal
Musculoskeletal disease	Variable	Aching	Variable	Aggravated by movement May be reproduced by localized pressure on examination

Typical Clinical Features of Major Causes of Acute Chest Discomfort

Condition	Duration	Quality	Location	Associated Features
Herpes zoster	Variable	Sharp or burning	Dermatomal distribution	Vesicular rash in area of discomfort
Emotional and psychiatric conditions	Variable; may be fleeting	Variable	Variable; may be retrosternal	Situational factors may precipitate symptoms Anxiety or depression often detectable with careful history

Palpitations

- Intermittent "thumping," "pounding," or "fluttering”
- Either intermittent or sustained and either regular or irregular
- Often noted when the patient is quietly resting
- Palpitations that are positional generally reflect a structural process within (e.g., atrial myxoma) or adjacent to (e.g., mediastinal mass) the heart
- Most arrhythmias are not associated with palpitations
- Principal goal in assessing patients with palpitations is to determine if the symptom is caused by a life-threatening arrhythmia
- Patients with preexisting CAD or risk factors for CAD are at greatest risk for ventricular arrhythmias as a cause for palpitations

Differential Diagnosis of Palpitations

Cardiac (43%), psychiatric (31%), miscellaneous (10%), unknown (16%) causes

- Atrial fibrillation/flutter
- Advanced AV block or sinus node dysfunction
- Sick sinus syndrome
- Multifocal atrial tachycardia
- Premature supraventricular or ventricular contractions
- Sinus tachycardia or arrhythmia
- Supraventricular tachycardia
- Ventricular tachycardia
- Wolff-Parkinson-White syndrome
- Anxiety disorder
- Panic attacks
- Alcohol
- Caffeine
- Certain prescription and over-the-counter agents (e.g., digitalis)
- Tobacco
- Atrial or ventricular septal defect
- Cardiomyopathy
- Congenital heart disease
- Congestive heart failure
- Mitral valve prolapse
- Pacemaker-mediated tachycardia
- Pericarditis
- Valvular disease (e.g., aortic insufficiency, stenosis)
- Anemia
- Electrolyte imbalance
- Fever
- Hyperthyroidism
- Hypoglycemia
- Hypovolemia
- Pheochromocytoma
- Pulmonary disease
- Vasovagal syndrome

Physical examination

- Primarily serves to determine if there are cardiac or other abnormalities present
- A resting ECG can be used to document the arrhythmia
- If the arrhythmia is sufficiently infrequent, other methods must be used, including (Holter monitoring; loop recordings
- Ask about :

    -Is it regular or irregular ?

    -Is it spontaneous?

    -Onset , Offset , and duration

    -Associated symptoms

Key Clinical Findings	Suggested diagnosis
Single “skipped” beats	Benign ectopy
Feeling of being unable to catch breath	Ventricular premature contractions
Single pounding sensations	
Rapid, regular pounding in neck	Supraventricular arrhythmias
Palpitations that are worse at night	Benign ectopy or atrial fibrillation
Palpitations associated with emotional distress	Psychiatric etiology / catecholamine-sensitive arrhythmia
Palpitations associated with activity	Coronary heart disease
General anxiety	Panic attacks
Rapid palpitations with exercise	Supraventricular arrhythmia, atrial fibrillation
Positional palpitations	Atrioventricular nodal tachycardia, pericarditis
Palpitations since childhood	Supraventricular tachycardia
Rapid, irregular rhythm	AF, tachycardia with variable block
Palpitations terminated by vagal maneuvers	Supraventricular tachycardia

Thank you

http://dramiteshaggarwal.yolasite.com

dramitesh@rediffmail.com