

Evaluation of Chest Pain in General Practice

Pages with reference to book, From 254 To 258

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Chest pain can be one of the most challenging and difficult presentations with which a doctor is faced. Concerns about serious heart and lung disease intermix with more common problems like depression, anxiety, esophageal dysfunction and musculo- skeletal disease.

Although most chest pains prove to be harmless, the primary physician must be skilled in quickly and accurately recognizing the patient with serious underlying cardiovascular or pulmonary pathology.

In the office setting, the evaluation is predominantly clinical, based on data available from the history and physical examination. ECG and perhaps a Chest X-ray may be available. Of particular challenge is the assessment of the patient with atypical chest pain.

Most structures within and about the thorax are capable of producing chest pain, as is psychopathology.

The differential diagnosis of chest pain can be organized along anatomic lines¹ (Table).

Table.

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- I. Chest wall
 - A. Muscular disorders
 - 1. Muscle spasm (precordial-catch syndrome)
 - 2. Pleurodynia
 - 3. Muscle strain
 - B. Skeletal disorders
 - 1. Costochondritis (Tietze's syndrome)
 - 2. Rib fracture
 - 3. Metastatic disease of bone
 - 4. Cervical or thoracic spine disease
 - C. Neurologic disorders
 - 1. Herpes Zoster infection or post-herpetic pain.
 - 2. Nerve root compression
 - II. Cardiopulmonary
 - A. Cardiac disorders
 - 1. Pericarditis
 - 2. Myocardial ischemia
 - 3. Prolapsed mitral valve.
 - B. Pleuropulmonary disorders
 - 1. Pleurisy of any origin
 - 2. Pneumothorax
 - 3. Pulmonary embolization with infarction
 - 4. Pneumonitis
 - 5. Bronchospasm
 - III. Aortic
 - A. Dissecting aortic aneurysm
 - IV. Gastrointestinal
 - A. Esophageal disorders
 - 1. Reflux
 - 2. Spasm
 - B. Others
 - 1. Cholecystitis
 - 2. Peptic ulcer disease
 - 3. Pancreatitis
 - 4. Splenic flexure gas
 - V. Psychogenic
 - A. Anxiety and depression
 - B. Cardiac neurosis
 - C. Malingering
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Work-up

Faced with a patient complaining of chest pain, there is the temptation to proceed directly to 'the plethora of sophisticated diagnostic studies for detection of coronary artery disease. However, the cost and the false-positive rate of such expensive testing are likely to be unacceptably high because of the low pretest probability of CHD in unselected patients².

More useful is a work-up strategy that attempts to determine and stratify CHD risk on the basis of an initial history, physical examination and ECG.

History

Estimating probability of coronary disease

A careful chest pain description is critical. The prevalence of angiographically confirmed CHD approaches 90 percent in persons with a classic story for angina.

In the Framingham study², patients presenting with new onset of definite angina had relative risk of a coronary event over 2 years of 3.0 for men and 5.0 for women. Relative risk fell for those with possible angina to 3.0 for men and 2.9 for women and to 1.3 for men and 0.8 for women with non-anginal chest pain

Assessment of history for other important causes

Some elements of the history suggestive of coronary disease are also important for other cases such as:

- * Pain brought on by exertion and relieved by rest is certainly indicative of angina, but psychogenic disease and esophageal spasm may behave in similar fashion. A check for anxiety, depression, panic disorder and life long history of other bodily complaints may suggest a psychogenic origin. Heart burn, dysphagia and an absence of CHD risk factors raise the possibility of esophageal disease.
- * Episodes that last hours to days provide further evidence of a non-cardiac origin.
- * Prompt response to GTN is another characteristic feature of CHD, but esophageal spasm, coronary microvascular disease, cystic duct spasm and even some psychogenic etiologies may also respond to nitrates.
- * Chest pain brought on by eating may be due to angina, but in the absence of other risk factors for CHD, one needs to consider gastro-esophageal or pancreatobiliary pathology.
- * Pain worsened by deep inspiration or cough is a hallmark of pleural irritation, but it is also suggestive of pericarditis and chest wall pathology.
- * Focal chest wall tenderness narrows the differential diagnosis to a chest wall origin.
- * Pneumothorax should come to mind when pleuritic pain is sudden in onset and accompanied by dyspnea in a young patient with a previous H/O pneumothorax or long standing bullous emphysema.
- * Pleuritic pain in the setting of an episode of minor viral respiratory disease suggests pleurodynia.
- * Sudden onset of maximally severe pain is a worrisome presentation, necessitating consideration of aortic dissection. If the episode is accompanied by a new neurologic deficit or a syncopal episode, then urgent hospitalization is indicated.

Physical Examination

There is no standard physical examination for the patient with chest pain. The appropriate examination is based on the hypotheses suggested by the history. General appearance and vital signs can be telling.

- * Anxious, sighing, hyperventilating individual who complains of constant chest tightness is likely to be suffering from an anxiety disorder.
- * Tachypnea and tachycardia with pleuritic pain are indicative of pulmonary embolism.
- * Blood pressure difference between extremities for aortic dissection.
- * Skin for cyanosis, herpetic rash, pallor etc.
- * Other examination which will be helpful are:
 - * Fundi for atherosclerotic, diabetic or hypertensive disease.
 - * Slow rising carotid pulse in aortic stenosis
 - * JVP transiently elevated during an ischemic episode.
 - * On examination of the heart look for (1) forceful or heaving left ventricular impulse which is indicative of significant aortic stenosis (AS) or a hypertrophic cardiomyopathy; (2) Signs of ischemic myocardial dysfunction, such as loss of physiologic splitting of the 2nd heart sound and development of 4th heart sound; (3) systolic ejection murmur of AS
- * If the chest pain is pleuritic, rub may be present.

In abdomen look for any tenderness in the epigastric and right upper quadrant region for cholecystitis.

* Ailperipheral pulses are checked for any evidence of aortic dissection.

* Neruological examination for new focal deficit or aortic dissection.

Laboratory studies

It should always be based on the working differential suggested by the history and physical examination.

1. Coronary heart disease (CHD)

We can divide patients who have suspected coronary heart disease in 3 groups³.

a) Clinically high risk: These are the ones with a classic angina history, CHD risk factors, a positive family history, a few crackles, a fourth heart sound and loss of physiologic splitting they have such a high probability of CHD that diagnostic testing will add little except cost. One can proceed directly to management.

b) Clinically low risk: Patients with clearly non-anginal chest pain, no CHD risk factors or family history and a normal cardiac examination have such a low probability of CHD that testing, is likely to generate only negative or false - positive results and excessive medical bills. In this category, even a CHD test with high sensitivity and specificity like Thallium stress testing will perfonnpoorly. Occasionally, arresting ECG is obtained to reassure the patient and family.

c) Clinically Intermediate Risk: These are the ones who present with atypical chest pain, a single cardiac risk factor, questionable fourth heart sound. In such persons, a positive or negative test result is likely to have a significant effect on the post test probability of CHD and careful design of an evaluation program is indicated.

II. Suspected Esophageal Disease

Usually clinical presentation rules out coronary heart disease and the patient responds symptomatically to measures that reduce reflux and spasm.

Chest pain due to adisorderof esophageal motility is not easy to document. A trial of antacids or H₂ blocker therapy is a helpful empirical measure.

III. Pleuritic chest pain

a) Suspected pulmonary embolization: Patients should have a chest radiograph In short, history, physical examination and x-ray can be used to identify patients who might have an embolism and require further assessment. b) Suspected infection: In such cases chest radiograph may also reveal pnemonitis.

Pneumococcal pneumonia and tuberculosis often present with acute pleuritic pain and may be mistaken clinically for pulmonary embolus.

c) Suspected pneumothorax: Suspicion of pneumothorax is an indication fora chest film.

IV. Psychogenic

The anxious patient with psychogenic pain may find a chest X-ray and/or ECG reassuring. Repeating test "just to be sure" may begin to undermine the patient's confidence in the physician's explanation and even heighten anxiety.

It is important to realize that as many as 10 percent of cases remain undiagnosed, even after careful and thorough evaluation.

a) Symptomatic relief: Relief of pain must be based on an etiologic diagnosis. To simply suppress the pain with analgesics or sedatives before a diagnosis is made may hide important clues.

However, musculoskeletal forms of chest pain may require analgesia. An antacid regimeno r H₂ blockers are helpful in patients with esophagitis. Nitrates and Ca- channel blocker are of benefit to patients with esophageal spasm. Patients with depression or panel disorder require specific therapy directed at the underlying psychopathology.

b) Patient Education: A careful and thorough explanation is essential to avoid precipitating a cardiac neurosis or unnecessary visits to several physicians forevaluationof chest pain Patients making many visit usually harbor unexplored concerns that have not been adequately addressed.

c) Indications for referral: Urgent referral to the nearest emergency room is indicated for the patient with severe anginal chest pain lasting over 30 minutes.

Similarly, the patient with suspected pulmonary embolization, pneumothorax or aortic dissection requires immediate hospitalization.

The patient with panic disorder or depression severe enough to cause disabling symptoms deserves consideration for psychiatric referral.

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References

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