Chest Pain

For suspected cardiac causes of chest pain, see the separate article on Cardiac-type Chest Pain Presenting in Primary Care.

There is an urgent need to diagnose the cause of any patient presenting with chest pain to ensure that serious and life-threatening conditions are not missed. Urgent hospital referral is indicated if there is any indication of a severe underlying disorder or of the patient being acutely unwell.

When a patient telephones, acutely unwell with chest pain, arrange a 999/112/911 ambulance in advance of (or instead of) visiting, as any delay in starting appropriate treatment has an adverse effect on prognosis.

Epidemiology

Epidemiological studies of chest pain, in particular the risk of pain being cardiac in nature, vary according to setting. Community-based studies with their undifferentiated populations see high rates of non-cardiac chest pain, whilst studies based in A&E departments have much higher proportions of cardiac chest pain, as patients are already self-selected based on the severity of symptoms, or triaged via contact with their GP, emergency services (999/112/911) or the NHS 111 Service.

- Chest pain is a common symptom, accounting for about 1% of GP visits, 5% of A&E department visits and 40% of emergency hospital admissions. [1]
- Combined hospital and primary care data produced an incidence of cardiac chest pain of 6.5 per 1,000 general population per annum.
- Population-based questionnaire studies show about 20% of adults reporting chest pain over the course of a year. This reflects the chronicity of ischaemic heart disease but also low consultation rates, particularly in those without a diagnosis of cardiac disease.
- The incidence of chest pain consultations increases with age and is more common for men. [1]
- Cardiac disease accounts for only 8-18% of all cases of chest pain and the majority of chest pain seen in primary care is due to more benign conditions - eg, gastro-oesophageal reflux disease (GORD), muscle sprains, panic disorder or shingles. [1]
- GORD is the most common cause of non-cardiac chest pain. [2] One study found that 8% of those diagnosed clinically within primary care had a diagnosis of ischaemic heart disease, 83% were excluded as cardiac-based and in 9% there was diagnostic uncertainty. About 17% were referred for further assessment. [3]

Differential diagnosis

- Cardiac:
  - Ischaemic: stable angina, acute coronary syndrome (ACS), coronary vasospasm (Prinzmetal's angina), hypertrophic cardiomyopathy, aortic stenosis.
  - Non-ischaemic: arrhythmias, aortic dissection, mitral valve disease, pericarditis.
- Respiratory: pneumothorax, pulmonary embolism, pneumonia, pleurisy, lung cancer.
- Musculoskeletal: costochondritis, Tietze's syndrome, trauma, rib pain (including fracture, bone metastases, osteoporosis), radicular pain, nonspecific musculoskeletal pain (eg, fibromyalgia).
- Breast disease.
- Gastrointestinal: GORD, oesophageal rupture, oesophageal spasm, peptic ulcer disease, cholecystitis, pancreatitis, gastritis.
- Skin: herpes zoster infection.
- Psychological - eg, anxiety, depression, panic disorder.
- Others: sickle cell crisis, diabetic mononeuritis, tabes dorsalis.
Assessment

The aim is to exclude a life-threatening cause, which needs immediate treatment, from other causes of chest pain. Diagnosis of chest pain is difficult but the history often gives an indication of the underlying cause. As the patient walks into the consultation room or, when listening carefully over the telephone, discern general appearance/status, including any confusion, anxiety, shortness of breath, pain, distress, whether pale or sweaty, and any vomiting. If there is any suspicion of ACS or other serious cause, or any concern regarding the patient’s general well-being, arrange urgent hospital assessment and admission.

History

- Pain: site, radiation, nature (type, frequency, severity), onset, duration, variation with time, modifying factors (eg, exercise, rest, eating, breathing or medication) and any previous episodes.
- Visceral chest pain:
  - Originates from deep thoracic structures (heart, blood vessels, oesophagus) and is often (but not always) described as dull, heavy or aching in nature.
  - It is transmitted via the autonomic system but may be referred via an adjacent somatic nerve - eg, referred cardiac pain felt in the jaw or left arm.
- Somatic chest pain arises in the chest wall, pericardium and parietal pleura and is characteristically sharp in nature and more easily localised (usually dermatomal).
- Associated symptoms may be useful in determining the underlying cause but may be nonspecific (eg, breathlessness may be associated with a cardiac, musculoskeletal, respiratory or psychological cause):
  - Anorexia, nausea, vomiting may suggest a gastrointestinal or cardiac cause of chest pain depending on the individual context.
  - Breathlessness, cough, haemoptysis may indicate a respiratory or a cardiac cause of chest pain.
  - Excessive sweating may be associated with shock.
  - Palpitations, dizziness, and syncope increase the likelihood of a cardiac cause and imply the need for hospital admission - but palpitations may be associated with anxiety.
- Consider the presence of any risk factors for ischaemic heart disease.
- Refer to any previous ECGs for comparison and any previous cardiac investigations (where available).
- Exclude thrombolysis contra-indications if ACS is suspected.

Examination

- Vital signs, including blood pressure measurement in both arms.
- Detailed cardiovascular and respiratory examinations, looking particularly for signs of cardiac failure or dysrhythmia.
- Chest wall, looking for localised tenderness and evidence of trauma.
- Also examine the abdomen (possible gastrointestinal cause), legs (oedema or possible deep vein thrombosis) and skin (rash).

Investigations

Within primary care, non-acute chest pain:

- FBC (to exclude anaemia).
- Renal function tests and electrolytes.
- TFTs.
- CRP.
- Fasting lipids and glucose.
- Resting ECG. Note: a resting ECG is normal in over 90% patients with recent symptoms of angina. If an urgent ECG is considered necessary on clinical grounds, admission to hospital is usually required.
- Additional tests if a non-cardiac cause is suspected - eg, CXR, LFTs and amylase, abdominal ultrasound.
- Referral to a rapid access chest pain clinic is now usual for further assessment and review.

With acute chest pain, in a hospital setting:

- Blood tests: FBC, renal function tests, electrolytes, LFTs, amylase, coagulation screen, serial cardiac enzymes (troponin I or T).
- Serial ECG.
- CXR.
- Second-line investigations when indicated include echocardiography, angiography, exercise testing, myocardial perfusion scan, CT/MRI scan, upper gastrointestinal endoscopy, and lung ventilation/perfusion (V/Q) scan.

Cardiac chest pain

- Cardiac pain is often heavy, pressing and tight. Symptoms that may indicate ACS include:[4]
  - Pain in the chest and/or other areas (eg, the arms, back or jaw) lasting longer than 15 minutes.
  - Chest pain with nausea and vomiting, marked sweating and/or breathlessness, or haemodynamic instability.
  - New-onset chest pain, or abrupt deterioration in stable angina, with recurrent pain occurring frequently with little or no exertion and often lasting longer than 15 minutes.
However, clinical features are not completely reliable in the diagnosis of acute, undifferentiated chest pain:

- The site and nature of pain, the presence of nausea and vomiting and diaphoresis were not found to be predictive of ACS in one study.[8]
- ACS is often atypical (without chest pain). There is some evidence to suggest that this occurs more frequently in women, particularly premenopausal women.[6, 7]
- ACS pain can be intermittent and appear to ‘settle’, providing false reassurance.
- Response to nitrates or antacids does not prove the diagnosis as angina and GORD may appear to be relieved by both.

Non-cardiac chest pain

- Consider non-cardiac causes of chest pain, including recent trauma, past medical history, and current medications.
- Pleuritic pain (pain is aggravated during inspiration and when coughing) may indicate a respiratory or musculoskeletal cause of pain. Musculoskeletal pain is usually associated with tenderness of the chest wall.
- Gastrointestinal chest pain may be very difficult to distinguish from cardiac chest pain, especially in patients with oesophageal spasm.
- Screen for panic disorder:
  - A positive screen (‘yes’ to either question) is highly sensitive for panic disorder but should not preclude cardiac testing in patients with risk factors:[8]
    - ‘In the past six months, did you ever have a spell or an attack when you suddenly felt anxious or frightened or very uneasy?’
    - ‘In the past six months, did you ever have a spell or an attack when for no apparent reason your heart suddenly began to race, you felt faint or couldn’t catch your breath?’

Management

- Management will be dependent on diagnosis.
- See the separate articles on Angina Pectoris, Acute Coronary Syndromes and Acute Myocardial Infarction.
- Psychological treatment may be helpful with some patients.

Prognosis

- There is a 3% increased mortality rate in the year following consulting a GP regarding the onset of chest pain compared with a control group with no chest pain, the excess being primarily due to cardiovascular disease.[1]
- Once a cardiac cause for chest pain is excluded, further investigation is often curtailed and many patients continue to experience undiagnosed chest pain, which carries significant psychological morbidity.[2]

Further reading & references


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