Differential diagnosis

Haemoptysis classification

✓ Massive haemoptysis
- when there is so much blood that it interrupts breathing (generally more than about 200-240 mL, or about 1 cup, in 24 hours)
- a medical emergency: the mortality rate 75%

Clinical history

✓ Past history of lung diseases
✓ Document volume of blood and weather old or fresh
✓ Time course (intermittent, constant)
✓ Definitely from the airway and from the nose or mouth haematemesis (the blood may be easy swallowed, and then vomiting)
✓ Presence of systemic features associated with infection, malignancy etc.

Examination

May be normal or show signs of underlying lung disease e.g. bronchiectasis, bronchial carcinoma, or symptoms of circulatory collapse
Airway diseases
- bronchitis
- bronchiectasis
- cystic fibrosis

Pulmonary vascular diseases
- pulmonary thromboembolism
- pulmonary vasculitis
- arteriovenous malformations

Neoplasms
- bronchogenic carcinoma
- bronchial carcinoid

Inflammatory disorders
- tuberculosis
- pneumonia
- lung abscess
- aspergilloma

Goodpasture’s syndrome
- Use of anticoagulants or fibrinolytics

Other causes
- Cardiovascular and vascular
  - Mitral stenosis
  - Congestive heart failure
  - Wegener’s granulomatosis
  - Goodpasture’s syndrome
- Miscellaneous
  - Use of anticoagulants or fibrinolytics

Pulmonary embolus

Haemoptysis
In practice the usual differential diagnosis lies between:
- malignancy
- bronchectasis
- tuberculosis, infection
- pulmonary embolus

Patient’s description
- I am short of breath
- I can’t catch my breath
- ’air does not go all the way down’
- ’smothering feeling or tightness or tiredness in the chest:
- ’choking sensation’
- ’fatigue while walking up the driveway’
Aetiology

✔ Physiological dyspnoea: the normal breathlessness that accompanies exercise, the onset of which is dependent on the individual's fitness.
✔ Lung disease:
  - obstructive airways disease, e.g. acute asthma
  - chronic airflow limitation, e.g. chronic bronchitis and/or emphysema

Lung disease:
- parenchymal lung disease, e.g. fibrosing alveolitis, sarcoidosis, pneumoconiosis:
- pulmonary vascular disease, p.g. pulmonary emboli, pulmonary hypertension
- chest wall abnormality, e.g. obesity, kyphoscoliosis

Lung disease:
- respiratory muscle weakness, e.g. Guillain-Barre syndrome, polio, myasthenia gravis
- pneumothorax
- pulmonary collapse

Cardiac diseases
- pulmonary venous congestion due to left heart failure of any cause

✔ Other causes,
  e.g. psychogenic hyperventilation, altitude sickness, anaemia.

Types of dyspnoea

✔ Inspiratory- results from obstruction of the upper respiratory airway due to tumors, laryngeal edema, foreign bodies, or vocal cord paralysis. Often with stridor, intercostal retraction & use of the accessory muscles of inspiration.

✔ Expiratory- due to obstruction of the airflow in the lower airways, as in asthma & emphysema & is characterized by a prolonged expiratory phase.

Types of dyspnoea

- Physiological breathlessness on exertion is the sensation of increased work of breathing which the patient usually recognizes as being normal for the degree of exertion.
✔ Exertional dyspnoea:
- Pathological dyspnoea on exertion is the sensation of breathlessness at a lower level of exertion than is normal for the patient.
Exertional dyspnoea - ATS’ classification

- normal
- moderate: walking on the level causes dyspnoea
- severe: unable to continue walking even slowly on the level, all but the lightest housework is impossible
- gross: the slightest effort induces severe breathlessness the patient is practically confined to bed

Types of dyspnoea

- Orthopnea- it occurs when the person is at rest in the recumbent position but it does not in the upright position
- Paroxysmal nocturnal dyspnoea- it is an acute form of dyspnoea that causes the patient to awake from sleep. The patient is forced to sit upright or stand out of bed for relief. This condition is associated with pulmonary oedema.

Paroxysmal nocturnal dyspnoea

- It may be difficult to distinguish this condition from nocturnal attacks of bronchial asthma. One distinguishing feature is the absence of morning tightness, a factor characteristic of asthma.

- Patients with chronic airflow limitation may have similar nocturnal episodes of dyspnoea.

Differential diagnosis

- Obstructive diseases of airway:
  - Extrathoracic: aspiration of food or foreign body, angioedema of the glottis, tumors, fibrotic stenosis following tracheostomy or prolonged intubation- inspiratory dyspnoea
  - Intrathoracic: can occur actually intermittently or chronically with worsening during infections, e.g.

Intrathoracic, e.g.

- Asthma-acute intermittent obstruction with wheezing
- Chronic bronchitis or bronchiecstasis-chronic cough with expectoration, intercurrent infection cause more severe dyspnoea-during such episodes also paroxysmal nocturnal dyspnoea with wheezing relieved by cough & expectoration of sputum
- Emphysema-exertional dyspnoea progressing to dyspnoea at rest

Differential diagnosis

- Diffuse parenchymal lung disease-often with tachypnoea, arterial Pco2, & PaO2, & lung volume decreased
- Pulmonary vascular occlusive disease-repeated episodes of dyspnoea at rest often with pulmonary emboli, arterial gases invariably abnormal, lung volum rather normal
Differential diagnosis

- Diseases of chest wall or respiratory muscles - e.g. kyphoscoliosis, pectus excavatus, spondylitis, paralysis of respiratory muscles.

- Heart disease - exertional dyspnea & over the course of months and years, progresses until the patient is dyspneic at rest. Occasionally, a nonproductive cough developing in recumbent position, at night. Paroxysmal nocturnal dyspnea, orthopnea, third & fourth heart sounds, jugular neck vein distention & peripheral oedema may occur.

Heart disease:

- X-ray - signs of heart failure
- ECG - rarely specific & cannot specifically indicate the cardiac dyspnea
- Echocardiography - useful to diagnose structural heart diseases

Differential diagnosis

- Anxiety neurosis - frequent sighing respiration & irregular breathing pattern. Often breathing pattern returns to normal during sleep.

Chest pain

Important causes of chest pain

- Myocardial infarction, recognised mostly on the basis of chest pain for more than 30 minutes ECG showing regional ST elevation
- Aortic dissection:
  - sudden onset of severe pain
  - asymmetric pulses or aortic regurgitation
  - widened mediastinum on chest radiology

- A chest pain is a very non-specific symptom and may be the result of a variety of pathologies.

- A chest pain with classical features may not always be caused by the most usual pathologies.
Important causes of chest pain

- Pulmonary embolism:
  - pleuritic chest pain
  - at risk of DVT
  - hypoxia despite clear lungs on chest radiology
- Oesophageal rupture:
  - pain following vomiting
  - chest radiograph shows left pleural effusion with gas in the mediastinum

Acute coronary syndrome

- unstable angina
- myocardial infarction

Unstable angina

- Unstable angina - recurrent episodes of angina on minimal effort or at rest. It may be the initial presentation of ischaemic heart disease, or it may represent the abrupt deterioration of a previously stable anginal syndrome.

Unstable angina

- It is provoked more easily and persists for longer than stable angina. It may fail to respond to therapy. Pain is often associated with reversible ST segment depression on the ECG.
- Unless vigorously treated, 30% of patients will progress to myocardial infarction or death within 3 months.

Acute myocardial infarction

- Chest pain: central, crushing pain, may radiate to the jaw, neck, and one or both arms, more severe and lasts longer than angina
- Others symptoms:
  - nausea, vomiting, sweating
  - the patient is often distressed and may be tachycardic, cold, clammy and cyanosed
  - blood pressure is variable
  - mild pyrexia is variable feature

Angina

- It is typically a heavy or tight discomfort on or around the chest, usually associated with exertion; rest brings relief within a few minutes
- discomfort may radiate to arms, neck or jaw
- additional precipitants include: cold weather, heavy meals, emotion
Angina

- Nitrates typically offer rapid relief
- Pain may be associated with dyspnoea, faintness, sweating or a fear of death

The clinical examination is often normal in a patient complaining of angina.

Dissecting aortic aneurysm

- Chest pain: typically unheralded, sudden and severe
- The pain is described as tearing or pulsating
- The pain is deep, radiating to the back or left shoulder
- Myocardial pain may coexist if coronary arteries are involved
- There may be a history of hypertension or other complications of atherosclerosis.

Dissecting aortic aneurysm

- On examination there may be:
  - Sweating and pallor
  - More than 20 mmHg blood pressure difference between the two arms
  - Hypotension usually indicates rupture
  - Prominent arterial pulsation at the root of the neck
  - Aortic regurgitation
  - Neurological complications:

Massive pulmonary embolism

- Central chest pain due to myocardial ischaemia
- Sudden circulatory collapse: hypotension, cold peripheries, cyanosis
- Hyperventilation
- Neck vein engorgement or enlargement
- Auscultation of heart reveals:
  - Pulmonary hypertension (loud P2)
  - A third or fourth heart sound (gallop rhythm)
- Coma
- ECG changes - S1,Q3,T3 with right axis deviation and right bundle branch block

Pleural pain

- Acute, sharp, localized often precipitated by breathing and motion of the chest
- The pain in several locations
- Causes of this: pneumonia, pulmonary embolism, spontaneous pneumothorax, tumor

Poorly localised and well localised chest pain
Poorly localised:

- angina
- reflux oesophagitis
- oesophageal spasm
- myocarditis
- tracheitis
- pneumonia
- peptic ulcer

Well localised:

- fractured ribs
- pleurisy
- Tietz's syndrome
- shingles
- biliary colic
  - mastitis
  - pulmonary infarct

Features concerning the chest pain

- site
- nature of the pain
- radiation
- precipitating factors
- relieving factors
- associated factors

Right upper quadrant pain

- gallbladder disease
- duodenal ulcer
- acute pancreatitis
- pneumonia
- subphrenic abscess

Shoulder pain

- cervical spondylosis
- shoulder (examination of shoulder joint)
- lung cancer
- subphrenic abscess
- biliary colic
- cholecystitis
- cholecystectomy
- pregnancy (ectopic)

Non-central chest pain

- pleuritic pain - this pain that is made worse on inspiration. Massive pulmonary embolism may cause central chest pain.
- shingles - pain that is classically localized to the dermatomes. It is unaffected by respiration.
- rib fractures - pain is felt at the site of fracture.
- spondylitis
- tabes dorsalis
- gall bladder and pancreatic disease
- Tietz's syndrome
<table>
<thead>
<tr>
<th>Nature of chest pain</th>
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<tbody>
<tr>
<td>✓ constricting - suggestive of angina, anxiety or oesophagitis;</td>
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<tr>
<td>✓ sharp - may be from the pleura or pericardium (pain that is exacerbated by deep inspiration is pleuritic);</td>
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<tr>
<td>✓ intense prolonged pain - suggestive of myocardial infarction (&quot;the worst pain that I have ever had...I thought that I was going to die&quot;);</td>
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<thead>
<tr>
<th>Radiation of pain</th>
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<tr>
<td>✓ shoulder, arm(s), neck, or jaw - suggestive of a cardiac, aortic or oesophageal lesion.</td>
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<td>✓ back - suggestive of aortic dissection</td>
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<th>Exacerbating factors</th>
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<tbody>
<tr>
<td>✓ Features associated with cardiac pain or anxiety - pain comes on with exercise or emotion</td>
</tr>
<tr>
<td>✓ Factors associated with oesophagitis - pain is brought on by food, hot drinks or alcohol, lying flat. Note that a meal may also precipitate angina.</td>
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<th>Relieving factors</th>
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<td>✓ Pain that is relieved by stopping exercise is suggestive of cardiac origin to pain.</td>
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<tr>
<td>✓ Pain relieved by antacids suggests oesophagitis.</td>
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<tr>
<td>✓ Pain relieved by nitrate is suggestive of cardiac and oesophageal pain. However its effects are more rapid with cardiac pain.</td>
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<tr>
<td>✓ Pain that is relieved when the patient leans forwards is suggestive of pericarditis</td>
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<th>Associated factors</th>
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<tr>
<td>✓ Breathlessness - associated with cardiac pain, pulmonary embolism, pleurisy, anxiety (query peripheral and perioral paraesthesia of hyperventilation).</td>
</tr>
<tr>
<td>✓ Nausea and vomiting - associated with myocardial infarction and upper gastrointestinal lesions.</td>
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<th>Chest pain and breathlessness</th>
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<tbody>
<tr>
<td>✓ myocardial ischaemia</td>
</tr>
<tr>
<td>✓ pericarditis</td>
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<tr>
<td>✓ dissecting aneurysm</td>
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<tr>
<td>✓ pulmonary embolus</td>
</tr>
<tr>
<td>✓ oesophageal pain</td>
</tr>
<tr>
<td>✓ musculoskeletal pain</td>
</tr>
<tr>
<td>✓ other pulmonary causes</td>
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Cough

- is the third most common reason for an office visit.
- can be acute or chronic
- most common cause of acute cough (less than 3 weeks) is an acute respiratory infection
- chronic cough is defined as a cough persisting for more than 8 weeks

Causes of cough (with or without CXR abnormality)

**Common causes**
- smoking and other environmental irritants
- postnasal drip syndrome
- asthma
- gastroesophageal reflux
- chronic bronchitis
- transient airway hyperresponsiveness (e.g., after viral upper respiratory infection)
- medication-related (ACE-inhibitors, beta blockers)

**Less common causes**
- Congestive heart failure
- Cancer (bronchogenic or esophageal)
- Interstitial lung disease
- Bronchiectasis
- Tuberculosis and other chronic lung infections (e.g. fungal)
- Cystic fibrosis
- Recurrent aspiration (e.g., post-stroke, frequent vomiting [bulimia], alcoholism)

Causes of cough (with or without CXR abnormality)

**Less common causes**
- Pressure from an intrathoracic mass: thoracic aneurysm, thyromegaly, mediastinal lymphadenopathy
- Irritation of cough receptors in ear (e.g. foreign body)
- Opportunistic infections in immunosuppressed patients
- Lymphangitis carcinomatosis
- Foreign body
- Chronic inhalation of bronchial irritants (occupational)
- Psychogenic

Chronic cough

- chronic cough in nonsmokers with a normal chest x-ray (CXR)
- chronic cough in smokers with or without an abnormal CXR.
**Chronic cough in nonsmokers with a normal CXR**

- postnasal drip syndrome
- asthma
- gastroesophageal reflux disease (GERD)
- ACE inhibitors

**Postnasal Drip Syndrome**

- frequent nasal discharge, sensation of drainage in the back of the throat, and frequent throat clearing
- on physical examination: the rough appearance, termed cobblestoning, of the back of the throat
- Sinus x-rays or sinus CT may show evidence of sinusitis
- Causes include: sinusitis, allergic rhinitis, and vasomotor rhinitis

**Gastroesophageal Reflux Disease (GERD)**

- classic symptoms of frequent heartburn or sour taste in the mouth
- 40% of patients with GERD do not present with the classic symptoms (only of cough) - 24-hour esophageal pH probe
- Alternatively, proton pump inhibitors therapy

**Chronic cough in smokers with or without an abnormal CXR**

- bronchitis
- lung cancer

**Asthma**

- it is called cough-variant asthma
- physical examination and pulmonary function test results can be normal
- usually caused by cold air, fumes, fragrances, or exercise or after the initiation of a beta-blocker
- confirmation of the diagnosis of cough-variant asthma may include a methacholine bronchial challenge test

**ACE Inhibitors**

- More frequent in women
- Can occur 3-6 months after starting the drug
- Cough usually settles within a week of stopping the drug
Chronic bronchitis

- History of smoking
- Production of sputum with the cough most days of the week, for 3 months, in 2 successive years of smoking cessation
- CXR excludes other pathology
- Smoking cessation can completely resolve the cough

Lung cancer

- Is the cause of a chronic cough in less than 5% of patients with a normal CXR
- It is suspected as a cause when there is an abnormal CXR and a history of smoking
- In a smoker, any change in a chronic usual cough and any new cough