

CHEST PAIN

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Chest Pain

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graph TD; CP[Chest Pain] --- MI[Myocardial Ischemia]; CP --- ISMJ[Irritation of Serous Membrane or Joints]; CP --- TD[Tissue Disruption]; CP --- EP[Esophageal Pain]; CP --- GDU[\"Gastric And Duodenal Ulcer Tracheobronchitis\"];
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Myocardial Ischemia

Irritation of Serous Membrane or Joints

Tissue Disruption

Esophageal Pain

Gastric And Duodenal Ulcer Tracheobronchitis

3- Pain due to tissue disruption

- Abrupt and severe pain.
- Aortic dissection, pneumothorax, mediastinal emphysema, and esophageal rupture.

Chest Pain

Myocardial
Ischemia

Irritation of Serous
Membrane or
Joints

Tissue Disruption

Esophageal Pain

Gastric And
Duodenal Ulcer
Tracheobronchitis

4- Esophageal Pain

Deep thoracic burning pain results from chemical irritation of the esophageal mucosa secondary to acid reflux or from spasm of the esophageal muscles and characteristically follows swallowing.

- Associated with dysphagia, regurgitation of food and weight loss.
- Confirmed by Bernstein's acid perfusion test (acid reflux) and esophageal manometry with measurement of lower esophageal sphincter pressure (esophageal spasm).

5- Gastric, duodenal ulcer and Tracheobronchitis

Gastric and duodenal ulcers can cause referred chest pain. Tracheobronchitis Causes Burning pain increased by coughing. Others include breast diseases, herpes zoster, malignancy of ribs and emotional.

Approach to patient with Chest Pain

1. Detailed history

- Most important: Location, radiation, quality, intensity, duration and precipitating and relieving factors.

2. Clinical Examinations

- At the time of the chest pain.

3. Attempt to produce and alleviate the pain

- Exercise, and response to Nitroglycerine.

4. Investigation

- ECG, radiology and cardiac enzymes.

Dyspnea

Important cardinal symptom of diseases affecting the cardiorespiratory system, defined as:

An abnormal, uncomfortable awareness of breathing.

- The breathing pattern is normally controlled by a series of high central and peripheral mechanisms that can increase ventilation in excess of metabolic demands in conditions such as anxiety, fever and physical activity.
- A normal resting person is unaware of the act of breathing.

Dyspnea can be described in various ways

1. Can't get enough air.
2. Air does not go all the way down.
3. Tightness in the chest.
4. Fatigue in the chest.
5. Choking sensation.

- **There are situations in which there is tachypnea but person does not feel dyspnea, e.g., hyperventilation of acidosis.**

Quantitation of dyspnea

This is related to degree of exertion (New York Heart Association Classification) (NYHA)

- G_1 dyspnea on heavy exertion
- G_2 dyspnea on mild exertion
- G_3 dyspnea at usual daily activity
- G_4 dyspnea at rest

- 1) Sudden and unexplained dyspnea at rest → Pulmonary embolism, spontaneous pneumothorax and anxiety.
- 2) PND (Paroxysmal Nocturnal Dyspnea) → LVF (Left ventricular Failure).
- 3) Orthopnea: Dyspnea on lying flat, relieved by sitting → LVF
- 4) Trepopnea: Dyspnea on left or right lateral decubitus position → Heart diseases.
- 5) Platypnea: Dyspnea in the upright position.

Differential Diagnosis: Causes of dyspnea

- **Causes**

- Obstructive Diseases of the Airways
- Diffuse Parenchymal Lung Diseases
- Pulmonary Vascular Diseases
- Diseases of Chest Wall and Diaphragm
- Heart Diseases
- Anxiety Neurosis

Obstructive diseases of airways: dyspnea and stridor

A. Large airway obstruction (extra-thoracic):

- Acute: Inhalation of foreign bodies and angioneurotic edema.
- Chronic: Tumors and stenosis following tracheostomy.

B. Small airway obstruction (intra-thoracic):

- Acute and intermittent → asthma**
- Chronic → Chronic bronchitis and bronchiectasis**

Prolonged expiratory phase, Rhonchi and crepitation

2) Diffuse parenchymal lung diseases:

- Pneumonia, pulmonary fibrosis, fibrosing alveolitis, sarcoidosis → exertional dyspnea, tachypnea, ↓ CO₂ pressure, ↓ O₂ pressure and ↓ lung volume.

3) Pulmonary vascular disease:

- Recurrent pulmonary emboli.**
- Source of emboli → such as DVT (Deep venous thrombosis) is helpful. Arterial blood gases abnormal, normal lung volume.**

4) Diseases of chest wall and respiratory muscles:

- Severe kyphoscoliosis (Lateral Curvature of Spine in relation to anteroposterior curve), pectus excavation. This will be evident on examination.
- Weakness or paralysis of respiratory muscles: Dyspnea and respiratory failure → other signs and symptoms of neurologic or muscular disorders (Guillain barre syndrome and myasthenia gravis).

5) Heart diseases:

Left ventricle dysfunction & ↓ left ventricle compliance and mitral stenosis → Left Atrial hypertension → ↑ pulmonary capillary pressure → exertional dyspnea → ↑ hydrostatic pressure in pulmonary vascular bed → transudation of fluid into interstitial space → pulmonary edema.

- The first symptom may be a non-productive cough, occurs in the recumbent position particularly at night.
- Orthopnea and PND (attacks of dyspnea occur at night and awaken the patient from sleep). These are characteristics of advanced heart disease.

Diagnosis of Cardiac Dyspnea

1. **History:** Previous heart disease, e.g., M.I
2. **Physical exam:** 3rd, 4th heart sound, LVE (Left Ventricular Enlargement), ↑ JVP, peripheral edema, ascites.
3. **Radiology:** interstitial edema, pulmonary vascular redistribution Kerley B-Lines, cardiomegaly and pleural effusion.
4. **Differentiation from pulmonary dyspnea** can be difficult, respiratory dyspnea is usually more gradual unless there is pneumonia, pneumothrax or exacerbation of asthma.
5. **Investigations:** PFT (Pulmonary Function Test), ECG, chest x-ray (CXR) and echocardiography.

6) Anxiety neurosis:

- **Dyspnea here is difficult to evaluate, some clues are useful**
 1. **Frequent sighing respiration and a bizarre irregular breathing pattern which returns to normal during sleep.**
 2. **Normal pulmonary and cardiac examination and investigation.**