



SNS COLLEGE OF ALLIED HEALTH SCIENCES
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DEPARTMENT OF CARDIOPULMONARY PERFUSION CARE
TECHNOLOGY

COURSE NAME: Pathology - II

TOPIC : Cor-pulmonale



Case Study



- The patient is a **28-year-old female**, who presented with dyspnea on minimum exertion and dry cough.
- The patient reported being asymptomatic until one year ago, when she had an episode of retrosternal pain followed by syncope, requiring admission to the intensive care unit, being then diagnosed with pulmonary thromboembolism (PTE).
- Her pulmonary auscultation showed **reduced breath sound intensity** in the left lung.
- On The ventricular septum and posterior wall thickness was 9 mm, and the LVEF, 65%. Left ventricular systole was normal, and the filling pattern showed relaxation impairment. The right ventricle was hypertrophic and severely hypokinetic. The valves had no changes. Systolic pulmonary artery pressure was estimated as 64 mm Hg.



Definition



Cor pulmonale (*cor* = heart; *pulmonale* = lung) or **pulmonary heart disease** is the disease of right side of the heart resulting from disorders of the lungs.

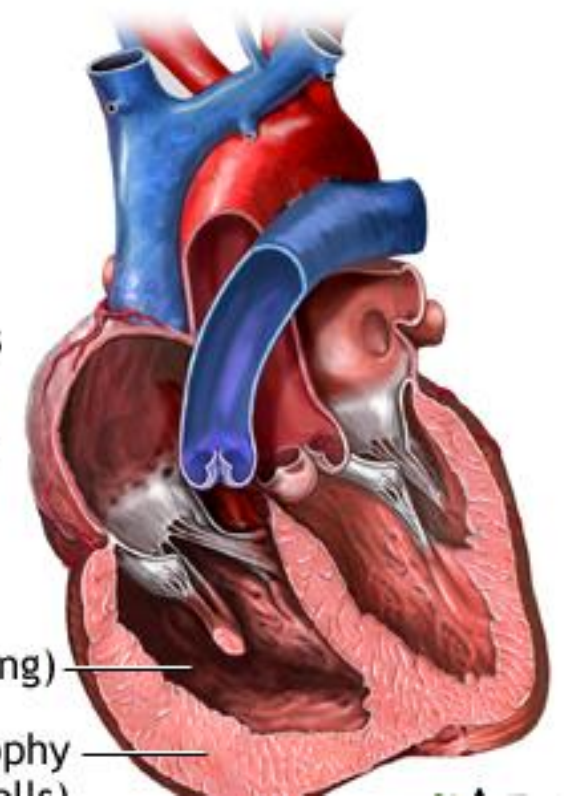
It is characterised by **right ventricular dilatation** or **hypertrophy**

Cor pulmonale, or right-sided heart failure, is an enlargement of the right ventricle due to high blood pressure in the lungs usually caused by chronic lung disease

Dilatation (stretching)

Hypertrophy

(overgrowth of cells)



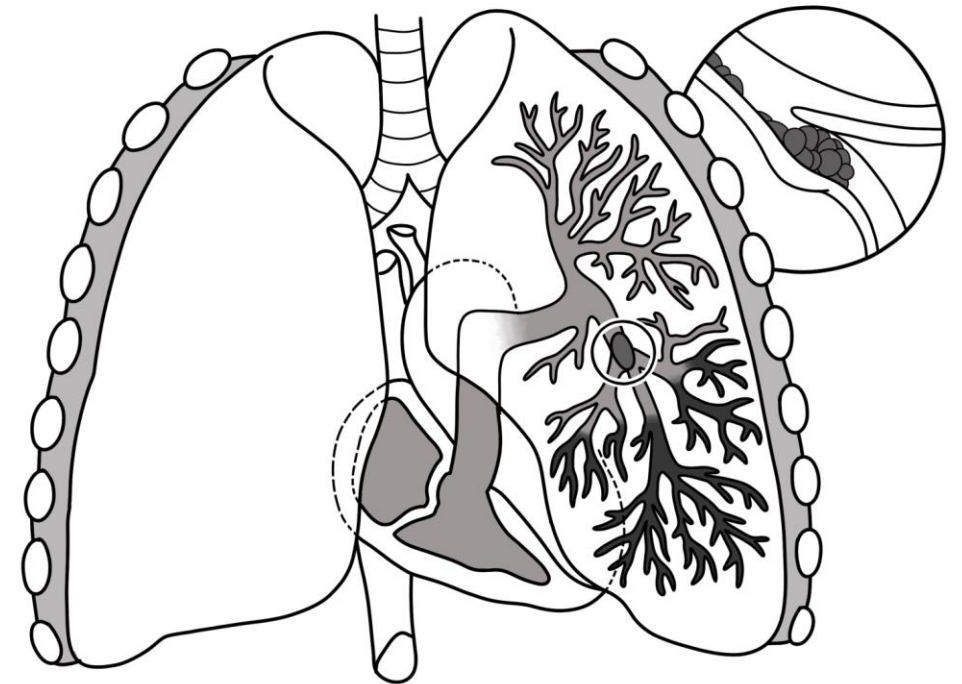


Types of cor pulmonale



Depending upon the rapidity of development, cor pulmonale may be acute or chronic:

- **Acute cor pulmonale** occurs following massive pulmonary embolism resulting in sudden dilatation of the pulmonary trunk
- **Chronic cor pulmonale** is more common and is often preceded by chronic pulmonary hypertension





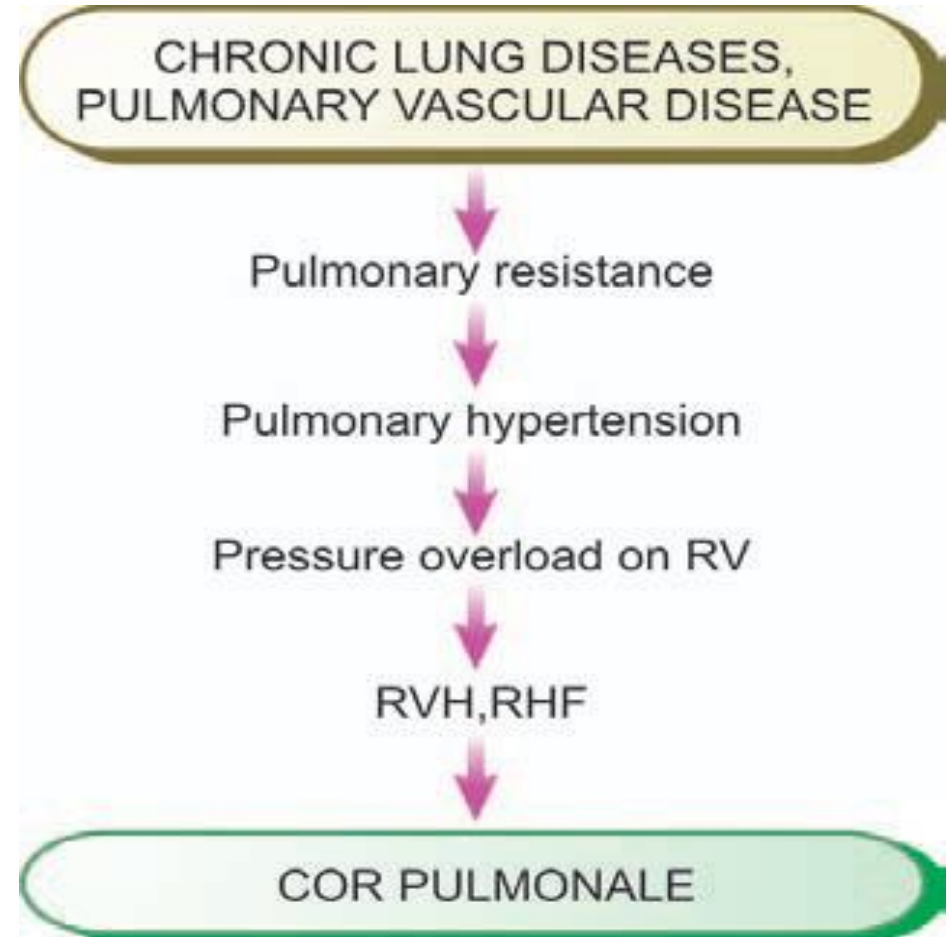
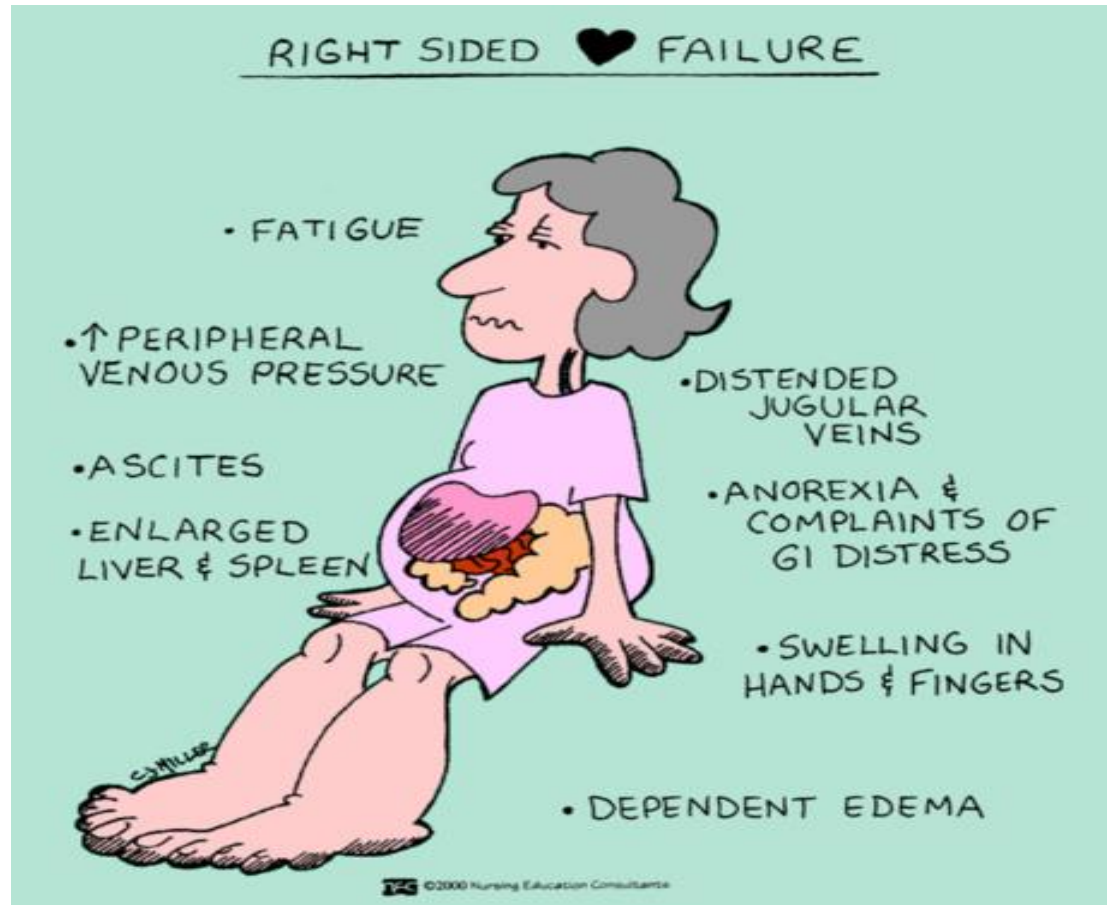
Subsequent Cor Pulmonale



- **Chronic emphysema** - the air sacs in the lungs (alveoli) are damaged
- **Chronic bronchitis** - inflammation of the lining of your bronchial tubes
- **Pulmonary tuberculosis**
- **Pneumoconiosis** - occupational lung disease
- **Cystic fibrosis** - thick and sticky mucus that can clog the lungs
- Hyperventilation in marked obesity
- Multiple organised pulmonary emboli



Pathogenesis, Signs & Symptoms





Morphology



- In *acute cor pulmonale*, there is characteristic ovoid dilatation of the right ventricle, and sometimes of the right atrium.
- In *chronic cor pulmonale*, there is increase in thickness of the right ventricular wall from its normal 3 to 5 mm up to 10 mm or more.

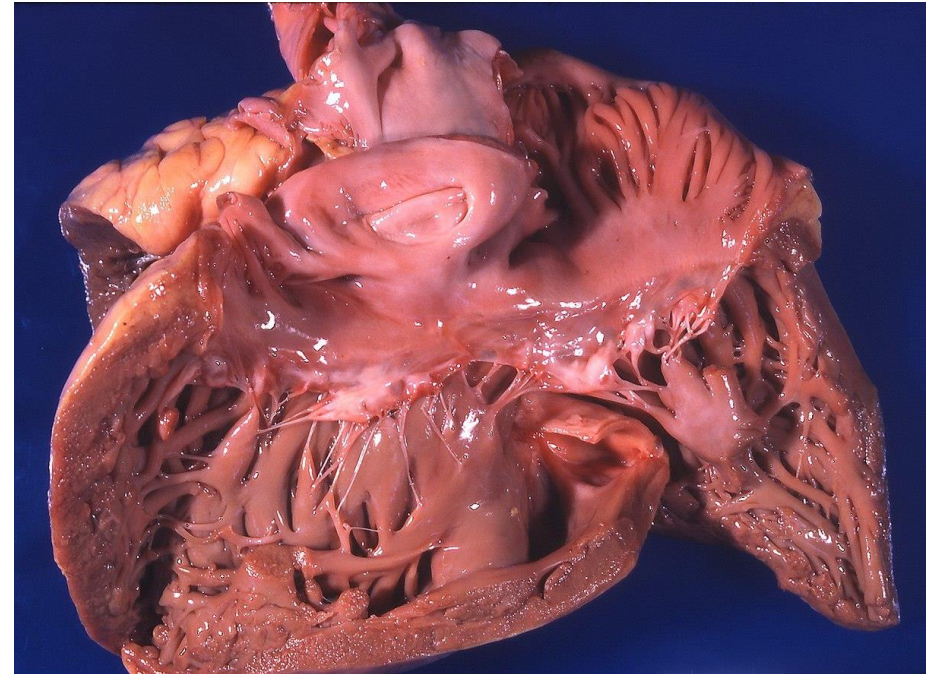




Factors that determine severity



- Hypoxia secondary to alterations in gas exchange
- Hypercapnia
- Acidosis
- Alterations in RV Volume overload that are affected by: exercise, heart rate, polycythaemia, increased salt and retention because of a fall in CO.





- **ECG** – RV Hypertrophy
- **Chest X Ray** – Enlargement of main pulmonary artery, Hilar Vessels, Descending right pulmonary artery
- **Spiral CT** – Acute Thromboembolic disease

Diagnosis



- **2D Echo** – measuring RV thickness and chamber dimensions
- **Doppler Echocardiography** – Assess pulmonary artery pressures
- **MRI** – assessing RV functions in severe lung diseases



Treatment



- Decreasing the work load of breathing using non invasive mechanical ventilation, bronchodilation and steroids.
- Adequate oxygenation (O₂ Saturation 90 – 92%) will also decrease pulmonary vascular resistance and reduces demand on the RV.
- Diuretics