

Pulmonary disorders

By: Dr. Mehrzad Salmasi



OVERVIEW

- Asthma
- COPD
- Bronchiectasis
- IPF
- Pulmonary embolism
- Pneumothorax
- Pleural effusion





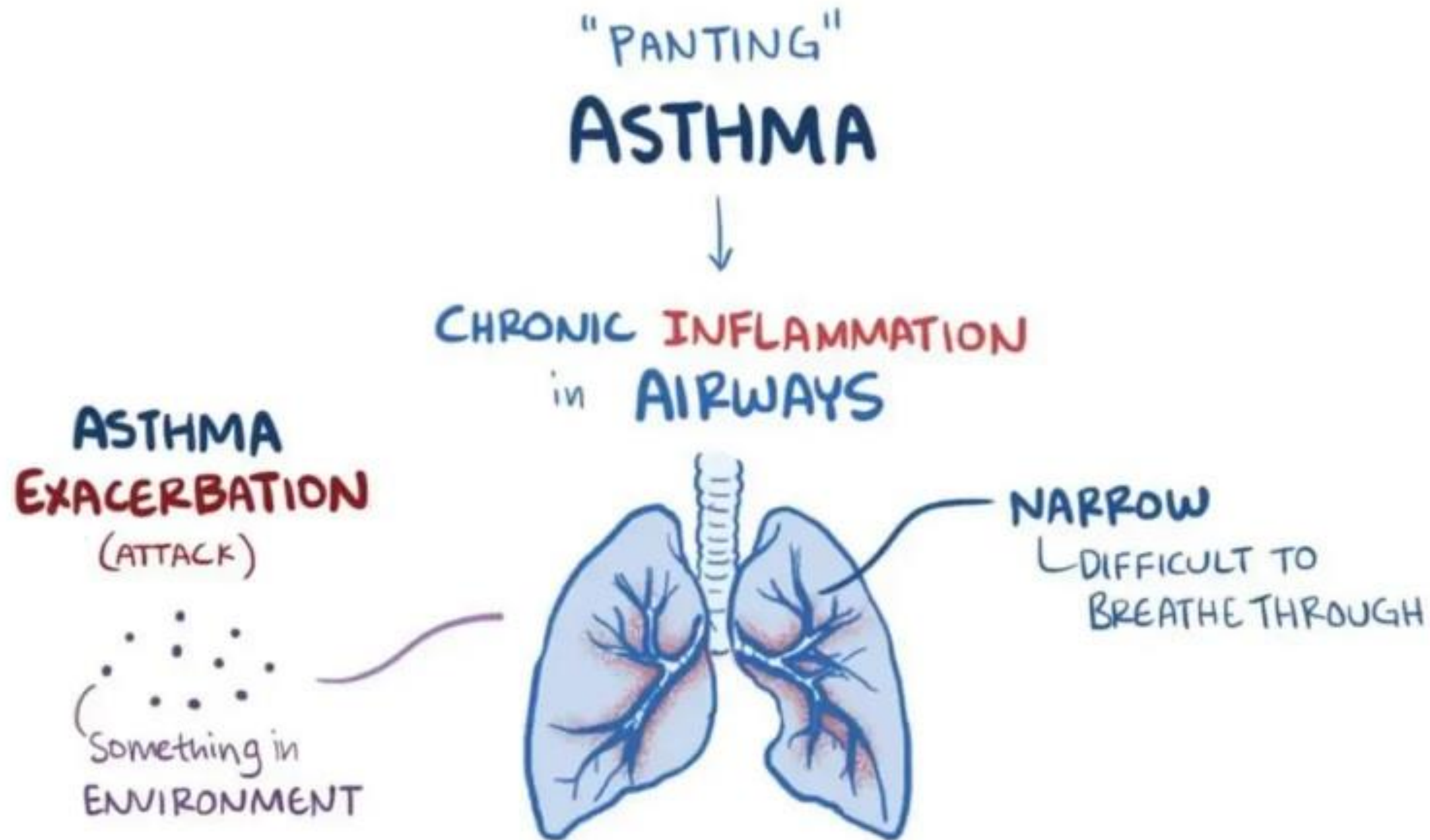
Asthma



Asthma

- Chronic airway inflammation
- History of respiratory symptoms, such as wheeze, shortness of breath, chest tightness and cough
- Vary overtime and in intensity
- Variable airflow limitation

Asthma



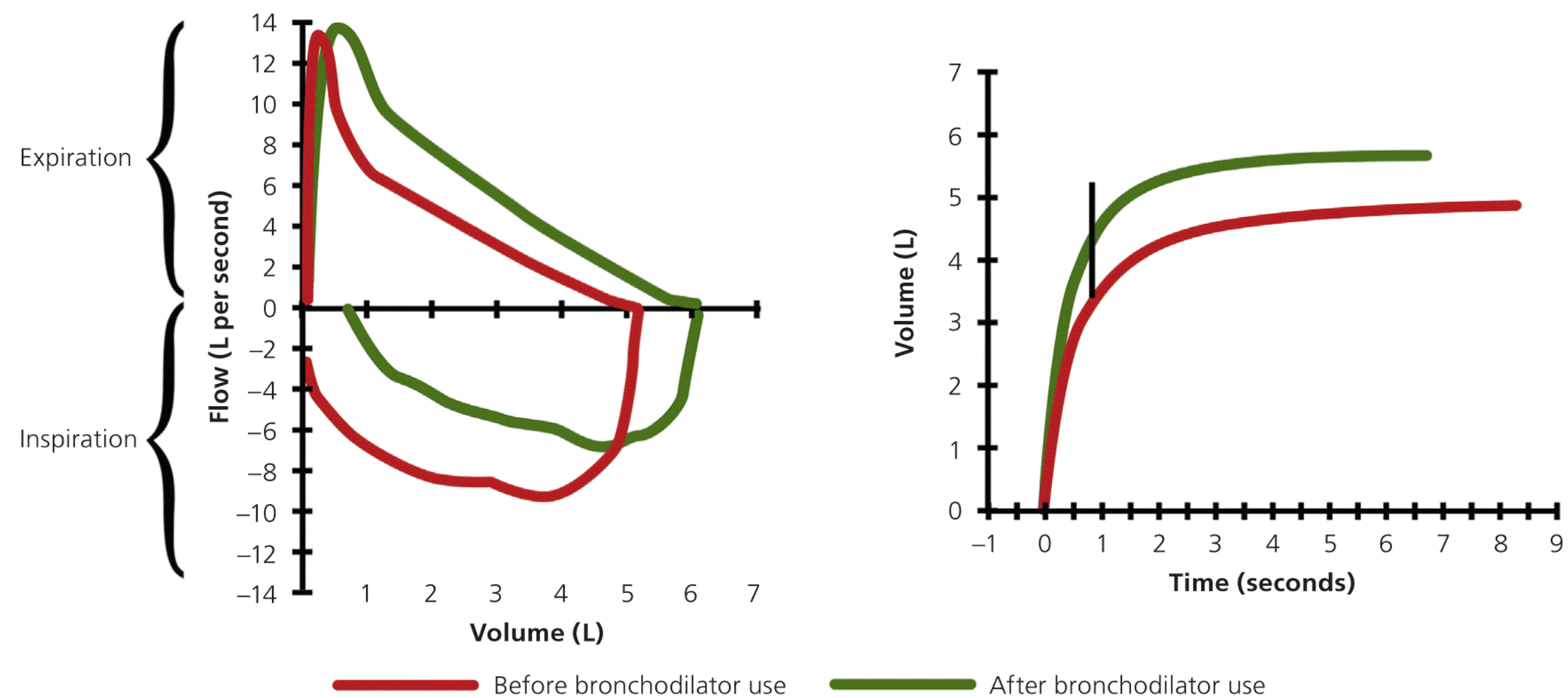
Asthma

1. HISTORY OF TYPICAL VARIABLE RESPIRATORY SYMPTOMS

<i>Feature</i>	<i>Symptoms or features that support the diagnosis of asthma</i>
Wheeze, shortness of breath, chest tightness and/or cough (Descriptors may vary by region and by age)	<ul style="list-style-type: none">• Symptoms occur variably over time and vary in intensity• Symptoms are often worse at night or on waking• Symptoms are often triggered by exercise, laughter, allergens, cold air• Symptoms worsen after end-exercise (very distinctive)• Symptoms often appear or worsen with viral infections

Asthma

Spirometry	Prebronchodilators				Postbronchodilators		
	Predicted	LLN	Actual	% of predicted	Actual	% of predicted	% change
FVC (L)	5.20	4.34	5.18 ^A	99 ^D	6.06 ^F	116	+16 ^I
FEV ₁ (L)	4.37	3.64	3.55 ^B	81 ^E	4.64 ^G	106	+30 ^J
FEV ₁ /FVC (%)	84	75	68 ^C	81	77 ^H	91	+11
FEF _{25%-75%} (L per second)	4.74	3.11	2.41	50	3.84	80	+59



Asthma imaging

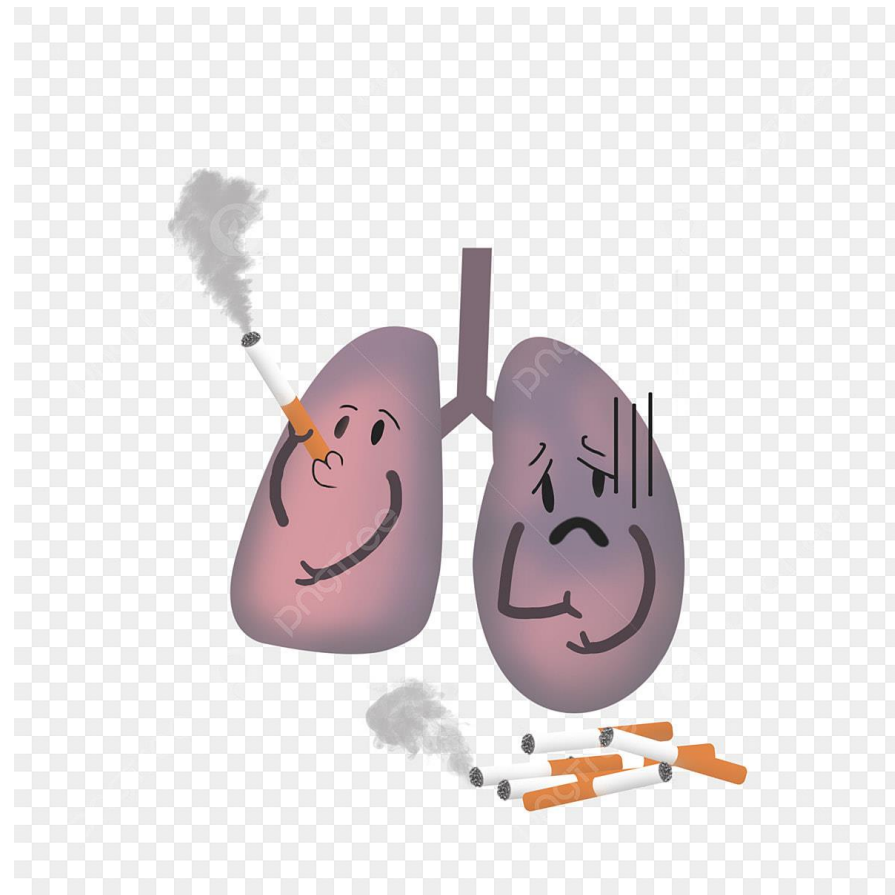
- Not routinely used in the diagnosis
- For the evaluation of an alternative diagnosis



COPD



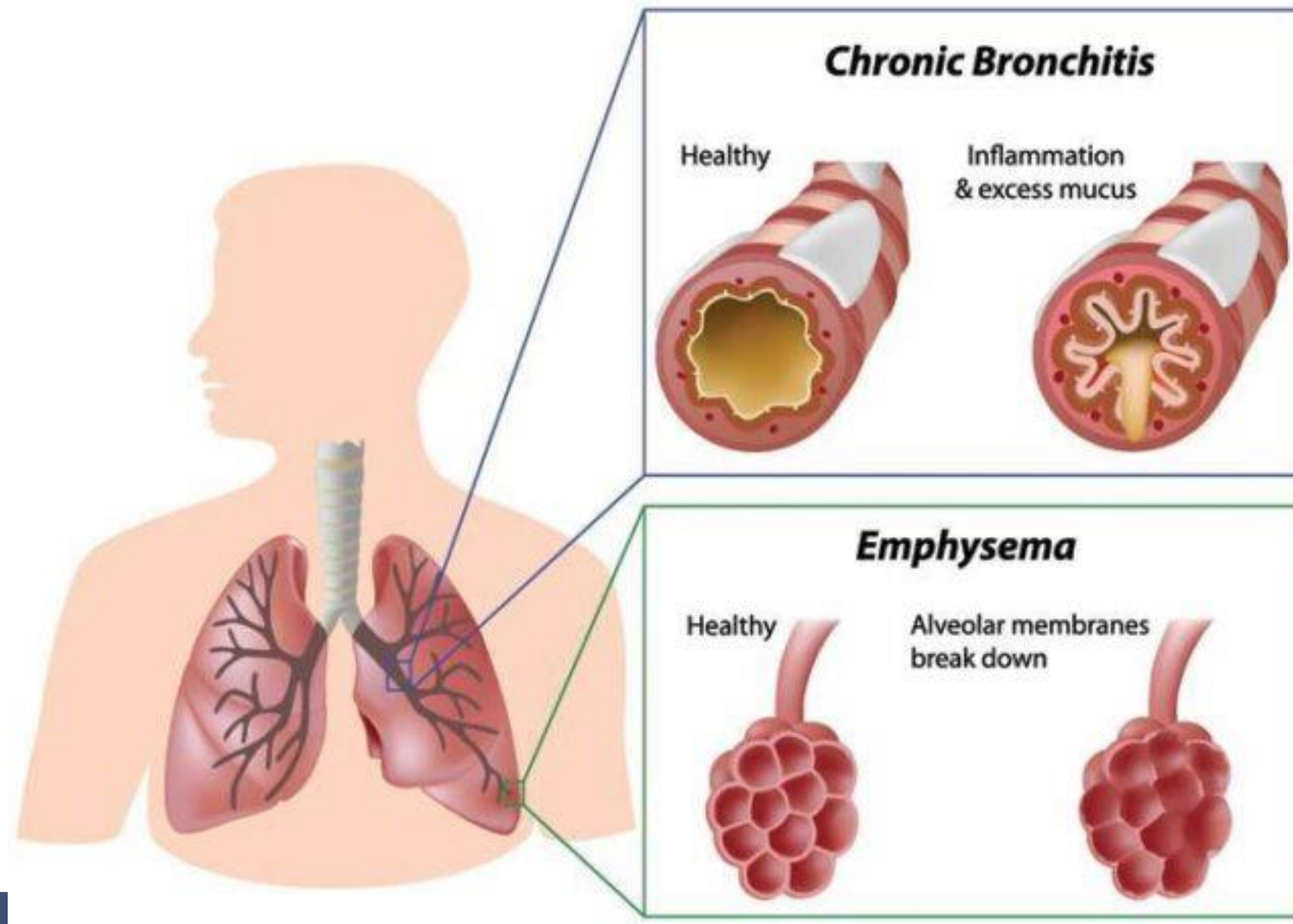
COPD



- ✓ Chronic respiratory symptoms (dyspnea, cough, and sputum production)
- ✓ Persistent, often progressive, airflow obstruction
- ✓ History of tobacco smoking or other risk factors

COPD

Chronic Obstructive Pulmonary Disease (COPD)



COPD

BLUE BLOATER

- Cough
- Overweight and cyanotic
- Elevated Hemoglobin
- Peripheral Edema
- Rattling noises present while breathing
- Wheezing

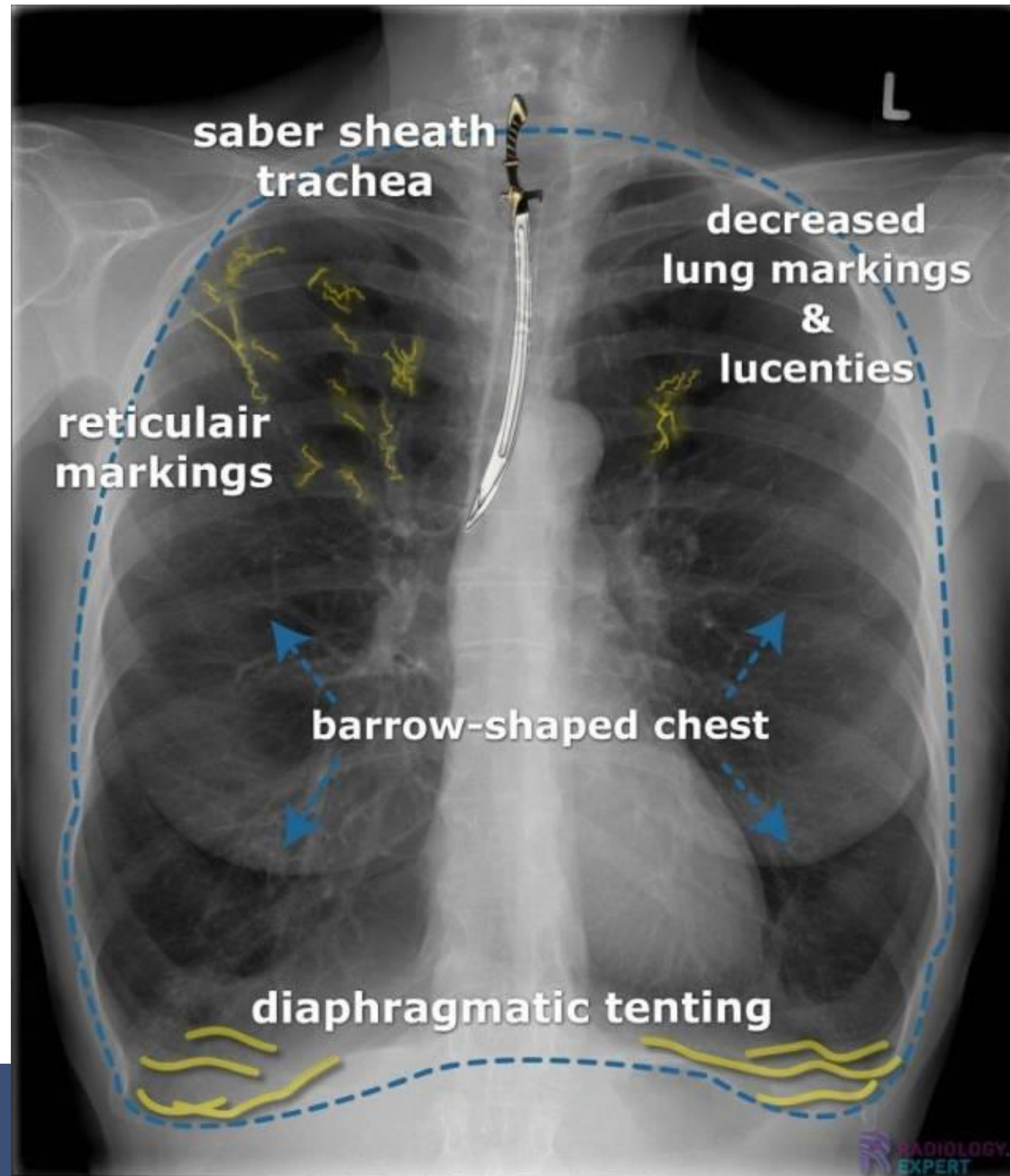


PINK PUFFER

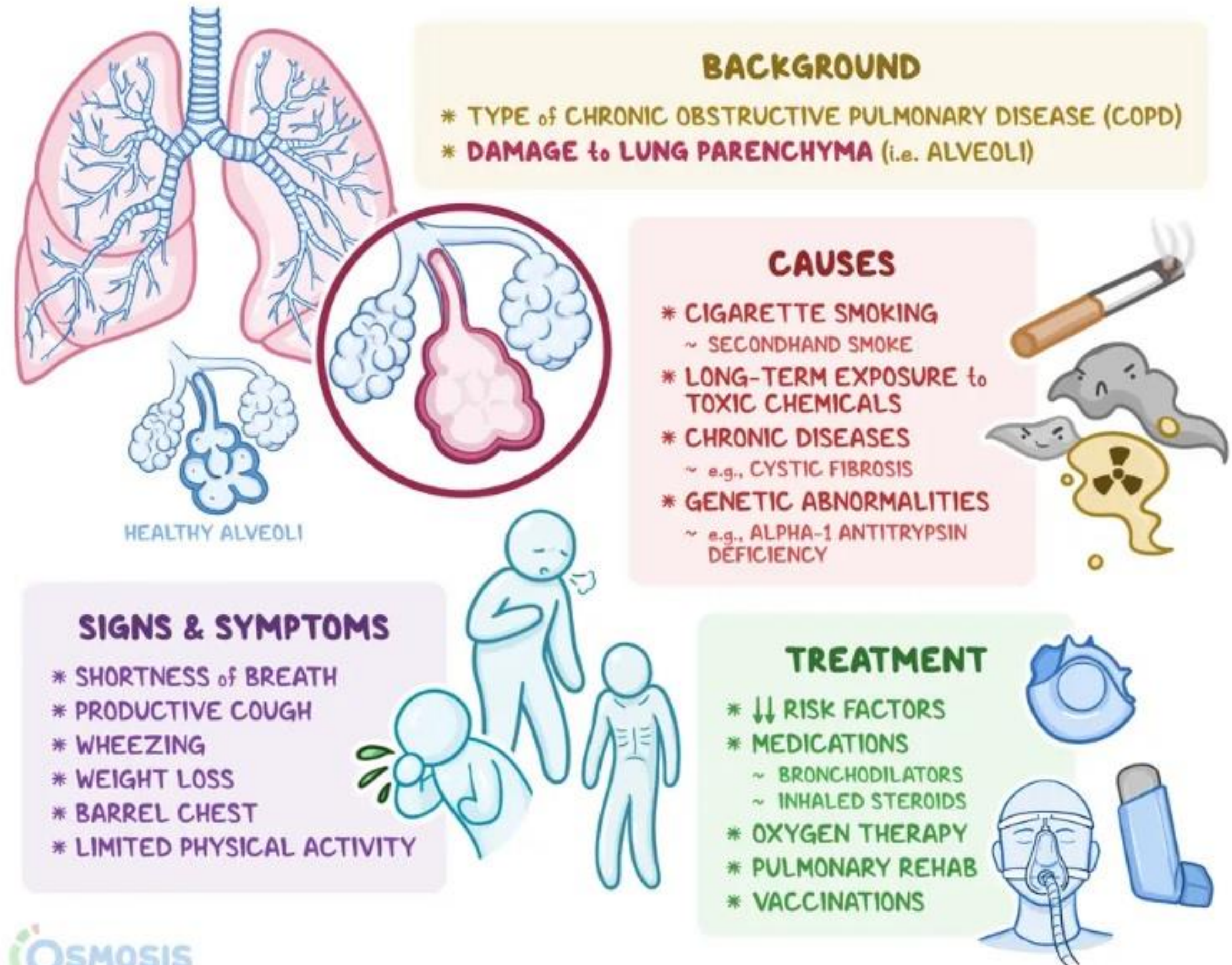
- Labored Breathing
- Older and very thin
- "Barrel Chest"
- Shortness of breath
- Use accessory muscles to breathe
- Frequent respiratory infections



COPD



COPD

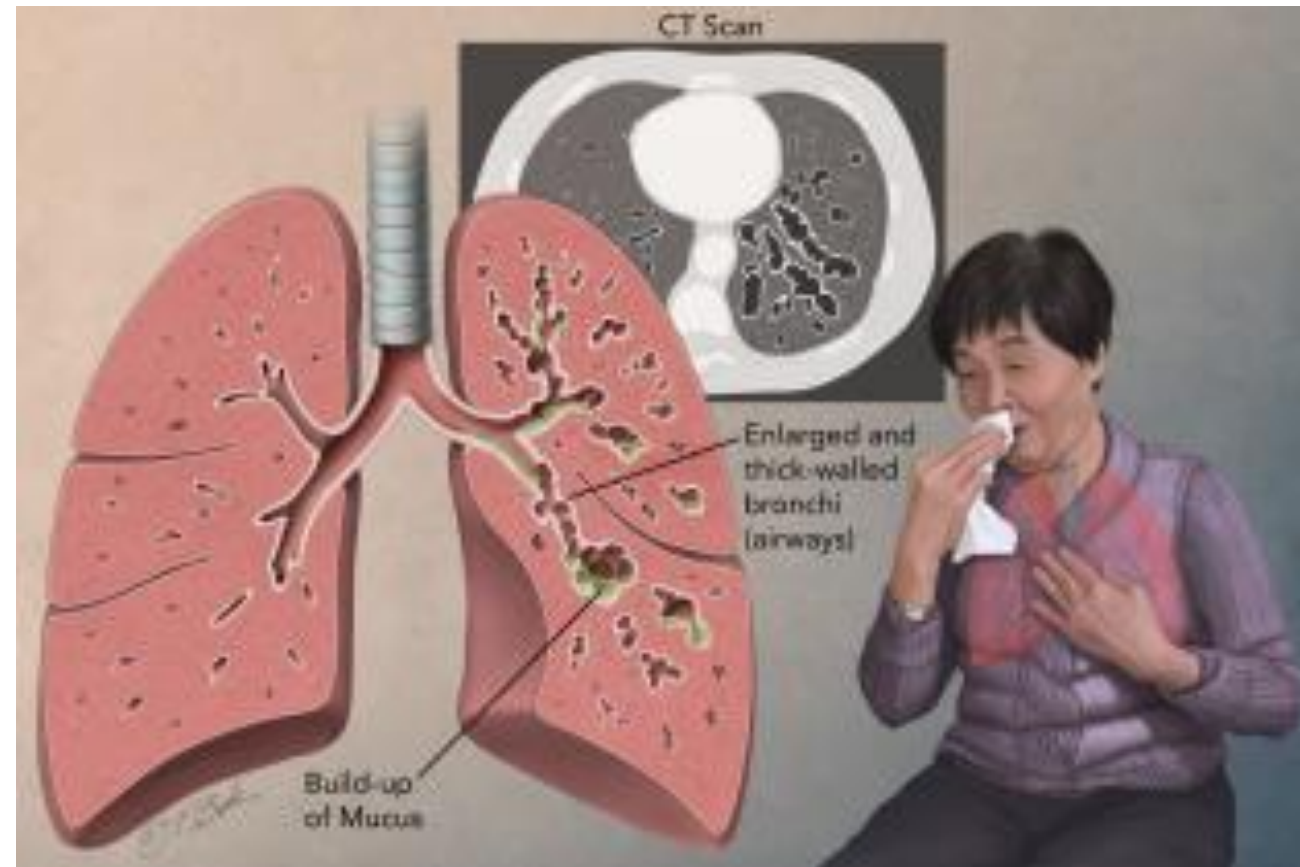




Bronchiectasis



Bronchiectasis

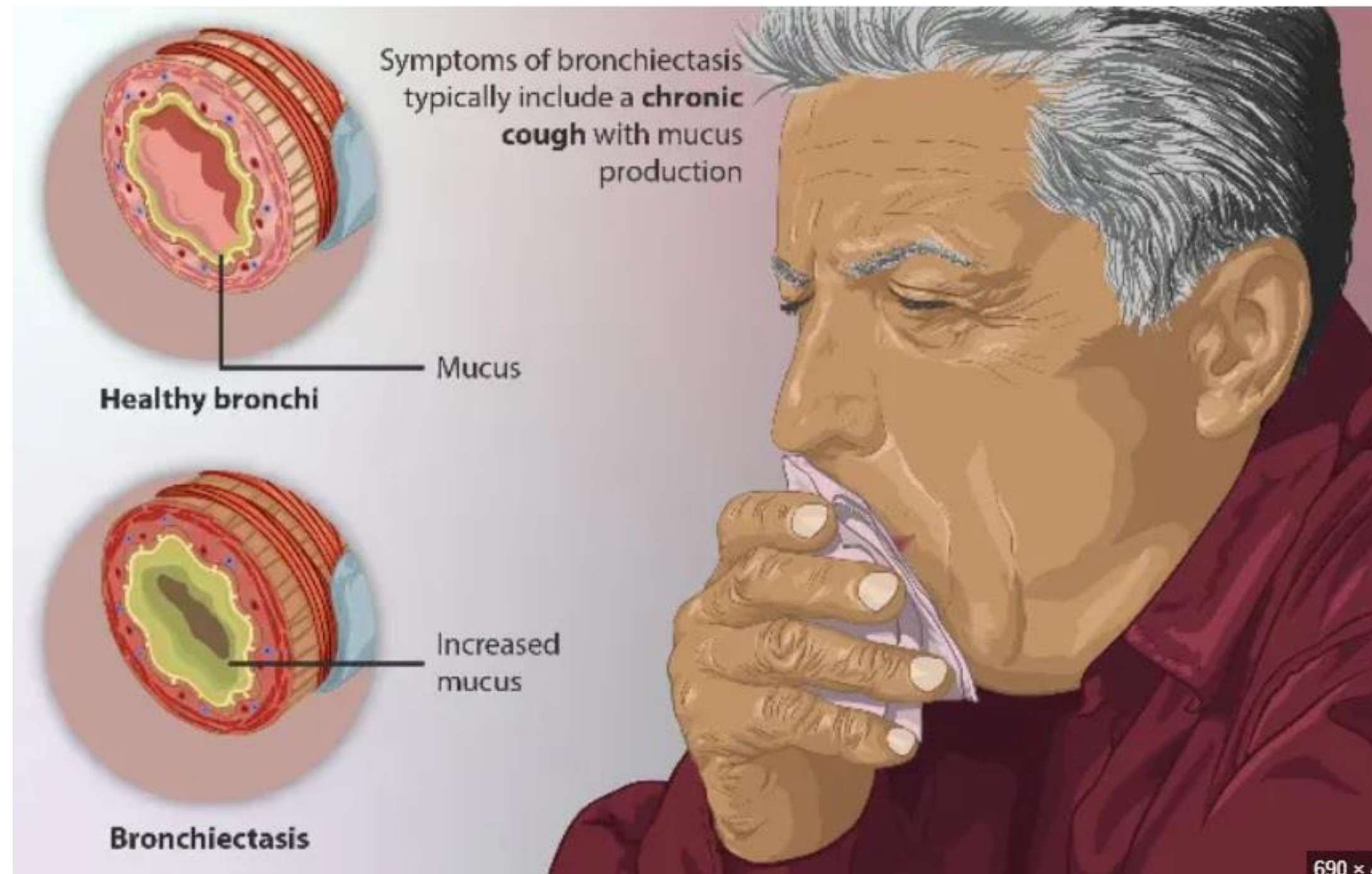


✓ A clinical syndrome of cough, sputum production and bronchial infection

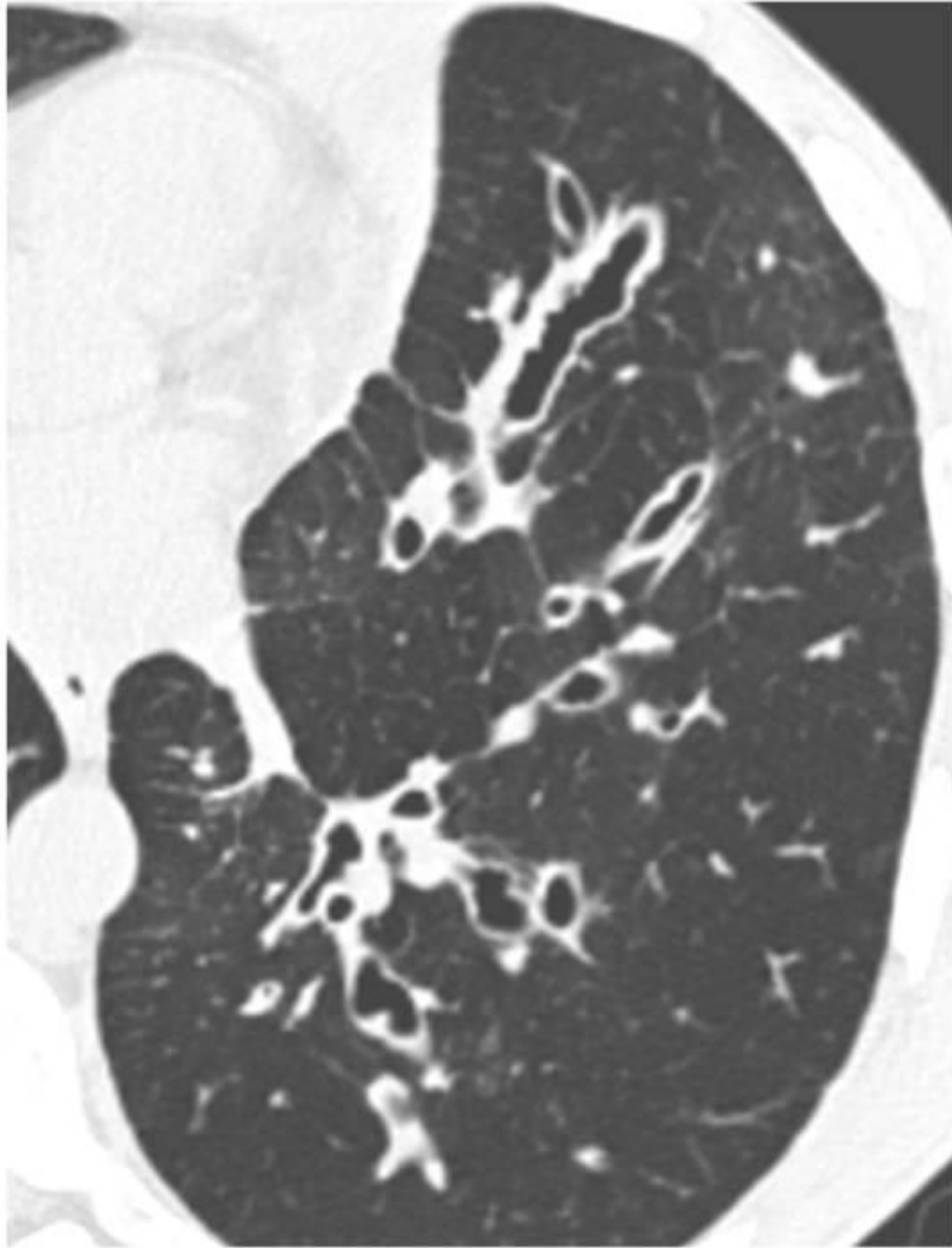
✓ Abnormal and permanent dilatation of the bronchi in imaging

✓ Recurrent exacerbations due to infection

Bronchiectasis



Bronchiectasis



Bronchiectasis

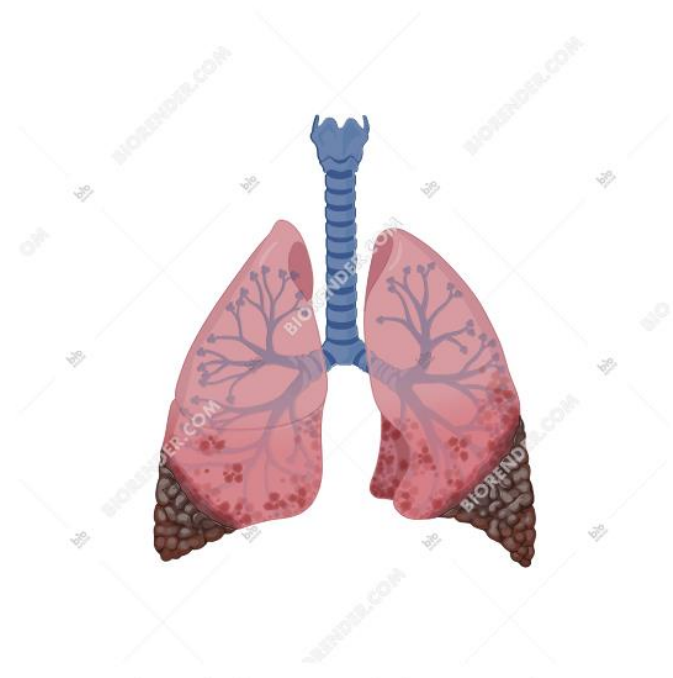




Idiopathic Pulmonary Fibrosis



Idiopathic Pulmonary Fibrosis (IPF)

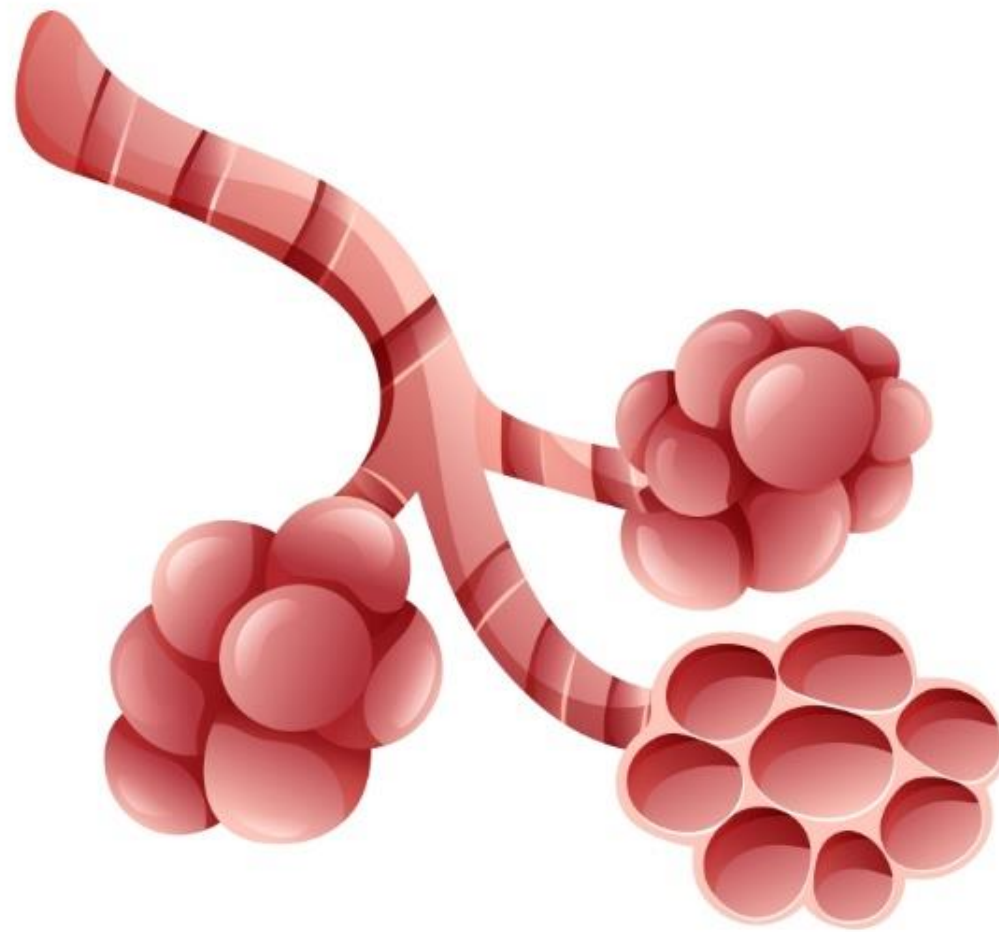
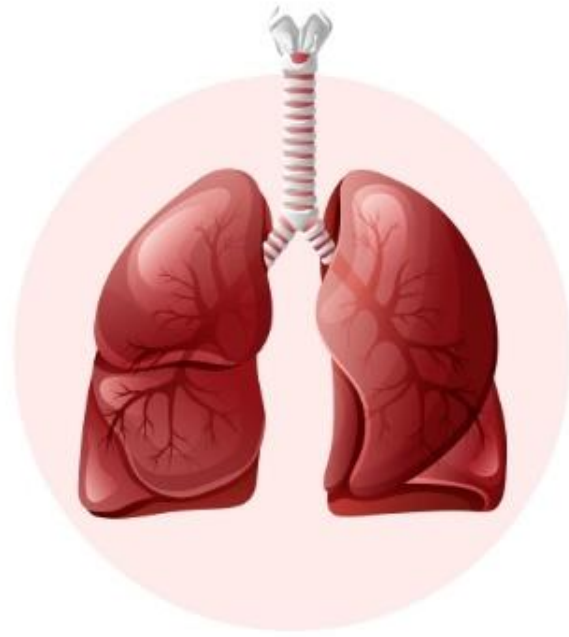


Use thousands of science icons for free at BioRender.com

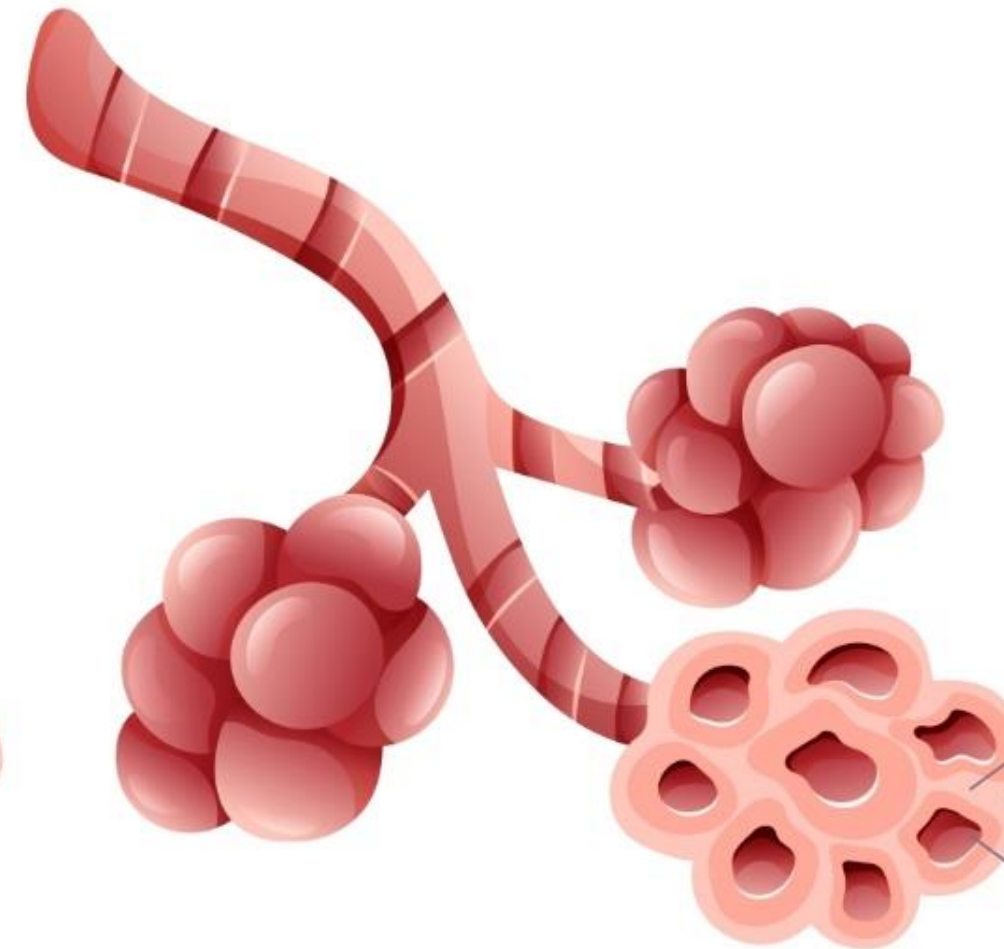
- ✓ A specific form of chronic, progressive fibrosing interstitial pneumonia of unknown cause, primarily occurring in older adults
- ✓ Gradual onset (often >6 mo) of exertional dyspnea and/or a nonproductive cough
- ✓ Hypoxia, weight loss, clubbing

IPF

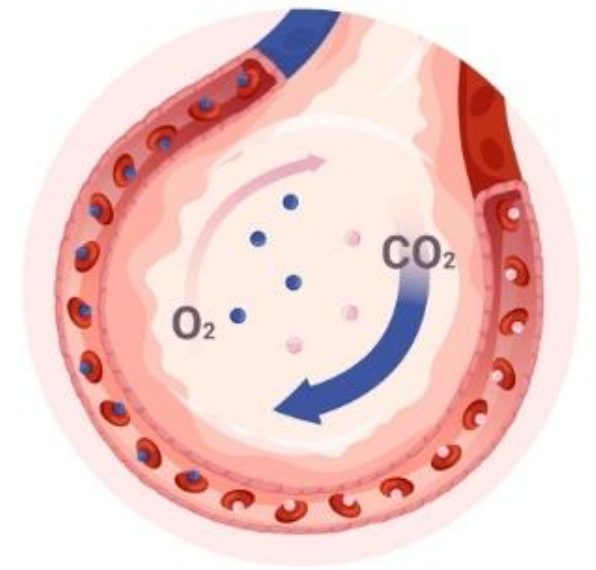
IDIOPATHIC PULMONARY FIBROSIS



HEALTHY ALVEOLI



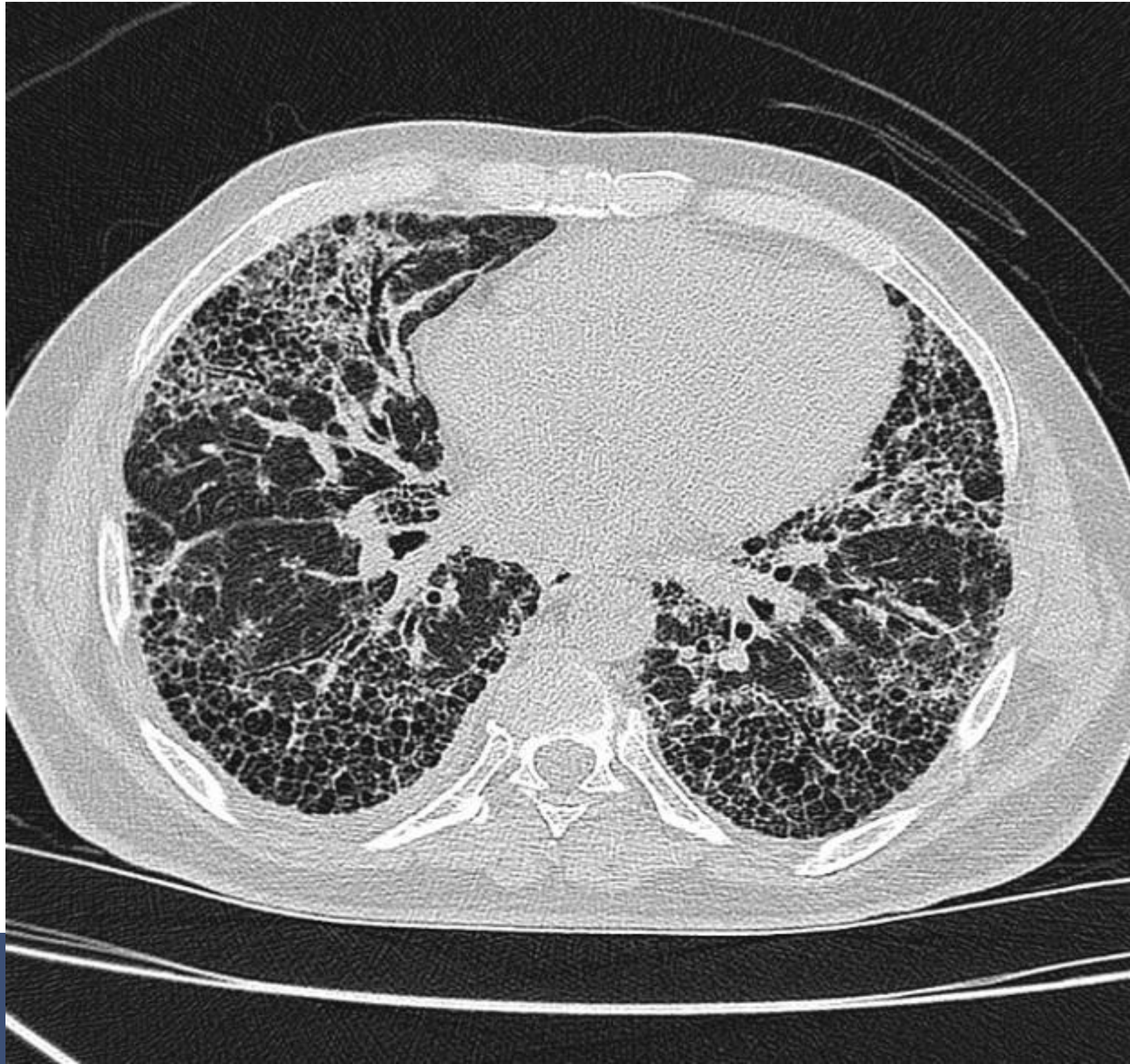
PULMONARY FIBROSIS



THICKENED
ALVEOLAR WALL

IMPAIRED
GAS EXCHANGE

IPF

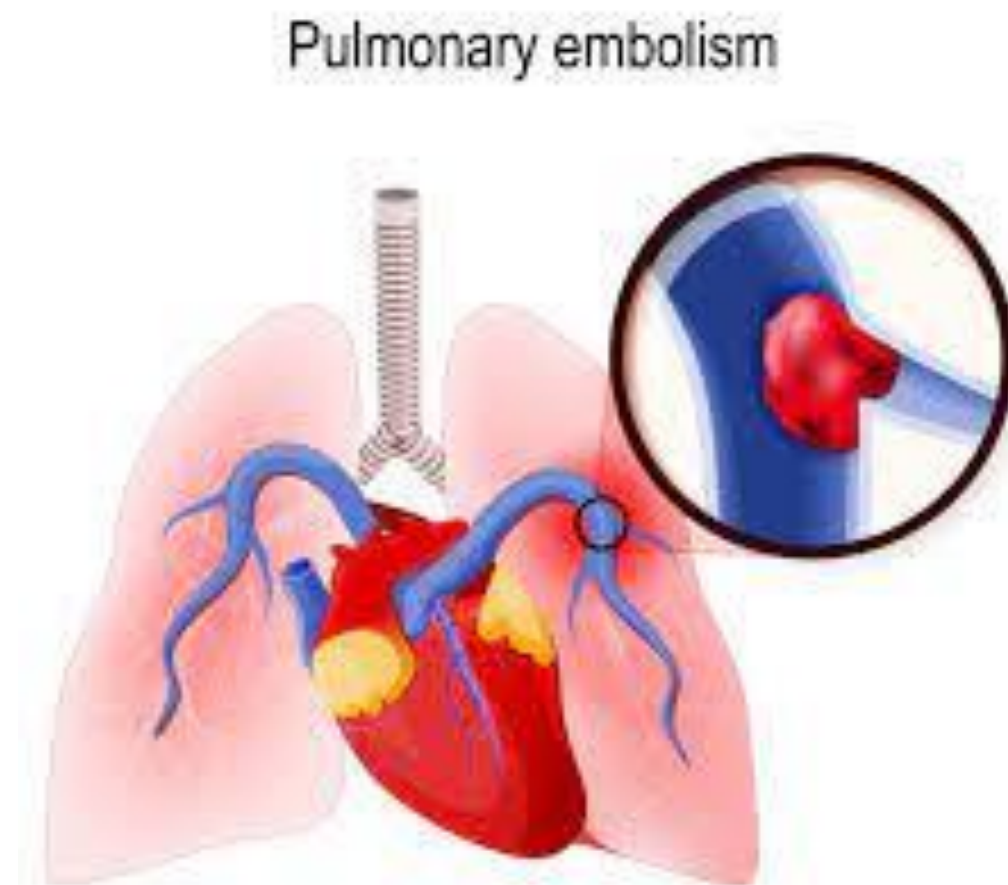




Pulmonary embolism



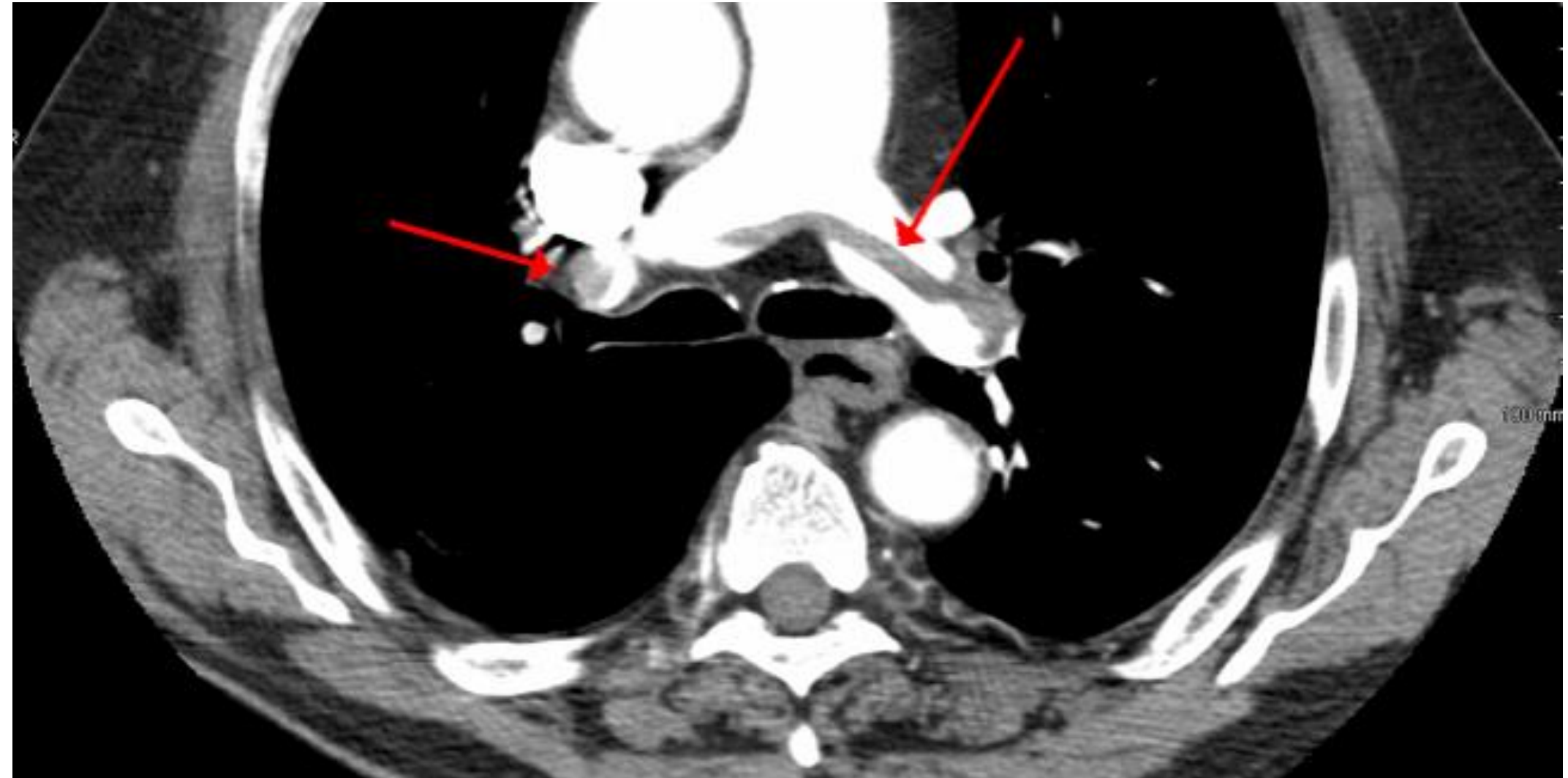
Pulmonary embolism



- ✓ Symptoms include: shortness of breath, chest pain, hemoptysis, and fainting
- ✓ Signs: tachycardia, tachypnea, leg edema, hypoxia
- ✓ Risk factors: fracture of lower limb, recent surgery, hospitalization, major trauma, immobilization

Pulmonary embolism diagnosis

Lung CT angiography, V/Q scan,
Pulmonary angiography



Massive PTE

(1) Cardiac arrest

Need for cardiopulmonary resuscitation

(3) Persistent hypotension

Systolic BP < 90 mmHg or systolic BP drop ≥ 40 mmHg, lasting longer than 15 min and not caused by new-onset arrhythmia, hypovolaemia, or sepsis

(2) Obstructive shock^{68–70}

Systolic BP < 90 mmHg or vasopressors required to achieve a BP ≥ 90 mmHg despite adequate filling status

And

End-organ hypoperfusion (altered mental status; cold, clammy skin; oliguria/anuria; increased serum lactate)

Contraindication of anticoagulation



Difficult to control bleeding



Platelet lower than 25000



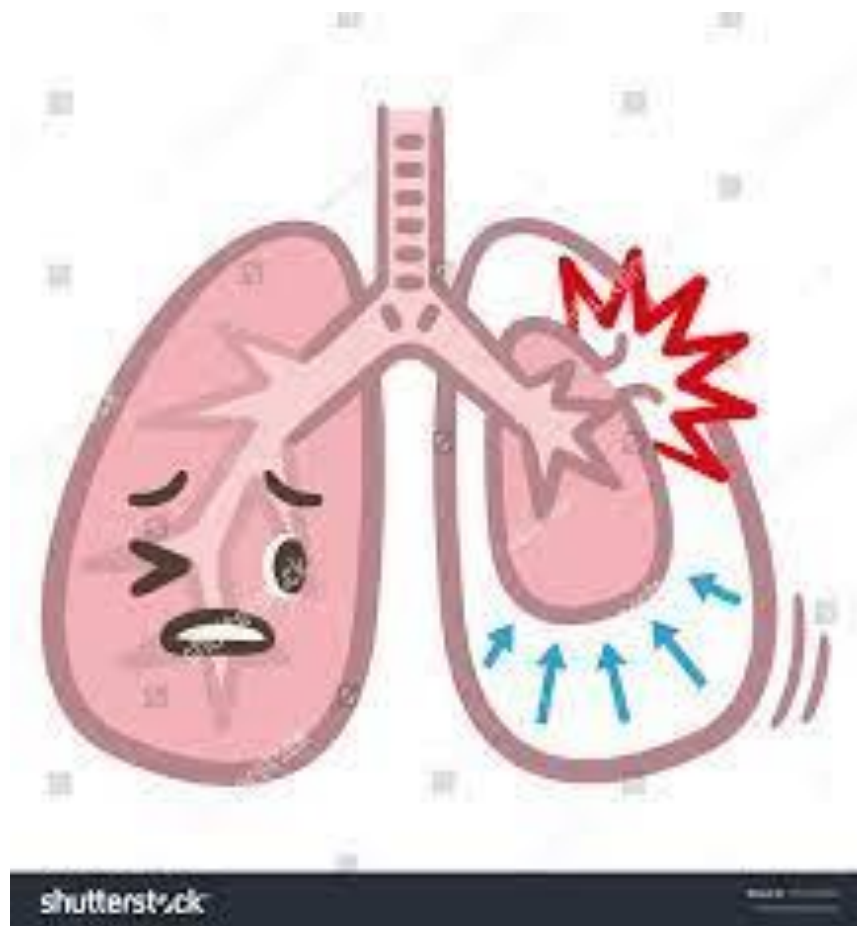
Intracranial bleeding in the last 30 days



Pneumothorax

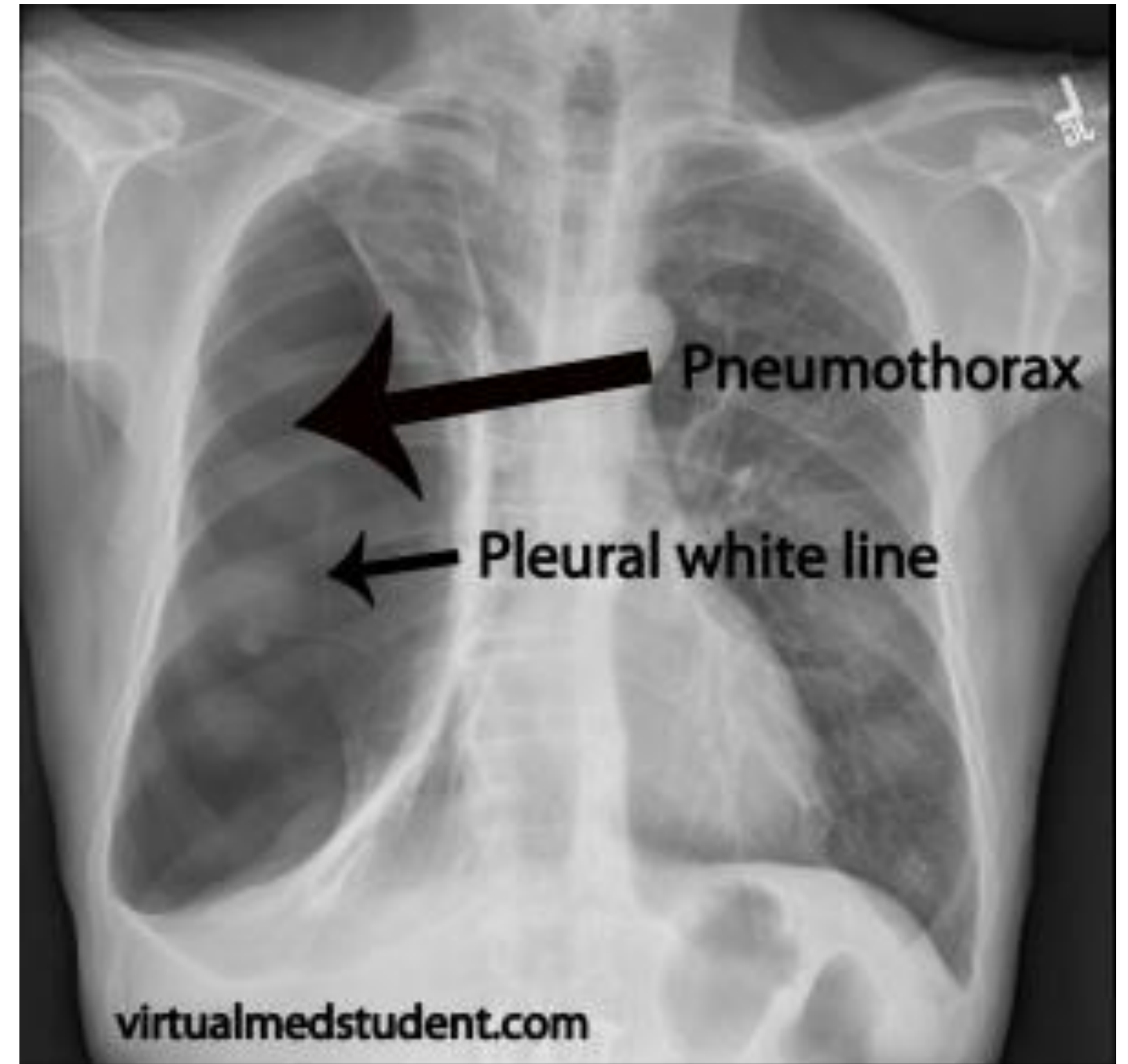
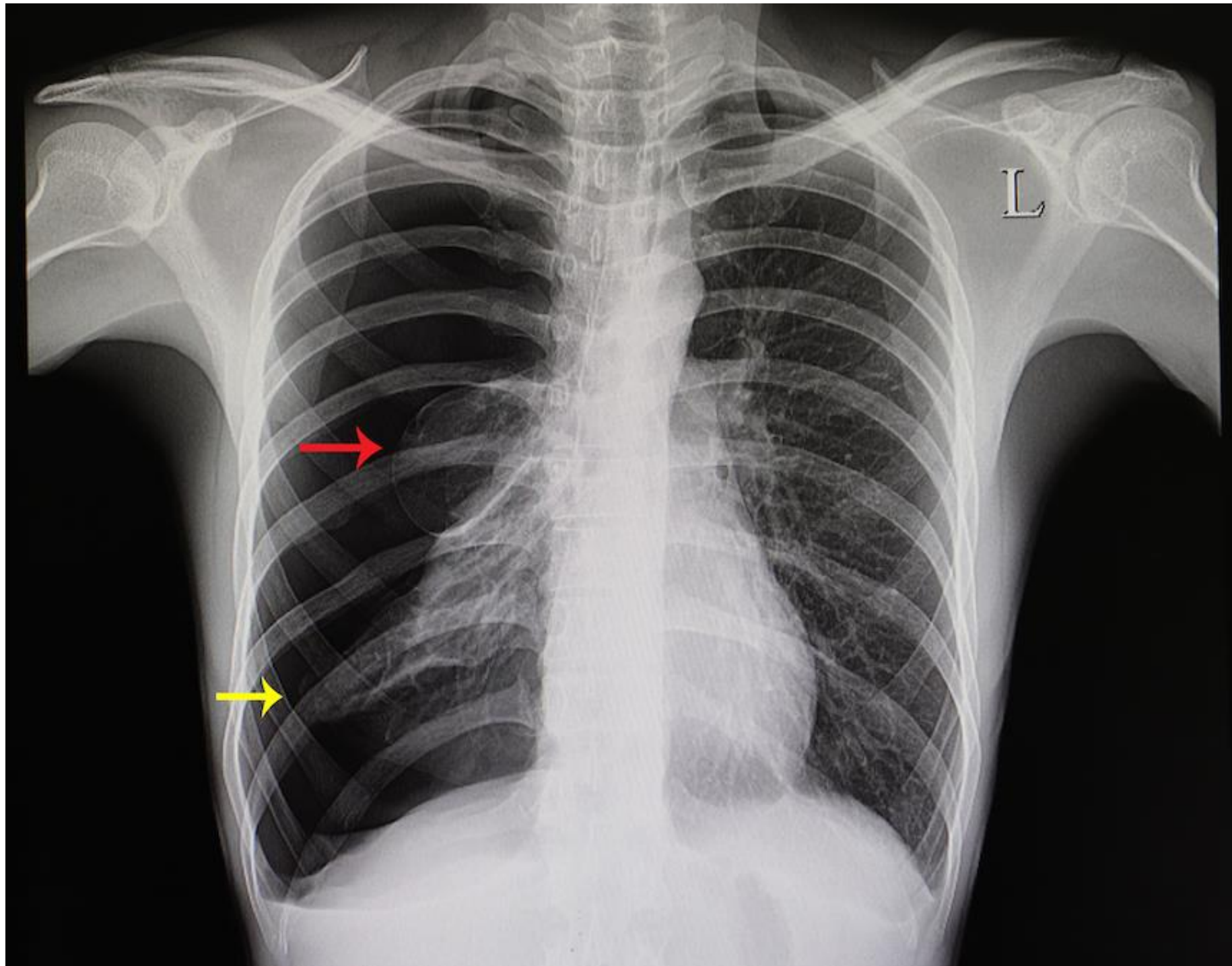


Pneumothorax



- ✓ Air in the pleural space
- ✓ Primary spontaneous, Secondary
- ✓ Symptoms and signs: chest pain, shortness of breath, ipsilateral decreased breath sounds

Pneumothorax

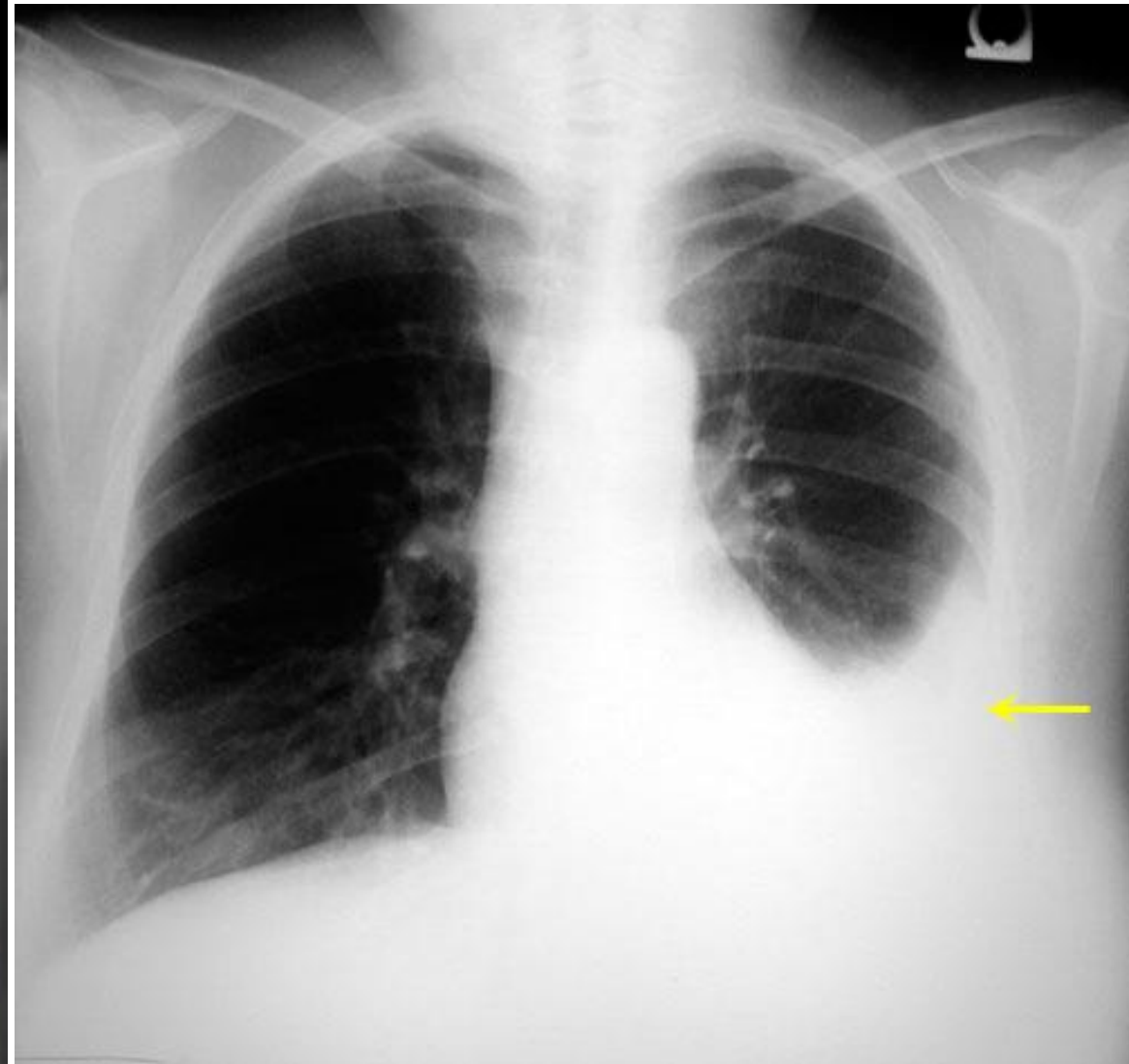
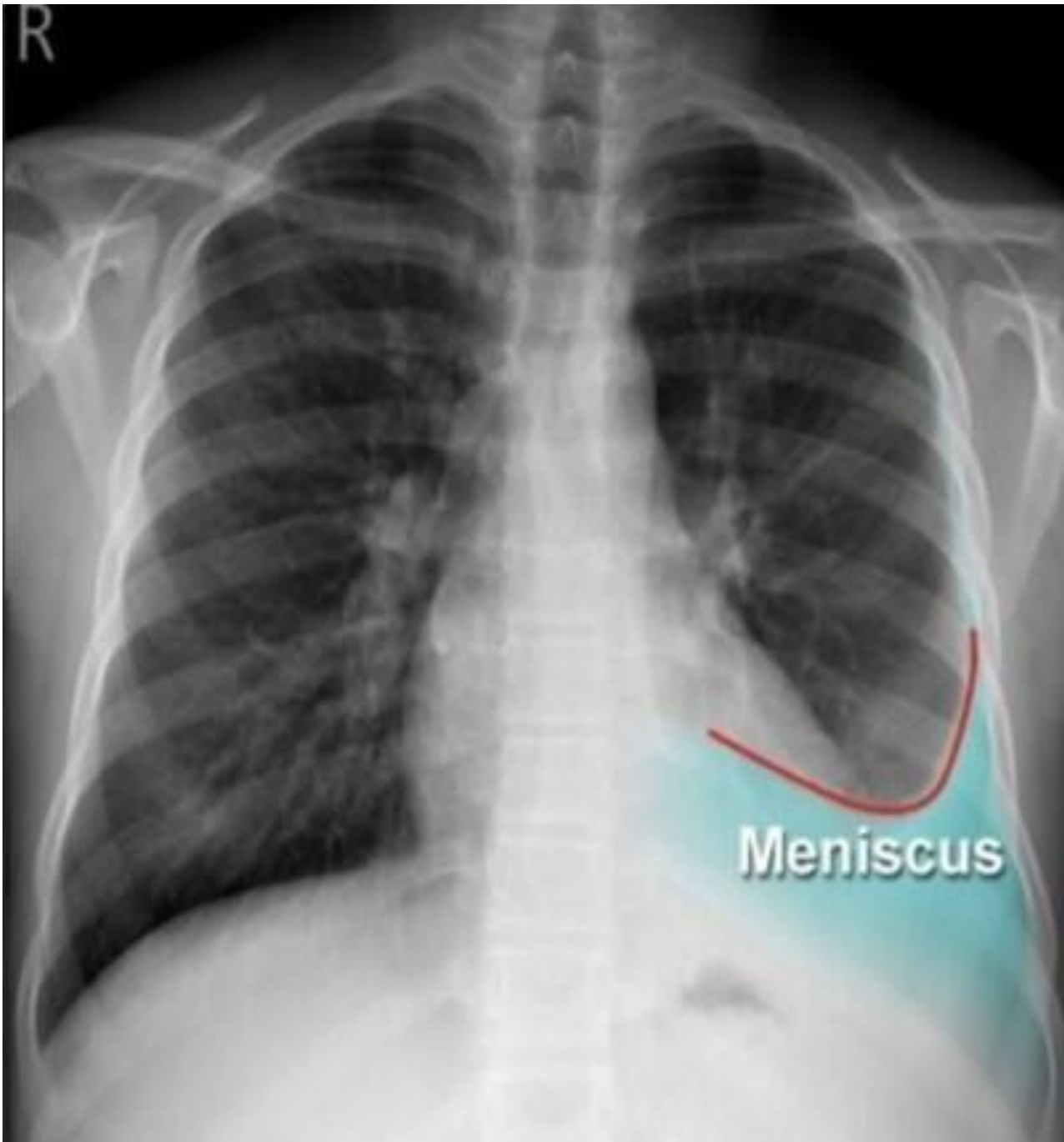




Pleural effusion



Pleural effusion



Pleural effusion

Pleural fluid	PF/serum protein ratio	PF/serum LD ratio	PF LD (U/L)
Transudative	< 0.5	< 0.6	< 2/3 URL
Exudative*	≥ 0.5	≥ 0.6	≥ 2/3 URL

*Effusions are identified as exudative if one or more conditions are met.

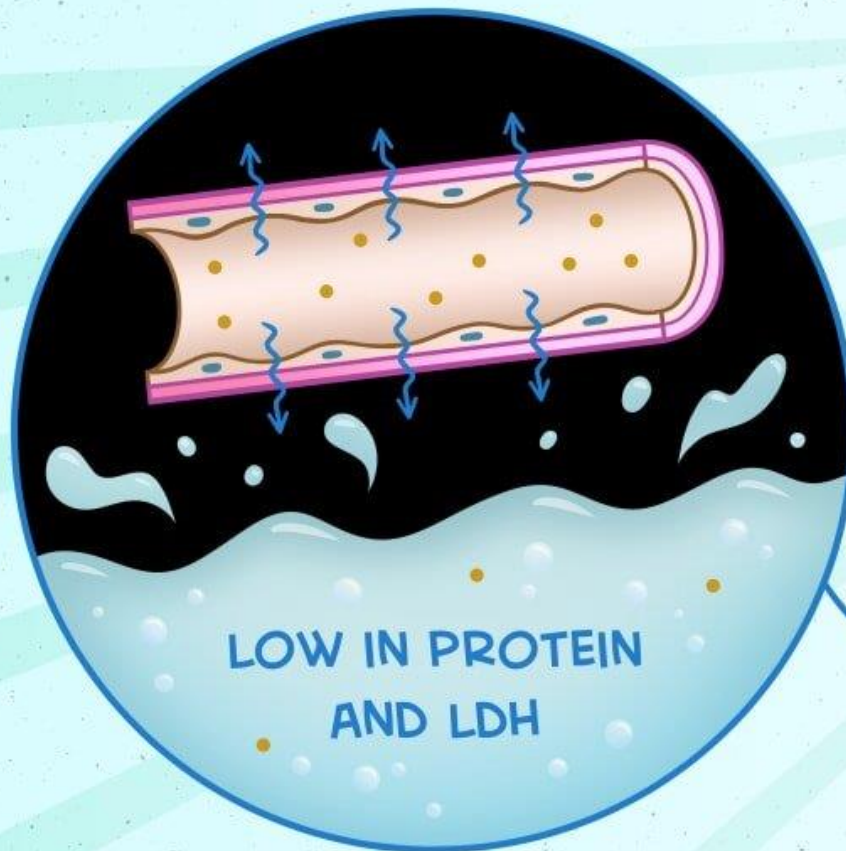
LD – lactate dehydrogenase; PF – pleural fluid; URL – upper reference limit of serum LD.

Pleural effusion

TRANSUDATIVE

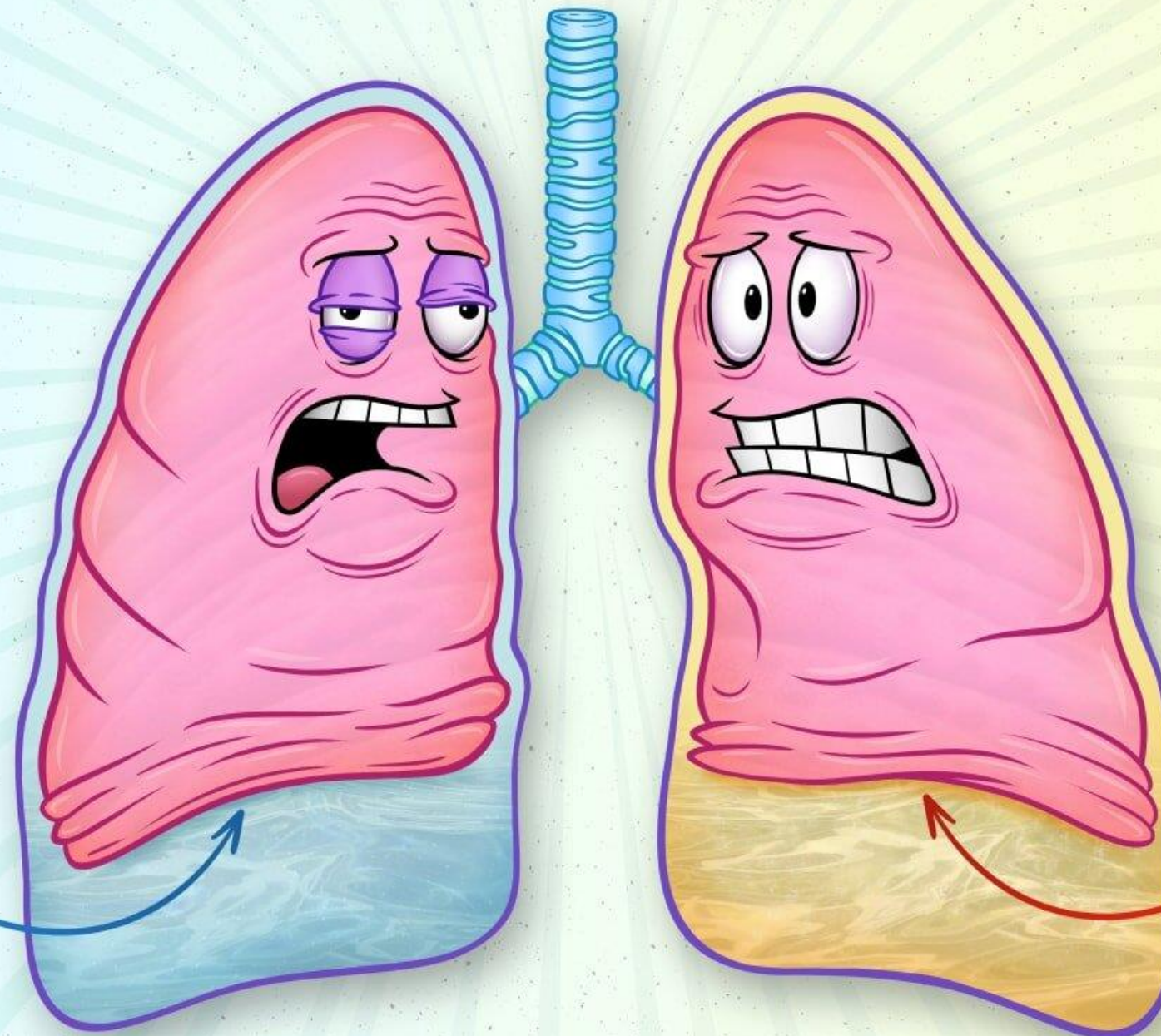
OCCURS DUE TO INCREASED
HYDROSTATIC PRESSURE OR LOW
PLASMA ONCOTIC PRESSURE

E.G., CHF, CIRRHOSIS, NEPHROTIC
SYNDROME, PE, HYPOALBUMINEMIA



PLEURAL EFFUSION

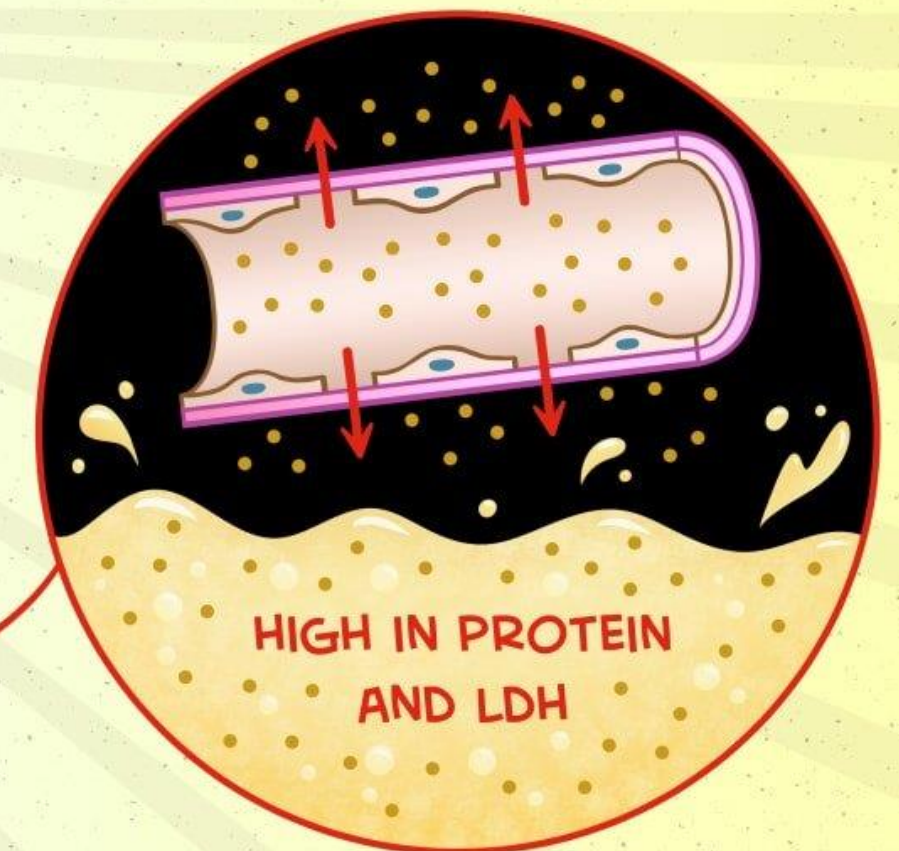
ACCUMULATION OF FLUID WITHIN THE PLEURAL SPACE



EXUDATIVE

OCCURS DUE TO
INFLAMMATION AND INCREASED
CAPILLARY PERMEABILITY

E.G., PNEUMONIA, CANCER, TB,
VIRAL INFECTION, PE, AUTOIMMUNE





THANK YOU

For your attention

