

COPD

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

PA26.3 Define and describe the etiology, types, pathogenesis, stages, morphology and complications and evaluation of Obstructive airway disease (OAD) and bronchiectasis

Domain: K

Level: KH

Core: Y

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Obstructive lung diseases

Increase in resistance to airflow due to diffuse airway disease, which may affect any level of the respiratory tract.

FEV1/FVC ratio < 0.7

COPD: Emphysema, Chronic Bronchitis
Asthma, bronchiectasis

Restrictive lung diseases

Reduced expansion of lung parenchyma and decreased total lung capacity

FEV1/FVC ratio remains constant

Chest wall disorders and chronic interstitial and infiltrative diseases

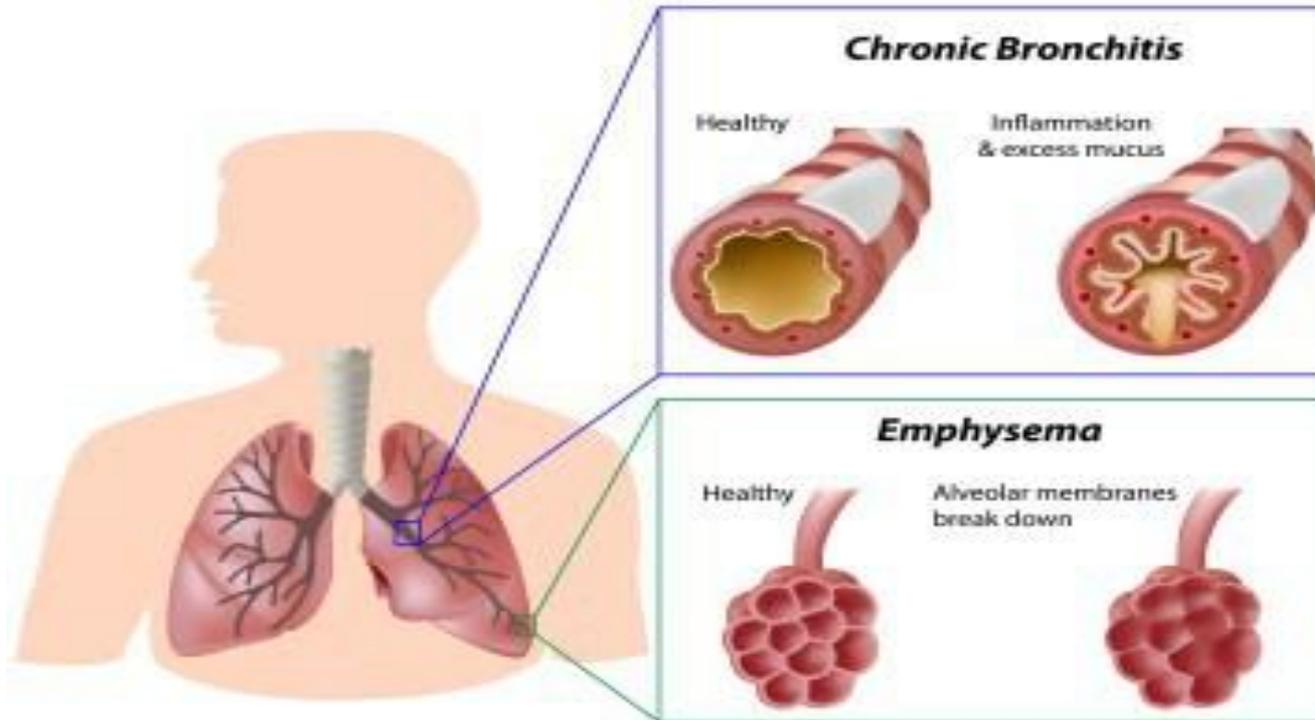
PFTs, Forced expiratory volume at S1, Forced ventilatory capacity

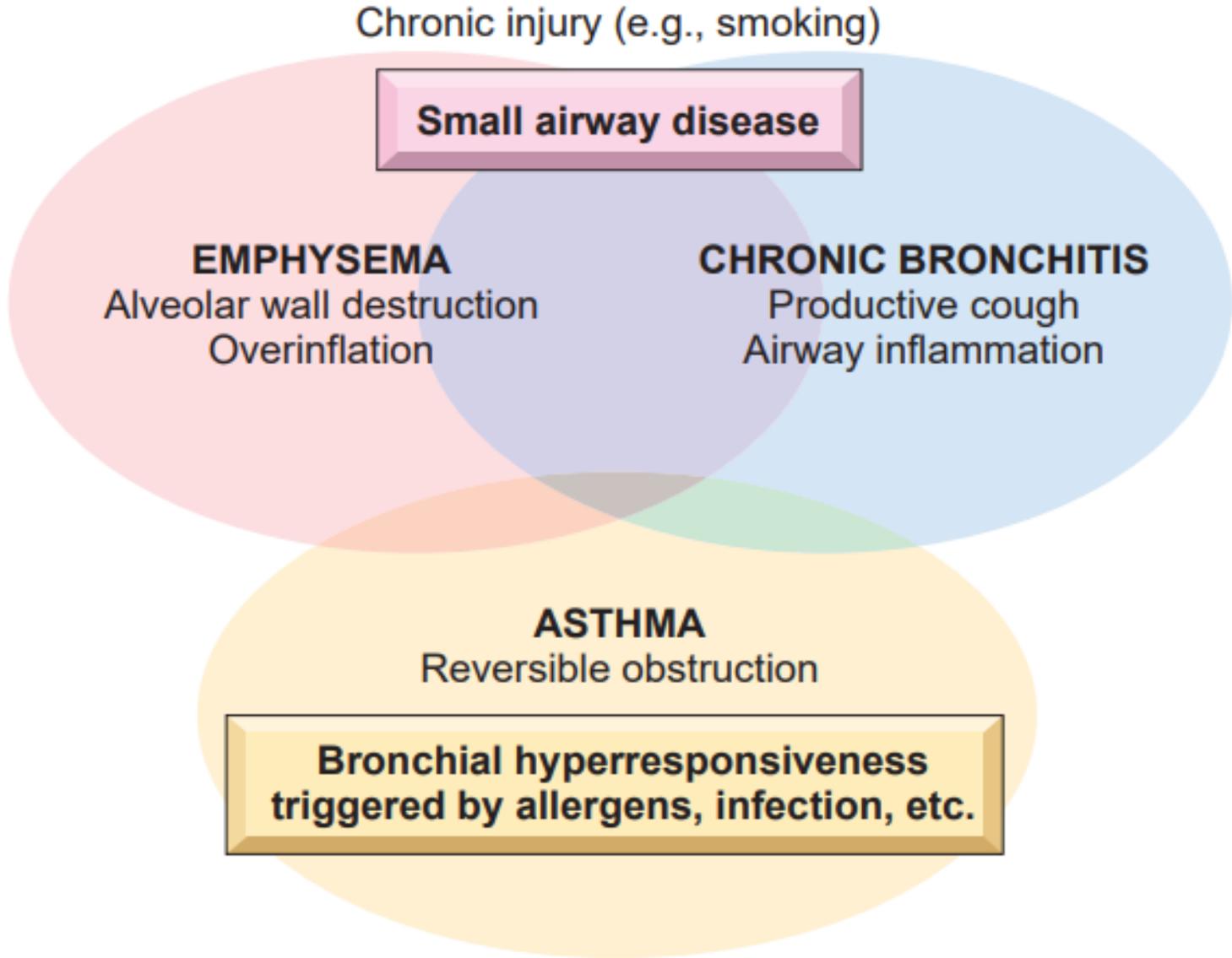


Clinical Term	Anatomical Site
Chronic Bronchitis	Bronchus
Bronchiectasis	Bronchus
Asthma	Bronchus
Emphysema	Acinus
Small airway disease (Bronchiolitis)	Bronchiole



Chronic Obstructive Pulmonary Disease (COPD)





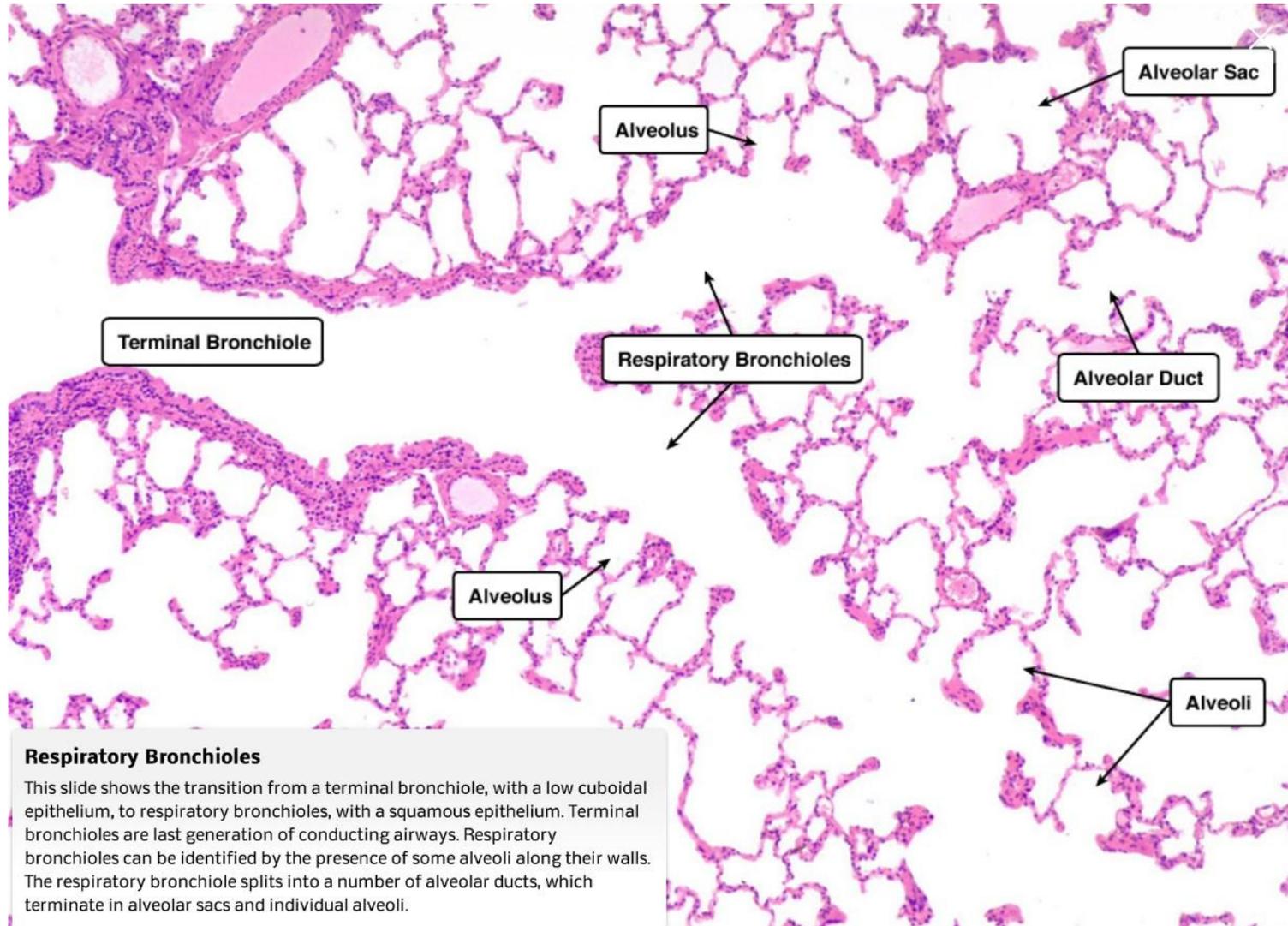
COPD

- A common, preventable and treatable disease that is characterized by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities caused by exposure to noxious particles or gases.
- Strong association with cigarette smoking
35-50% of smokers / COPD patients 80% are smokers, Women >

COPD

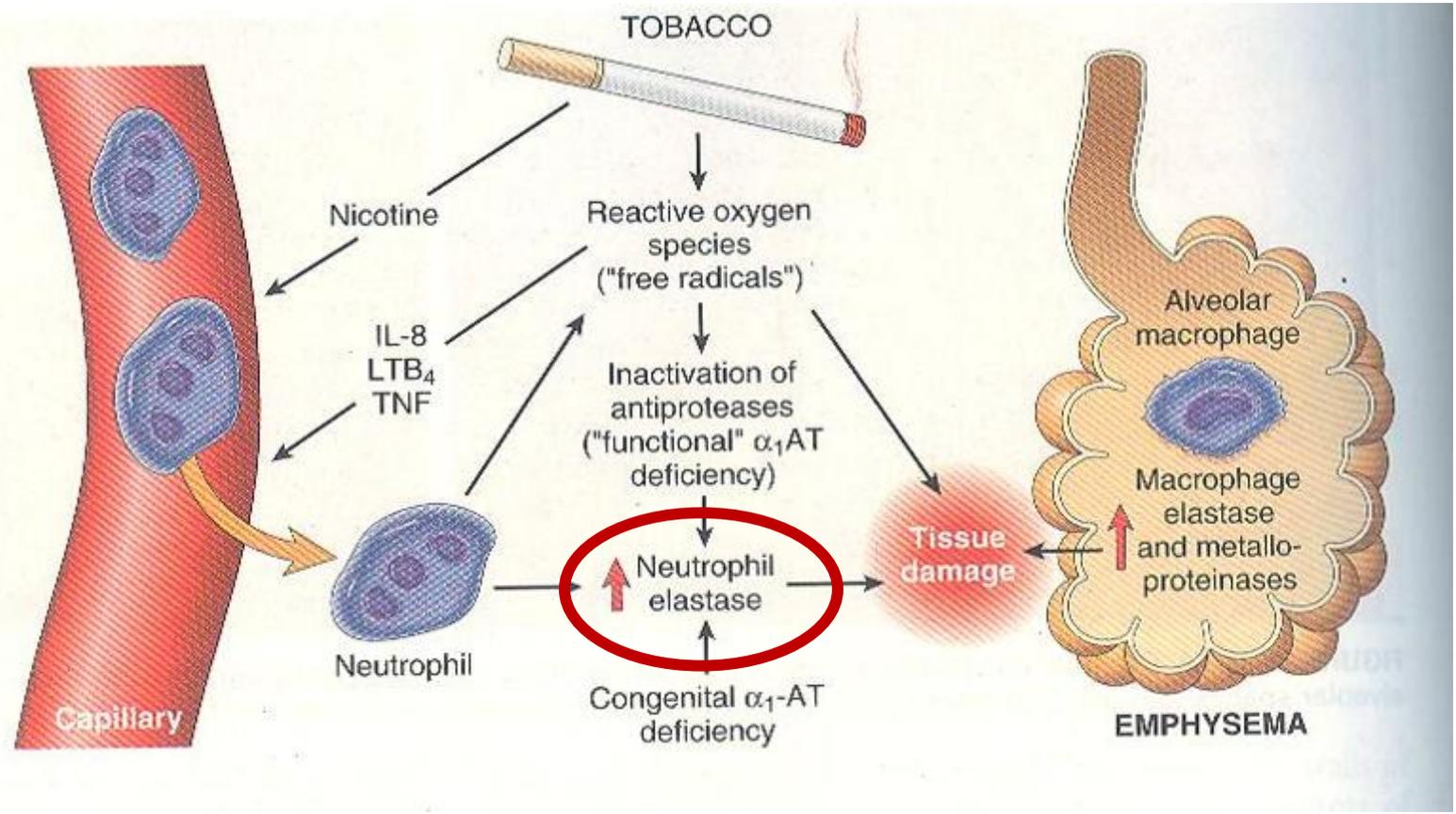
- **Emphysema** –

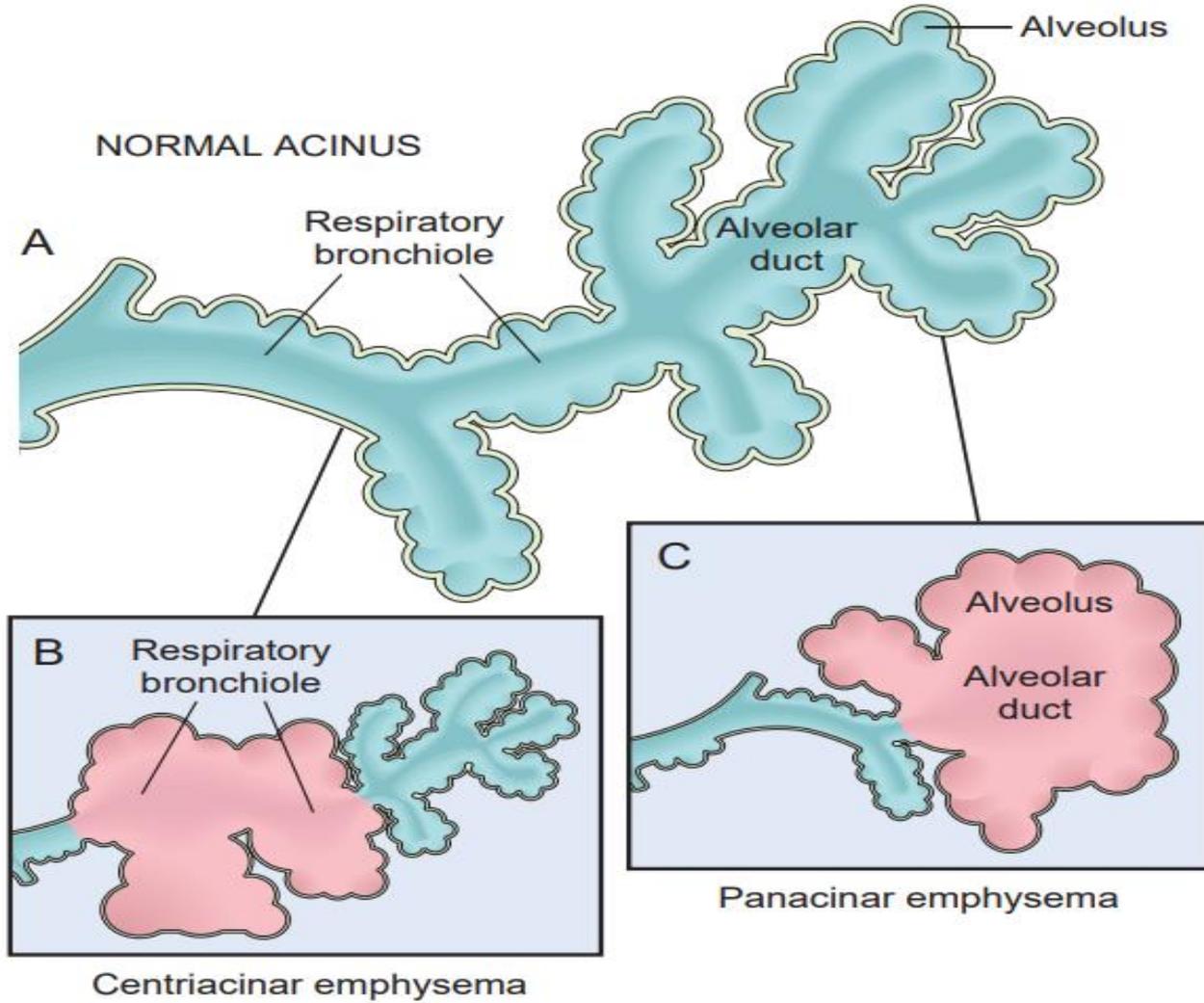
Definition: Emphysema is a condition of the lung characterized by irreversible enlargement of the airspace distal to the terminal bronchiole, accompanied by destruction of their walls.

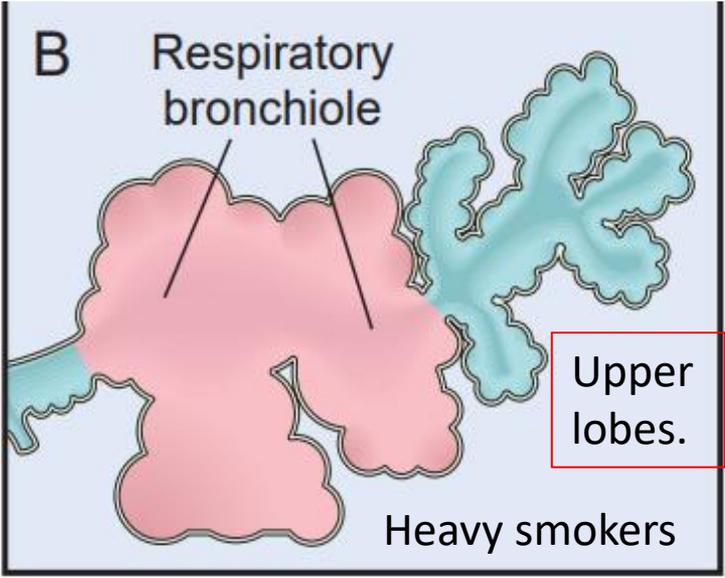


Bronchioles

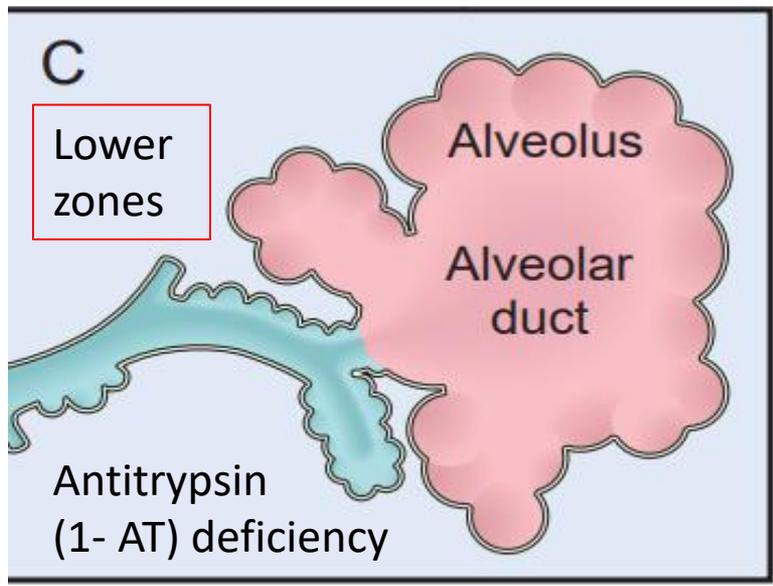
1. TOBACCO 2. ALFA 1 ANTITRYPSIN



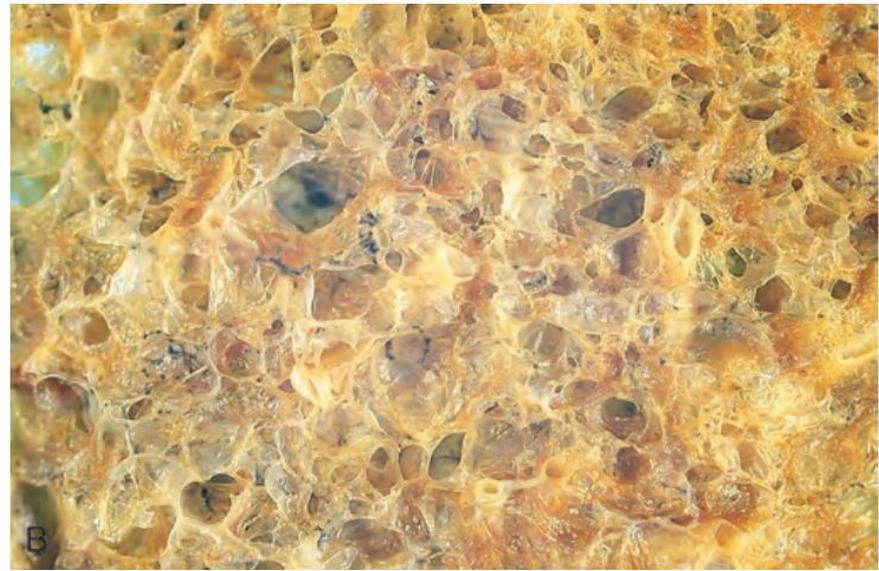
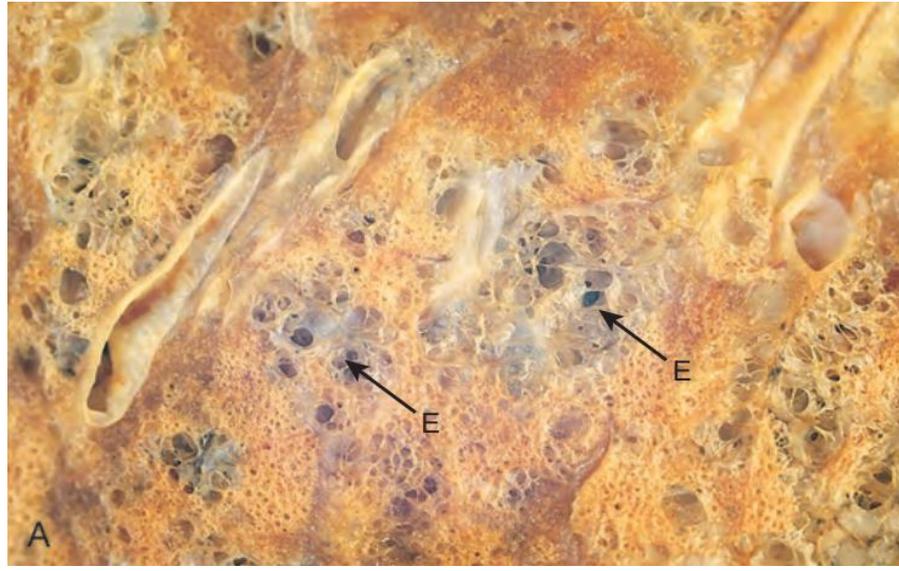




Centriacinar emphysema



Panacinar emphysema



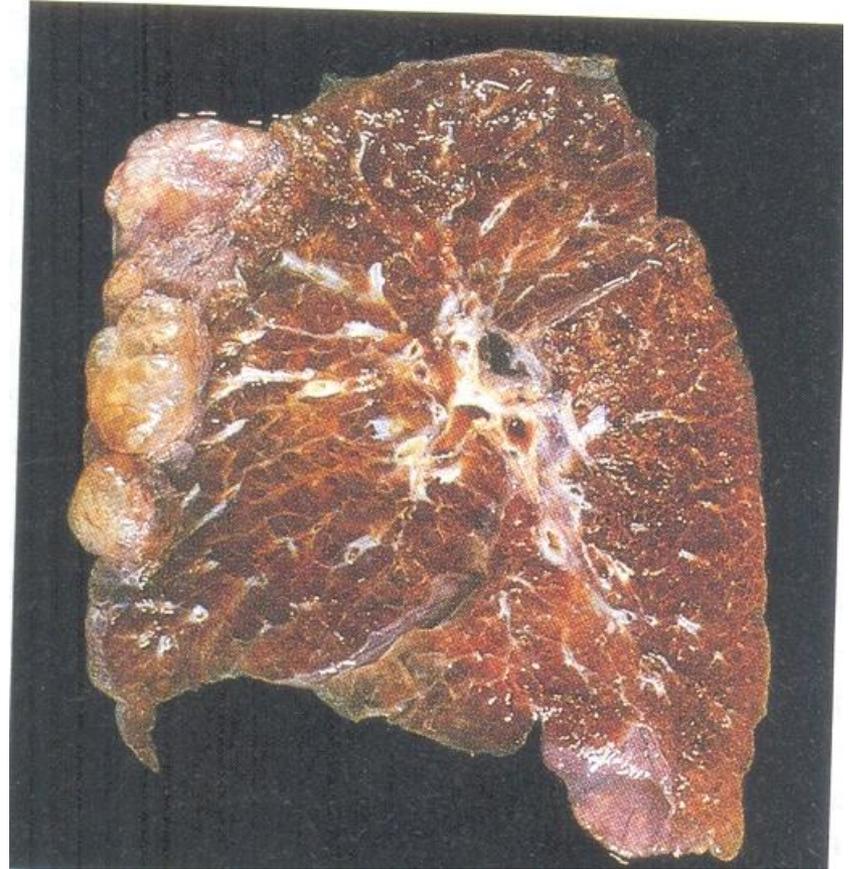


Paraseptal:

Distal part of the acinus
adjacent to the pleura,
near areas of fibrosis scarring
? Spontaneous pneumothorax

Irregular:

Acinus is irregularly involved
With scarring





PINK PUFFERS

C/F :
Dyspnea,
cough,
weight loss
Barrel chest



Complications

- Respiratory acidosis & Coma
- Right sided heart failure
- Lung Collapse



Chronic Bronchitis

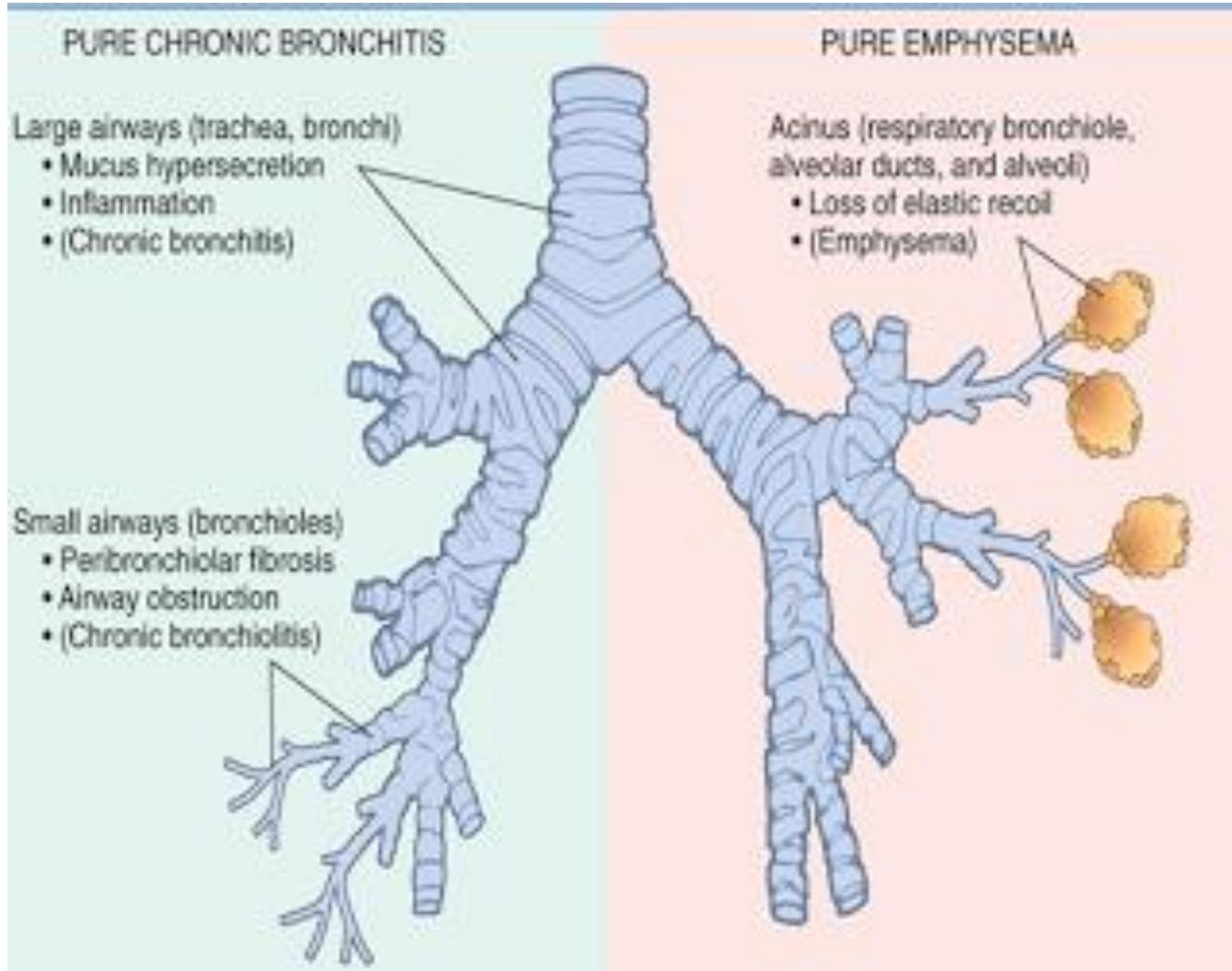
- **Definition**

Chronic bronchitis per se is defined **clinically**. It is present in any patient who has **persistent cough with sputum** production for at **least 3 months** in at **least 2 consecutive years**, in the **absence of any other identifiable cause.**



Aetiopathogenesis

- **Initiating factor** – chronic irritation by inhaled substances (90% smokers), grain, cotton or silica dust.
 1. Mucous hypersecretion in large airways- Histamine and IL-13
 2. Acquired cystic fibrosis transmembrane conductance regulator (CFTR) dysfunction....smoking
 3. Inflammation....acute and chronic, fibrosis
 4. Infection – Acute exacerbation.
- Middle aged men and Heavy smokers
- Hyper secretion of mucus with hypertrophy of submucous glands

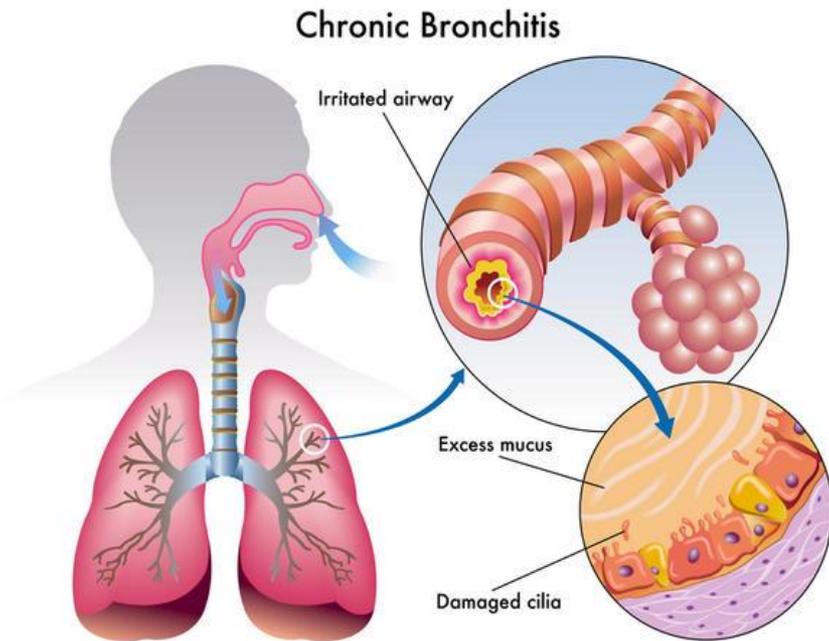


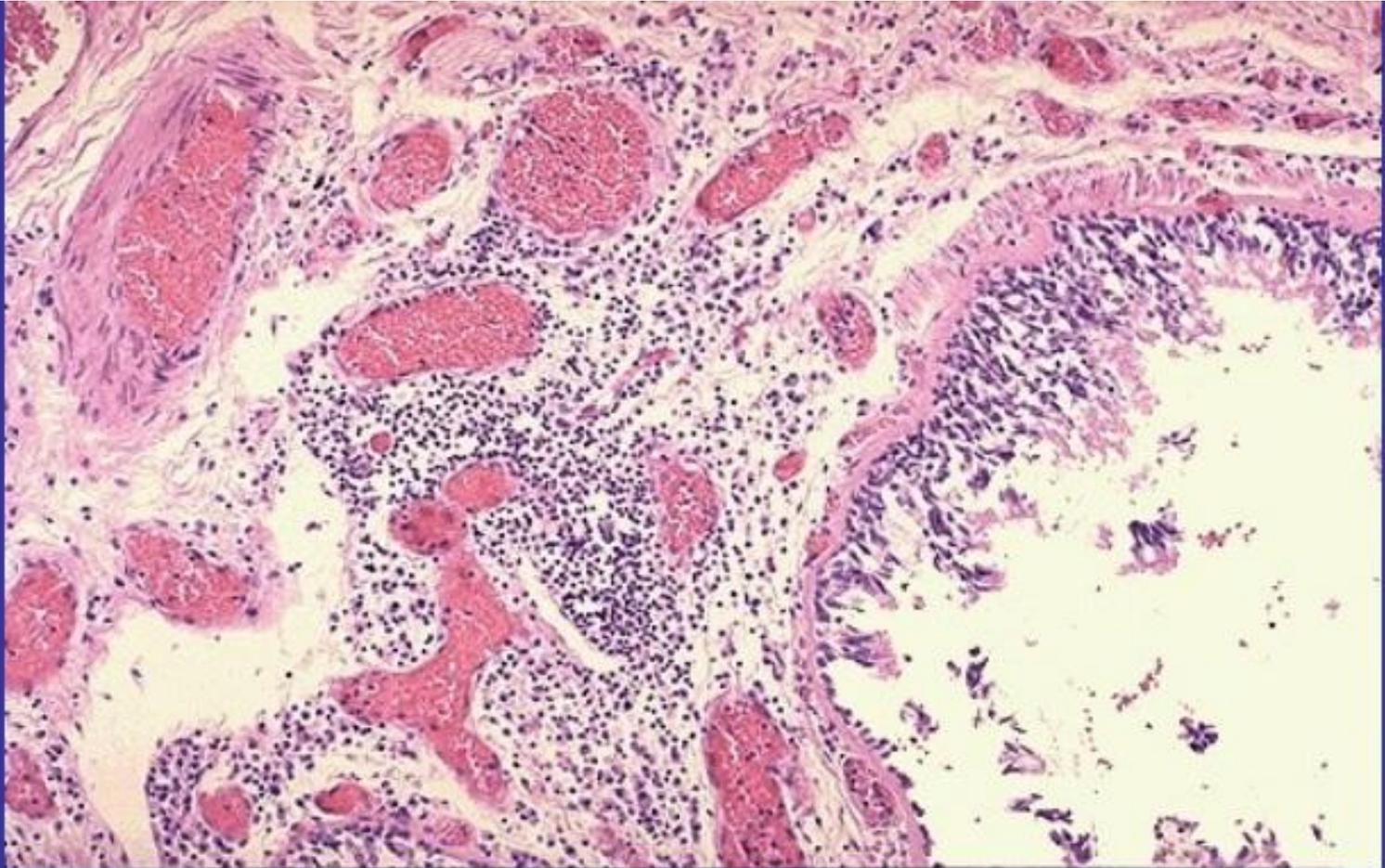


Morphology:

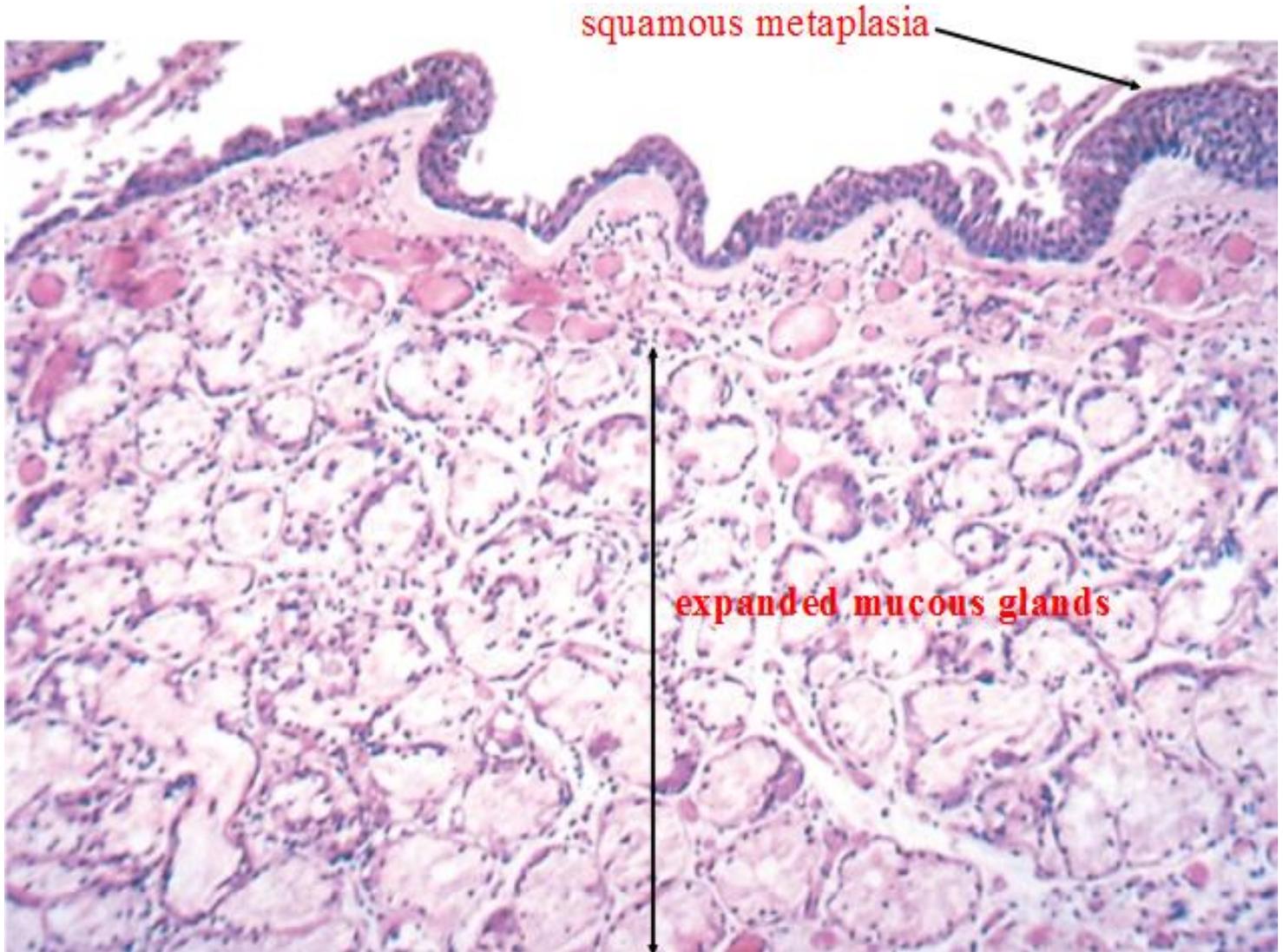
- **Gross:**

- **Hyperaemia, swelling & edema of mucous membrane.**
- **Excessive mucinous to mucopurulent secretion.**
- **Casts of secretions.**





Chronic Bronchitis showing a bronchus with increased numbers of chronic inflammatory cells in the submucosa.

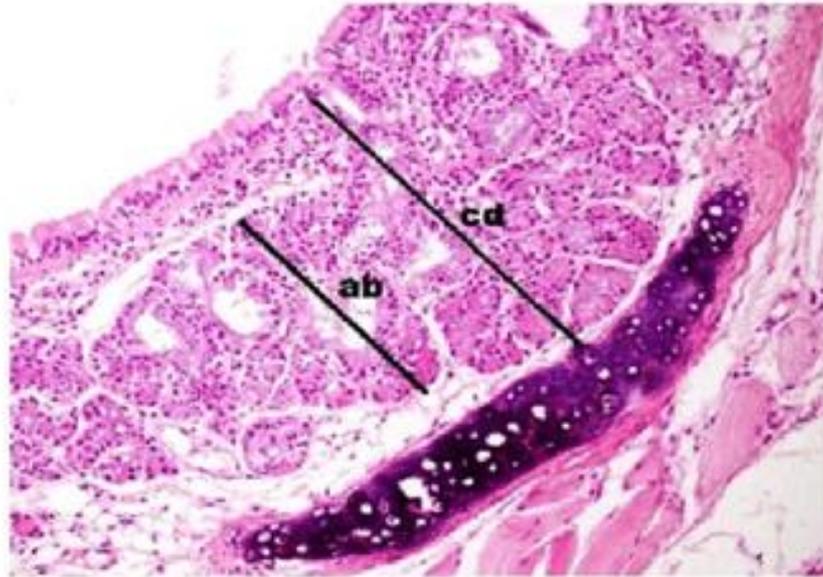


Microscopy:

- Chronic inflammation of airways - Lymphocytes.
- Enlargement of mucous secreting glands of trachea & bronchi
- Bronchial epithelium – squamous metaplasia, dysplasia
- Goblet cell metaplasia, mucous plugging, inflammation, fibrosis with narrowing of bronchioles.
- **Bronchiolitis obliterans** – Obliteration of Lumen due to fibrosis.

Microscopy:

- Reid index –
- Ratio of thickness of the mucous gland layer to the thickness of the wall between the epithelium & cartilage. (Normal range – 0.4) Reid index is increased





C/F:

- Persistent cough with sputum
- Dyspnea
- CYANOSIS
- PEDAL EDEMA

BLUE BLOATERS

Complication:

Cor pulmonale with cardiac failure.



CHRONIC BRONCHITIS

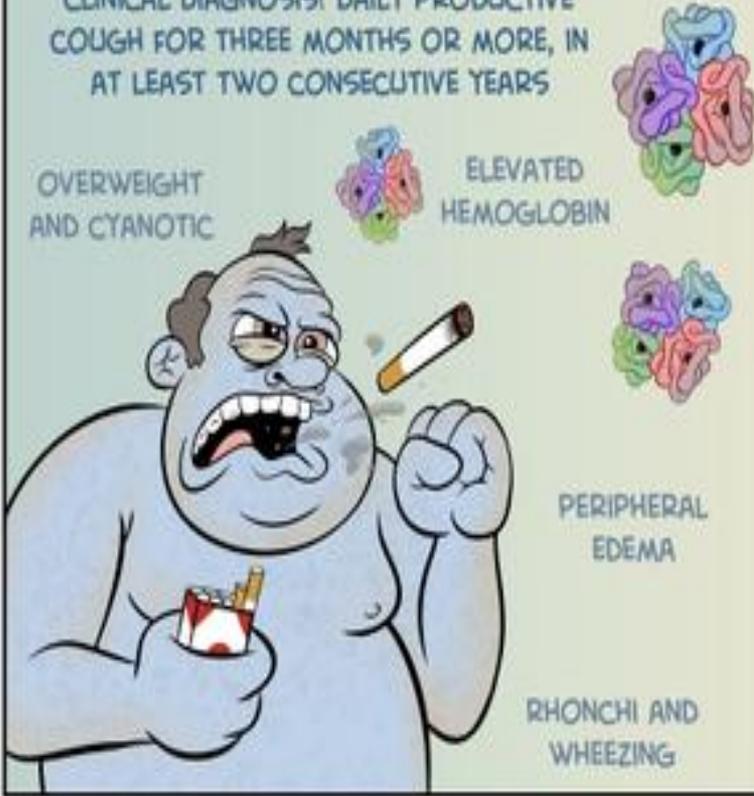
CLINICAL DIAGNOSIS: DAILY PRODUCTIVE COUGH FOR THREE MONTHS OR MORE, IN AT LEAST TWO CONSECUTIVE YEARS

OVERWEIGHT AND CYANOTIC

ELEVATED HEMOGLOBIN

PERIPHERAL EDEMA

RHONCHI AND WHEEZING



EMPHYSEMA

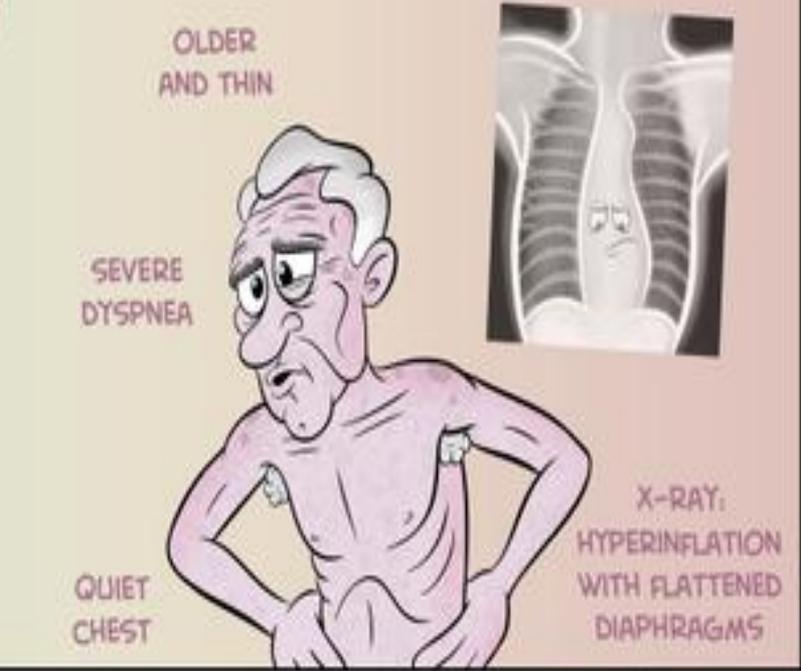
PATHOLOGIC DIAGNOSIS: PERMANENT ENLARGEMENT AND DESTRUCTION OF AIRSPACES DISTAL TO THE TERMINAL BRONCHIOLE

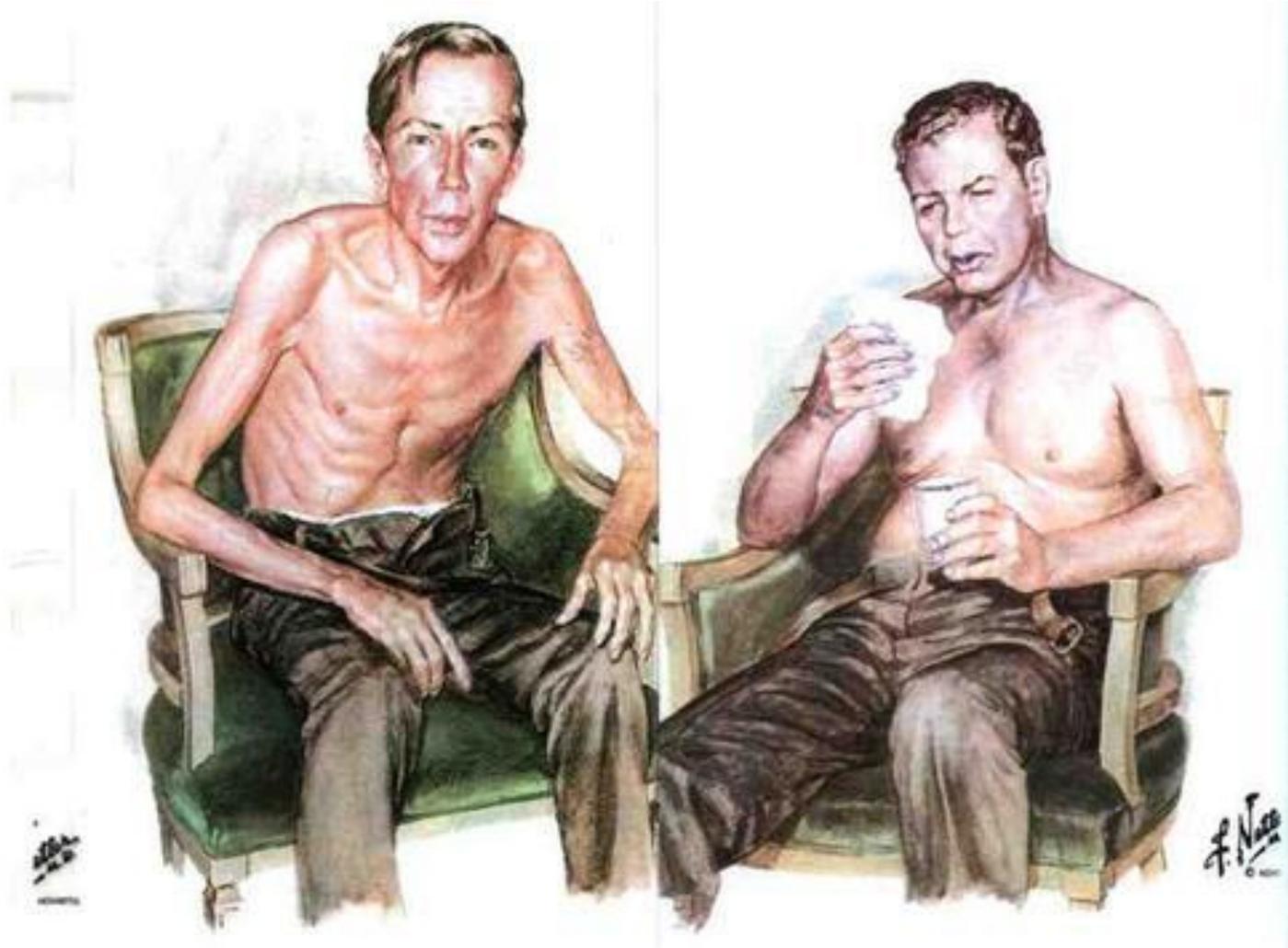
OLDER AND THIN

SEVERE DYSPNEA

QUIET CHEST

X-RAY: HYPERINFLATION WITH FLATTENED DIAPHRAGMS





Thank You

THANK YOU



पुढे नरो
विषादे पाणी
मरण हो