



# **Respiratory system pathology**

**By**

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## **Objectives**

**Bronchiectasis(definition ,pathogenesis and-1  
clinical features and morphological features)**

## **Bronchiectasis**

**The abnormal permanent dilation of bronchi and bronchioles due to destruction of the musculo-elastic supporting tissues, caused by chronic necrotizing infections . The end result lead to loss of airway tone results in air trapping.**

### **Pathogenesis**

**1-Two processes are crucial in the pathogenesis of bronchiectasis:**

**A-chronic infection    B- obstruction .**

**So chronic infection cause direct damage to bronchial walls, leading to weakening and dilation . Usually there is bilateral involvement of the lower lobes .**

**Bacterial  
infection and  
colonization**



**Neutrophil  
inflammation  
(elastases)**



**Airway  
destruction  
and  
distortion**



**Abnormal  
mucus  
clearance  
(stasis)**



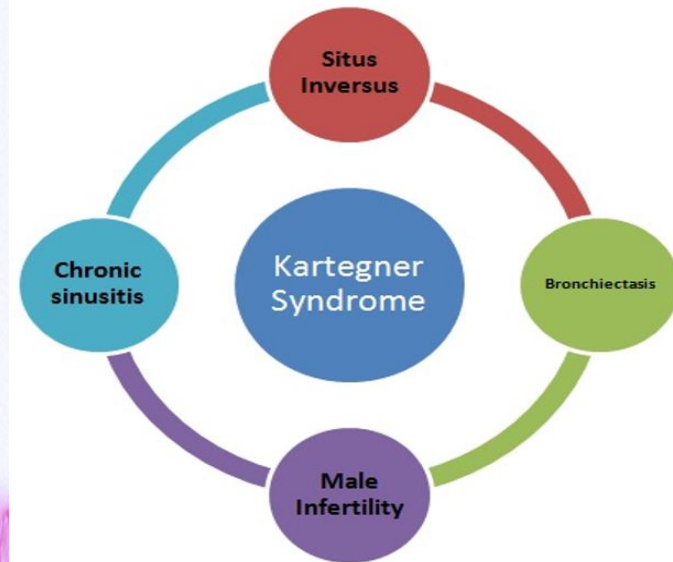
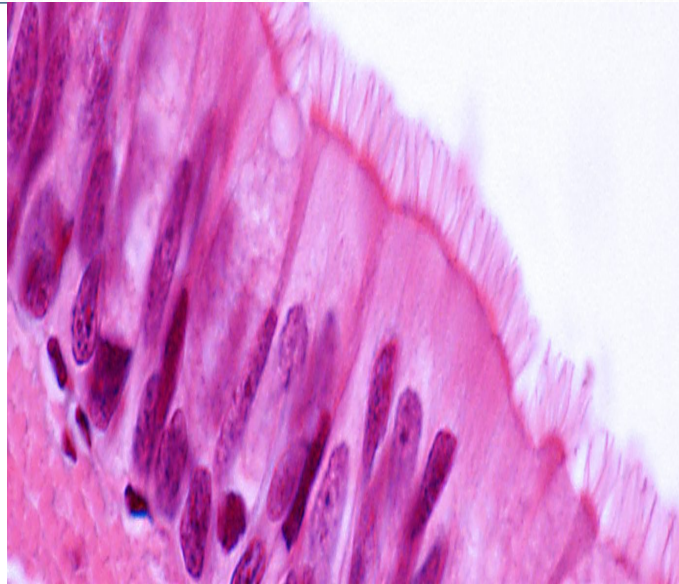
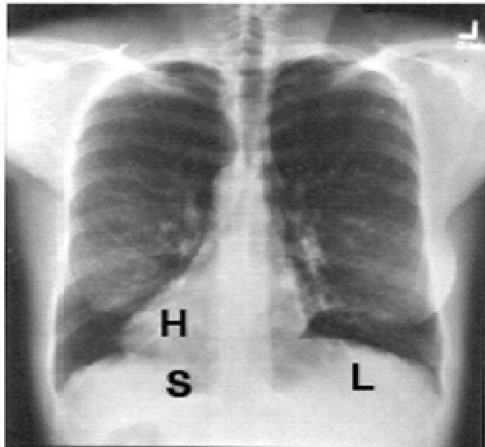
**Obstruction of airway (subtotal obstruction) lead to impairs normal clearance mechanisms e.g bronchogenic carcinoma or a foreign body, these lead to obstruction of airway and these lead to impairs clearance of secretions, providing a fertile soil for superimposed infection.**

**\*When tumors or aspiration of foreign bodies lead to bronchiectasis, involvement may be sharply localized to a single segment of the lungs. While if infectious cause lead to bronchiectasis and bilateral involvement**



**2-Congenital or hereditary conditions** like cystic fibrosis (excessive mucus secretion ,recurrent infection and progressive destruction of bronchi) , kartagener syndrome. Kartagener syndrome is an autosomal recessive condition caused by **immotile cilia** .it is characterized clinically by bronchiectasis ,chronic sinusitis , male infertility and situs inversus ( a congenital condition where the major visceral organs are anatomically reversed compared with their normal anatomical positions) .

Situs Inversus  
Totalis



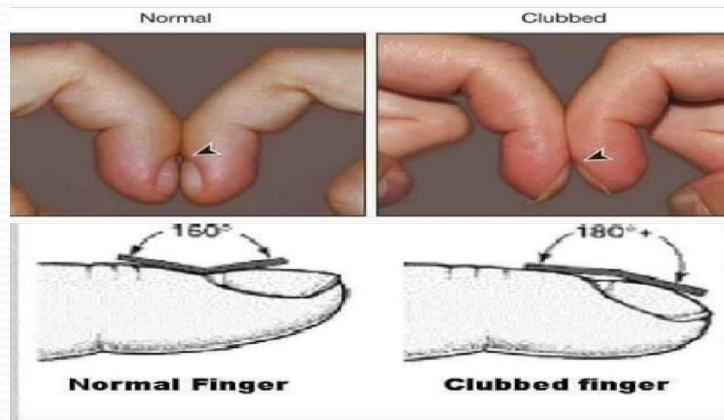
# Clinical features

It gives rise to symptoms dominated by **persistent** , **sever cough** , expectoration of **copious amounts** of **purulent, foul sputum** ,and fever . Coughing can be associated with **morning** rising and **positional** changes.

Clubbing of the fingers may develop . In cases of severe, widespread bronchiectasis, significant obstructive ventilatory defects develop, with hypoxemia, hypercapnia, pulmonary hypertension, and (rarely) cor pulmonale.

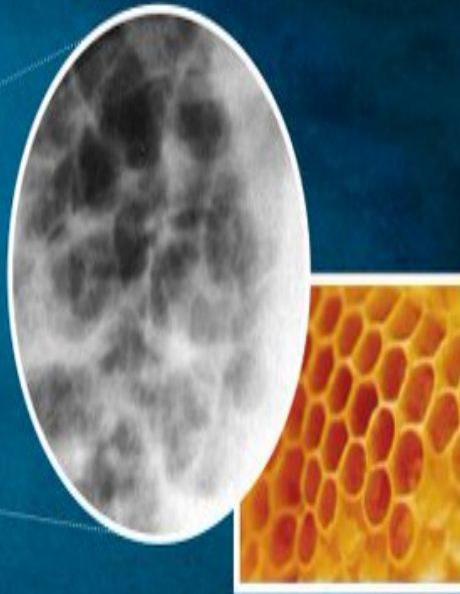
Metastatic brain abscesses and reactive amyloidosis less frequent complications of bronchiectasis.

VEGF stimulated by hypoxia  
VEGF induces vascular hyperplasia  
edema and fibroblast or osteoblast  
proliferation at peripheral levels in  
naile

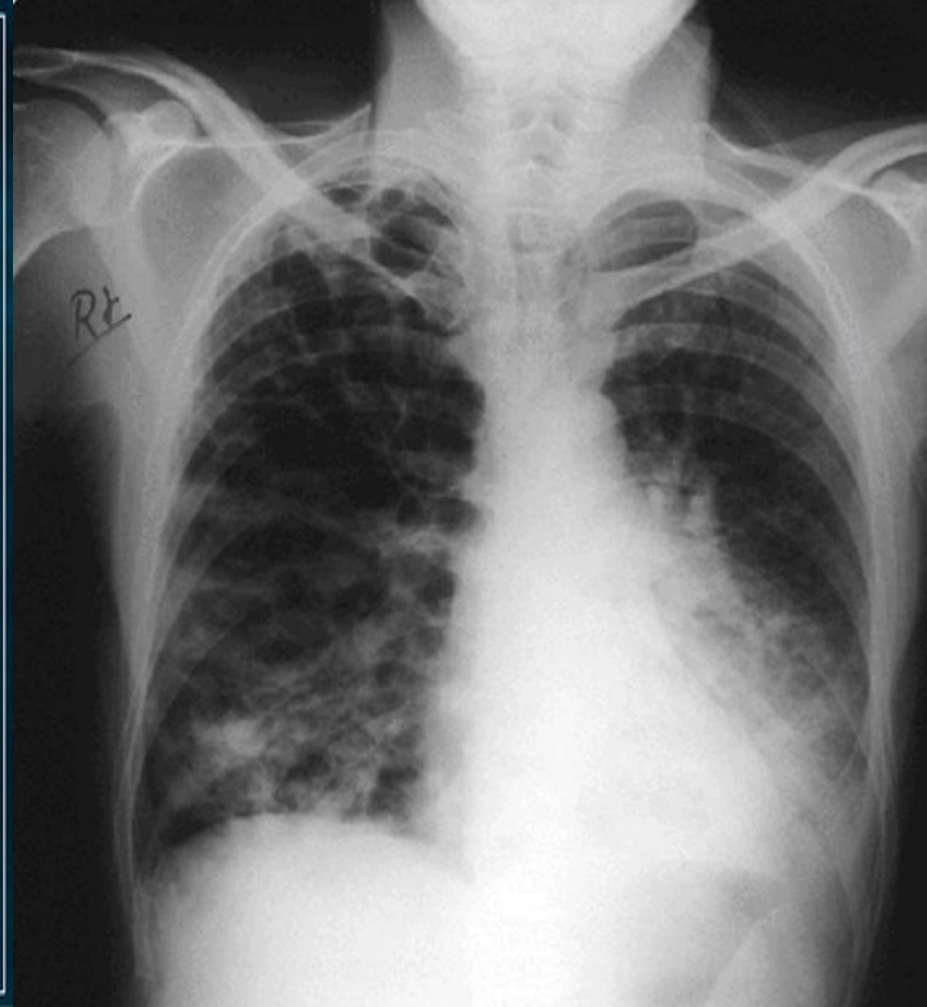




## Chest Radiograph (2)



Conglomerating cysts of varying size and wall thickness  
"Honeycomb" sign



**Bronchiectasis**  
**CXR-Showed honeycomb sign**

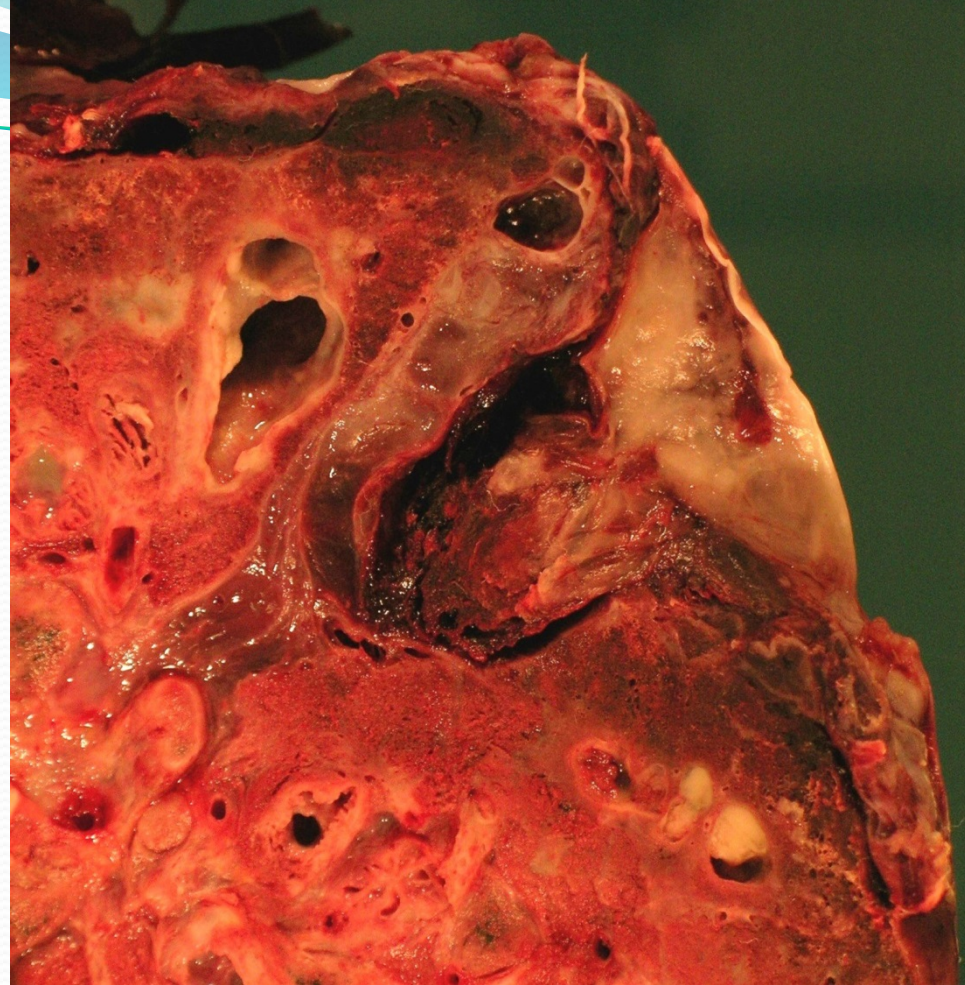


# Gross features of Bronchiectasis

The airways may be dilated up to 4 times their usual diameter and filled with mucus secretion .







## **Gross features of Bronchiectasis**

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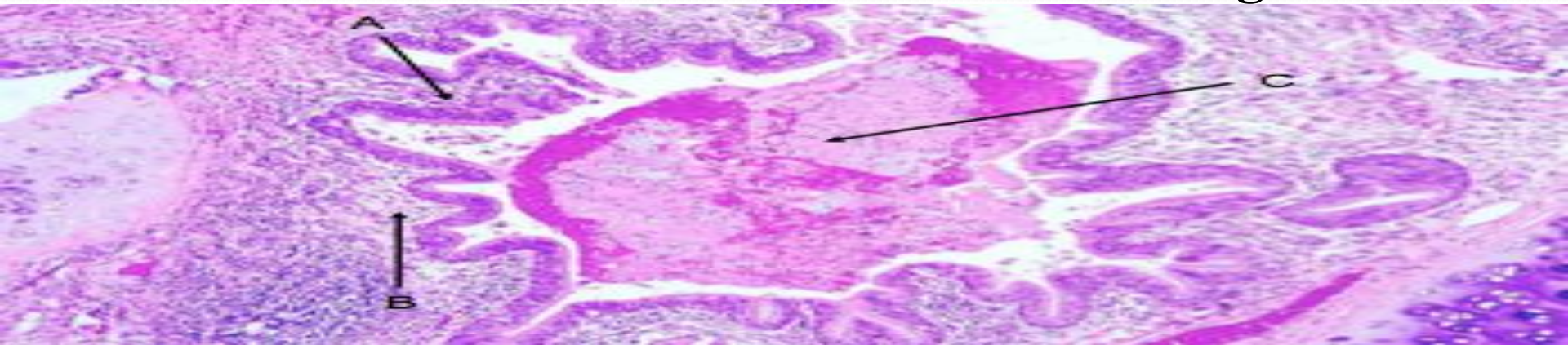
# Microscopic features

**1-There is intense acute and chronic inflammatory exudate within the walls of the bronchi and bronchioles (B) and exudate in lumen of bronchi (C)**

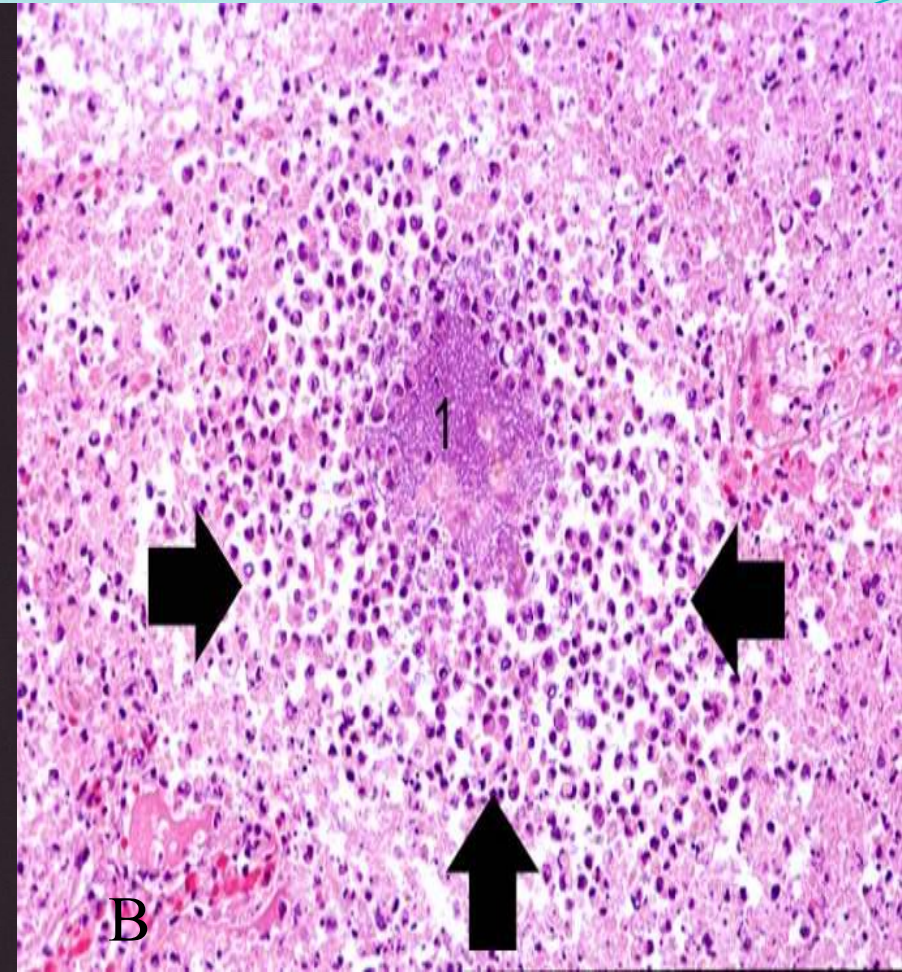
**2-The desquamation of lining epithelium causes extensive areas of ulceration. When healing occurs, the lining epithelium may regenerate completely. (A)**

**3-In chronic cases there is fibrosis of the bronchial and bronchiolar walls .**

**4-In some cases, the necrotizing inflammation destroys the bronchial or bronchiolar walls and forms a lung abscess**







## **Lung abscess**

**A-necrosis of the pulmonary tissue and formation of cavities containing necrotic debris and . exudate fluid**

**B- formation of cavities containing acute inflammatory cells ,necrotic tissues and exudate fluid**



# Summary



## **Chronic obstructive pulmonary disease**

**Group of diseases characterized by airway obstruction; lung does not empty, and air is trapped.**

**1- Volume of air that can be forcefully expired is decreased (FVC), especially during the first second of expiration results in decreased FEV1 :FVC ratio**

**2. Total lung capacity (TLC) is usually prolonged due to air trapping.**



**THAN YOU**  
**You learn something every day**  
**if you pay attention**

