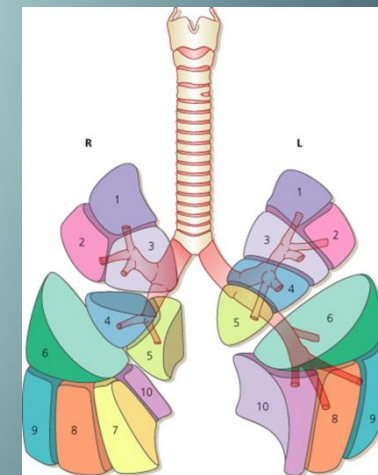


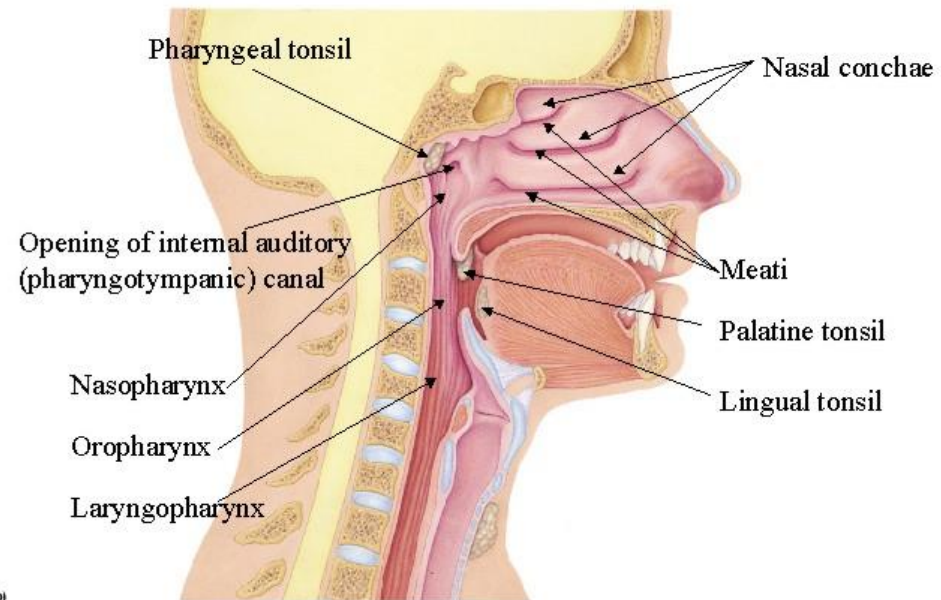
# Respiratory System Ist



# Rhinitis

- Allergic
- Infectious
- Chronic

## The Upper Division



(b)

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# Allergic rhinitis

- Also called **hay fever**
- Due to exposure to plant pollens, fungi, dust mites, animal allergens
- **IgE** mediated hypersensitivity reaction  
type I.

# Infectious rhinitis

Also called “common cold”

Due to adenovirus, echovirus and rhinoviruses

**Symptom:** catarrhal discharge

## Chronic rhinitis

Sequel to acute rhinitis with development of secondary bacterial infection

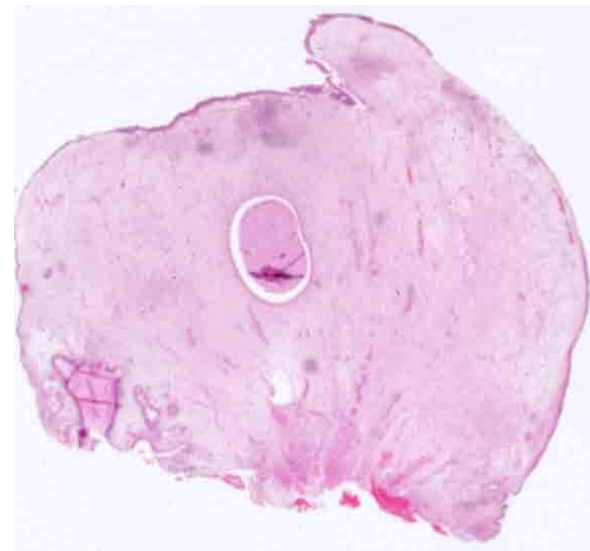
Associated with deviated septum or nasal polyps

# Nasal polyps

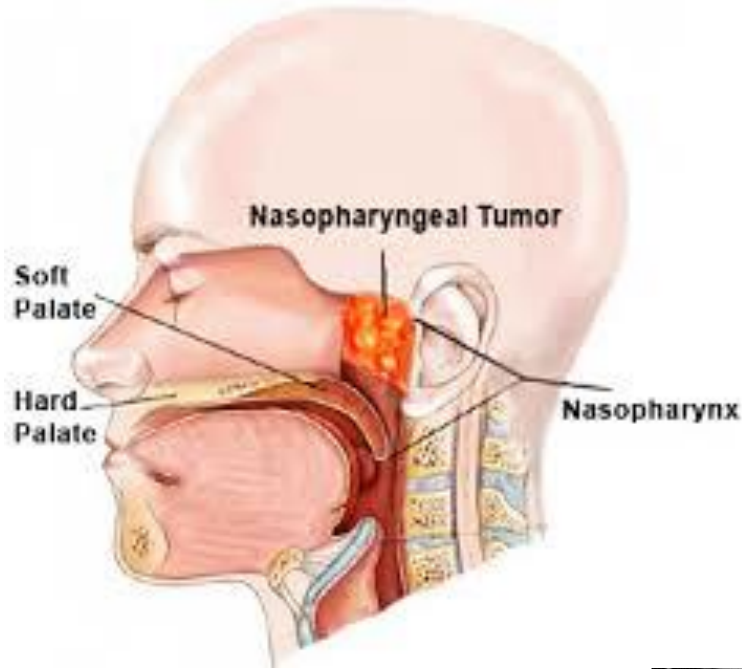
Common;

non-neoplastic, allergic reaction

**Micro:** edematous mucosa with  
inflammatory infiltrate including  
**eosinophils**



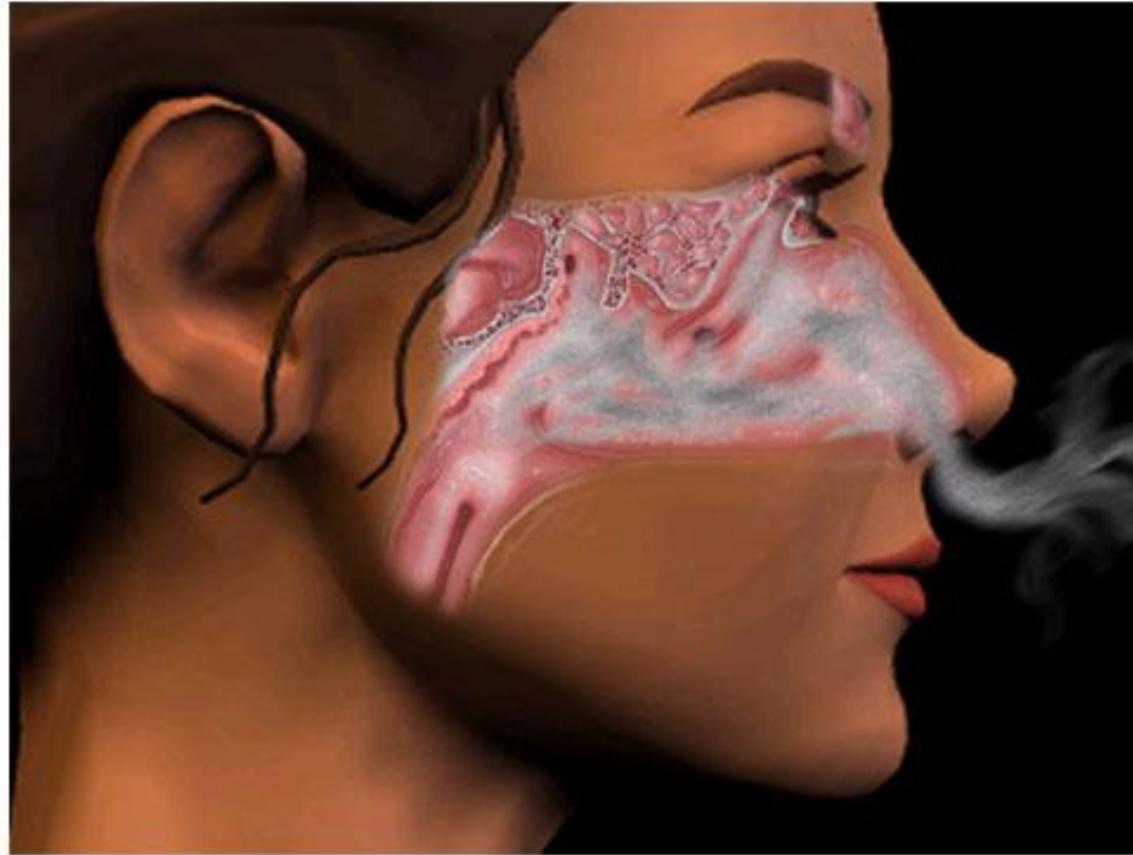
# Nasopharyngeal carcinoma



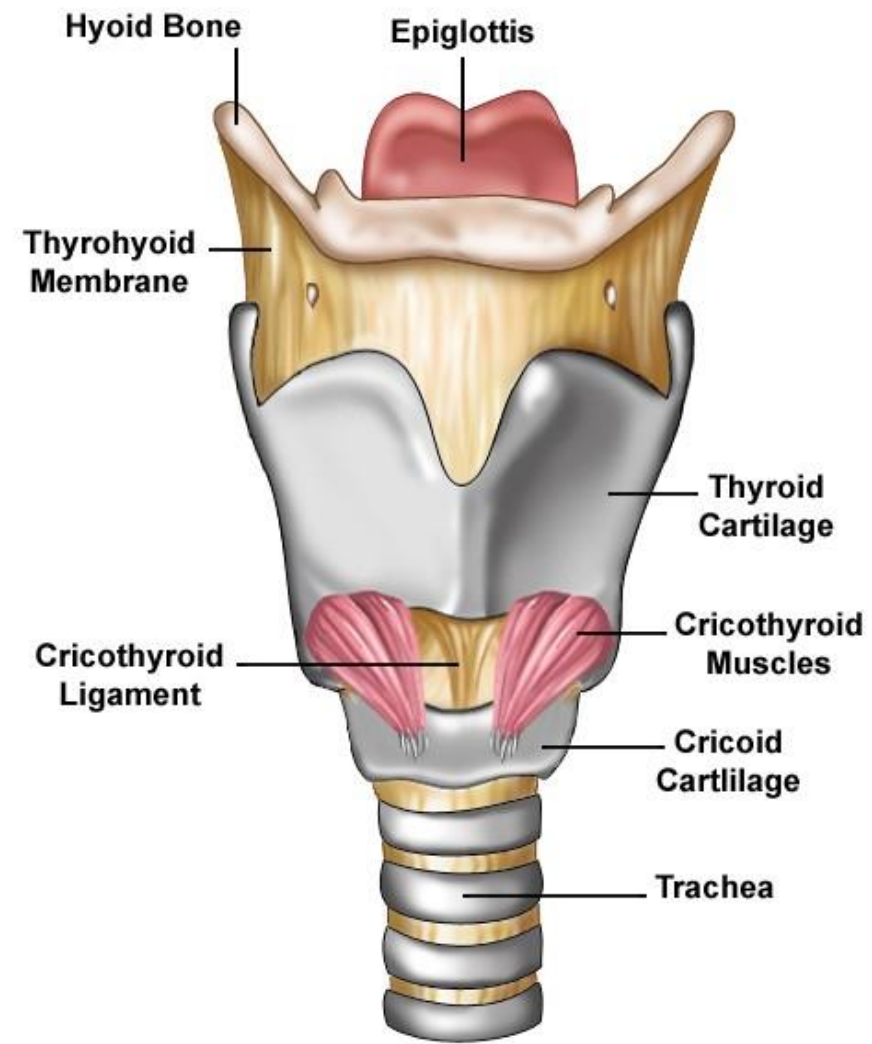
- Demographics vary greatly by region
- In USA: rare, in Africa: common **childhood** cancer
- South China: most common cancer in **adults** 70% male
- Associated with **EBV infection**
- Histology: squamous cell carcinoma

## Effects of Cigarette Smoke on Sinus

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Cigarette smoke reduces the ability of the microscopic cilia inside the nose and sinus lining to sweep mucus through the nasal and sinus passages. The thin mucous blanket that covers the nose and sinus lining thickens, and postnasal drainage can be quite thick and noticeable.





# Inflammatory/infectious lesions

## 1. Croup - parainfluenza virus

laryngo-tracheo-bronchitis in children

inflammatory narrowing produces inspiratory stridor



## 2. Diphtheria - Corynebacterium

pseudomembrane

## 3. H. Influenzae - acute epiglottitis

## 4. Tonsillitis - $\beta$ -hem Strept - rheumatic fever

## 5. Tuberculosis



Bild 28 · Diphtherie. Angina diphtherica: festhaftender, pseudomembranöser Belag auf den Tonsillen.



# LARYNGEAL PAPILLOMA

**Warty** outgrowths of laryngeal surface epithelium

## Children

- Usually **multiple**
- Associated with **HPV 6 and 11** in most cases

## Adults

- Usually men, **solitary**
- Recurrences frequently exhibit **dysplasia**
- **DD:** verrucous carcinoma



# LARYNGEAL CARCINOMA

96% male;

usually ages 40+

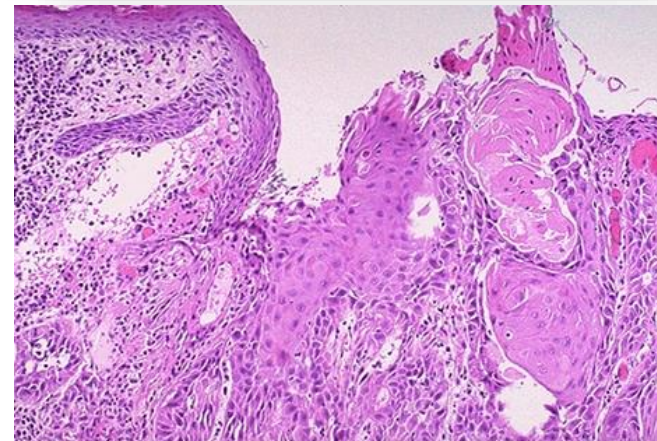
Major risk factor **smoking**,

enhanced by

heavy **alcohol** consumption

Asbestos exposure(?)

**Squamous cell carcinoma**



# LARYNGEAL CARCINOMA

**Site influences histology and clinical behavior – either glottic, supraglottic or subglottic**

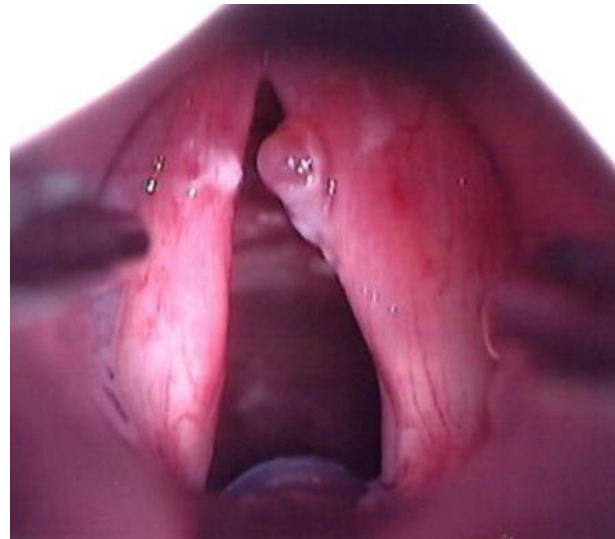
- Spread is limited by tough membranes / ligaments

**Metastases** to regional lymph nodes and lungs; direct extension to thyroid gland and jugular vein

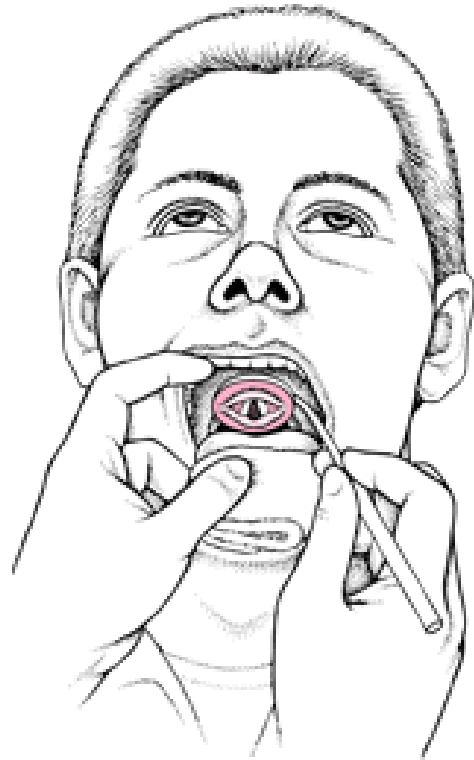
# Others

## Vocal cord polyp

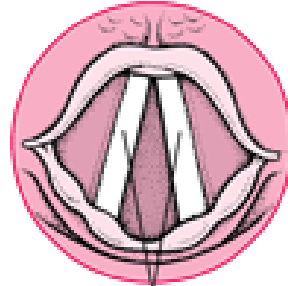
- Also called laryngeal nodule or singer's nodule
- Non-inflammatory response to injury due to changing air pressure



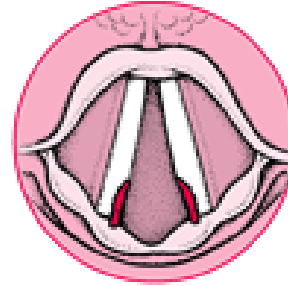
# Vocal Cords



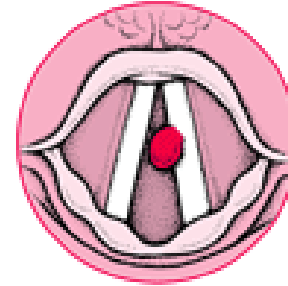
**Examination of  
Vocal Cords**



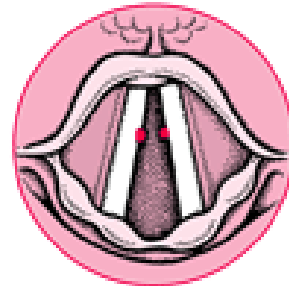
**Normal  
vocal cords**



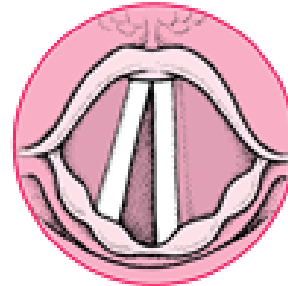
**Contact  
ulcers**



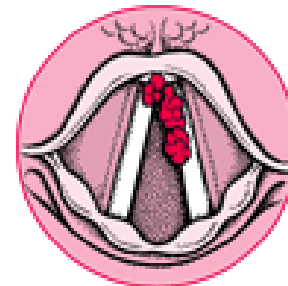
**Polyp**



**Nodules**



**Unilateral  
paralysis**

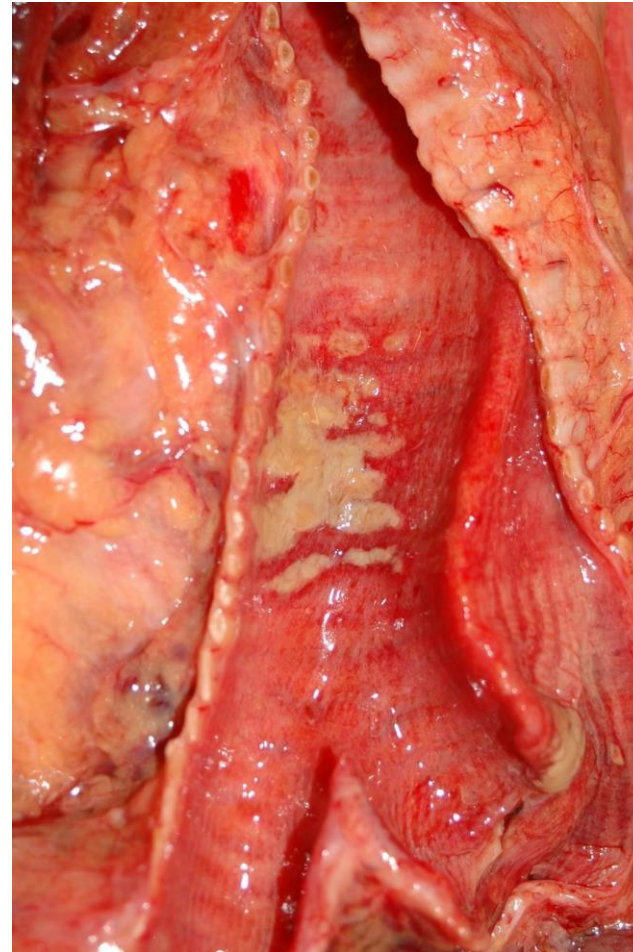


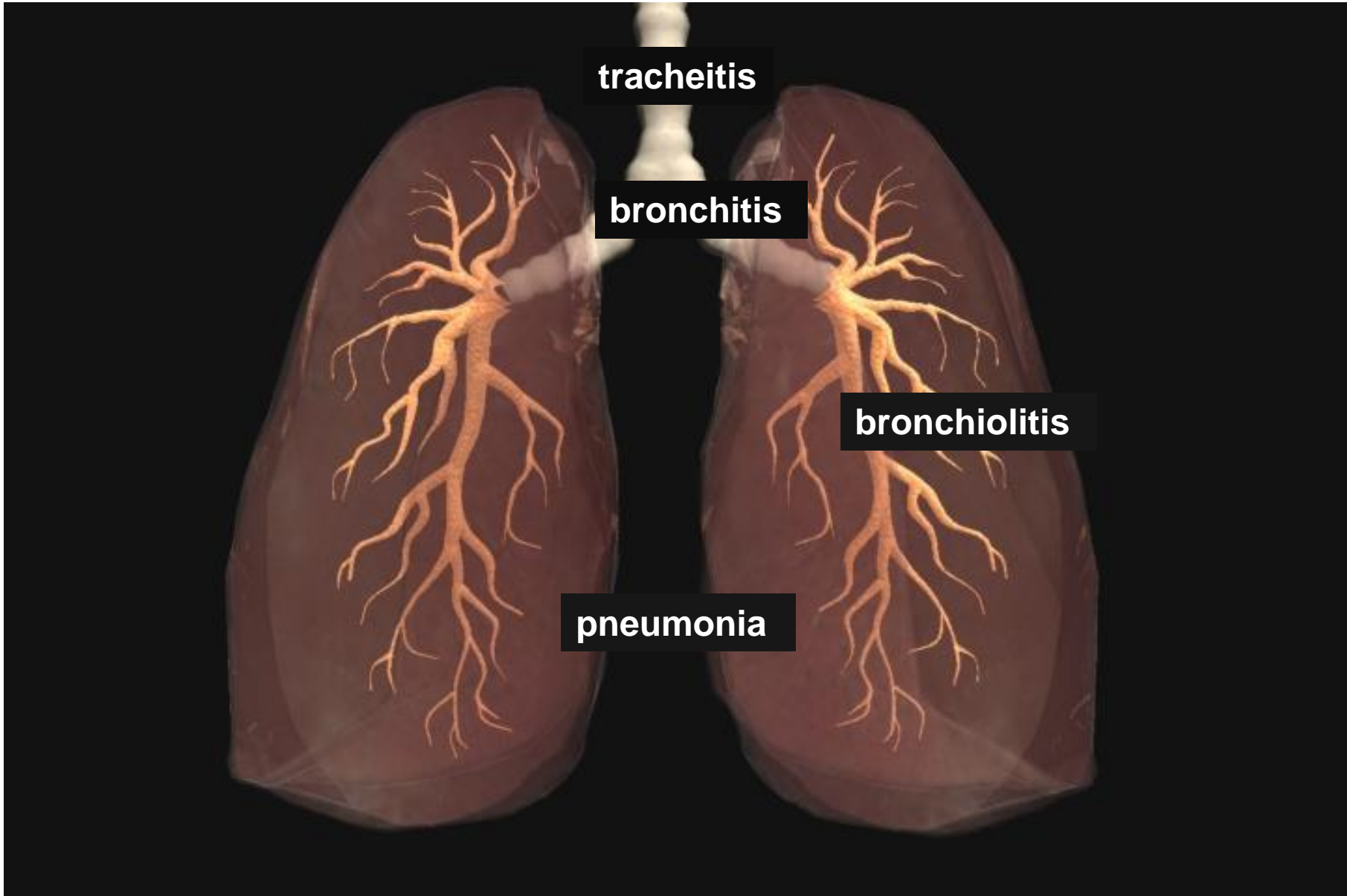
**Cancer**

**Examination Findings**

# TRACHEA – WINDPIPE

- **Developmental**
- **Inflammation - tracheitis**
- **Decubitus**
- **Rare tumors**





**tracheitis**

**bronchitis**

**bronchiolitis**

**pneumonia**



# Lung diseases

- Acute lung injury (ARDS)
- Inflammation: pneumonia  
nota bene: pneumonitis – non-organic hypersensitive reaction
- COPD (chronic obstructive lung disease)
- Restrictive lung diseases  
DPLD (diffuse parenchymal lung disease)
- Neoplasma- primary & secondary

# Acute Respiratory Distress Syndrome (ARDS) – clinical diagnosis

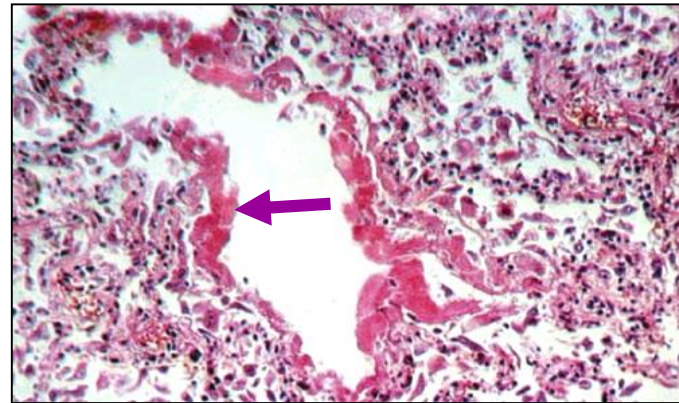
## Diffuse Alveolar Damage (DAD) – pathological diagnosis

**ARDS** is the **end result** of acute alveolar injury caused by a **variety of insults** and probably **initiated by different mechanisms**.

### Pathomechanism:

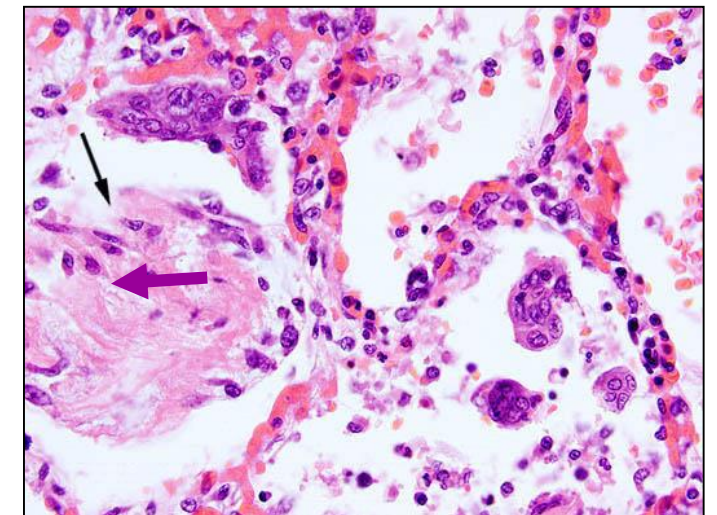
The **initial injury** is to either the **capillary endothelium** or **alveolar epithelium**.

**increased capillary permeability**  
[interstitial and then alveolar edema](#)  
[fibrin exudation](#)  
[formation of hyaline membranes](#)



**Endotoxin, neutrophils and macrophages** may also play key roles in the pathogenesis of ARDS.

**Complications:**  
**Organization and scarring**



# Pneumonia

- ***Clinical data:*** acute – chronic
- ***Pattern:*** broncho – lobar
- ***Clinical feature:*** atypical – hypostatic etc .....
- ***Type of infection:*** *community - acquired* (out of hospital) hospital–acquired nosocomial, opportunistic
- ***Based on agents:*** bacterial, viral, fungal ...
- ***Host reaction:*** normal, immunocompr, illness, infants, elderly...

# Pneumonia



## ***Bronchopneumonia:***

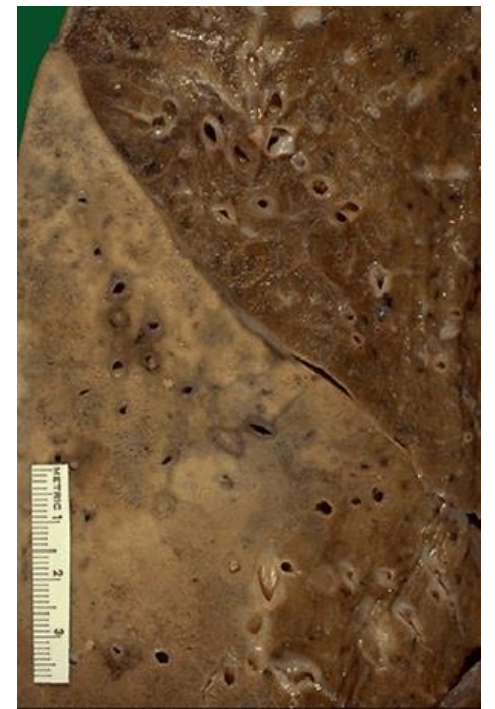
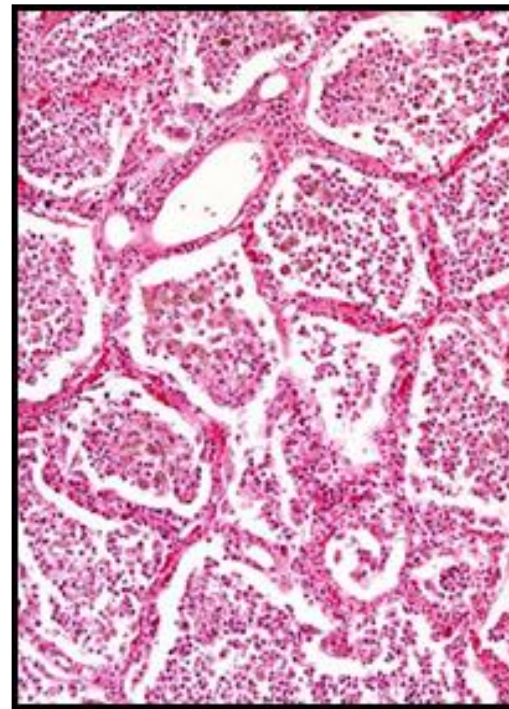
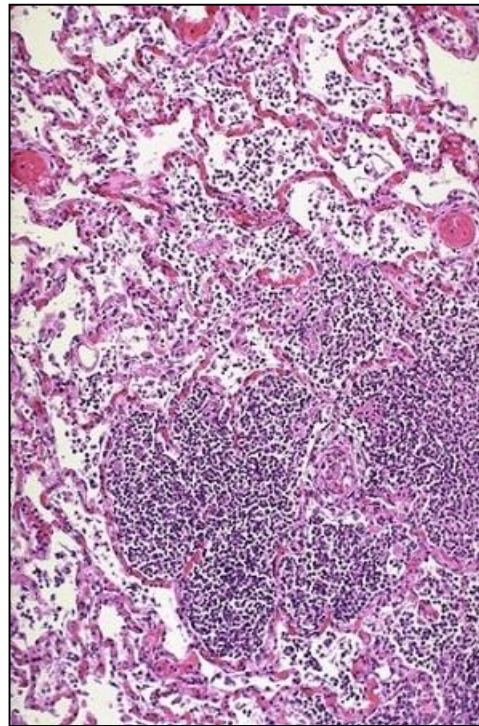
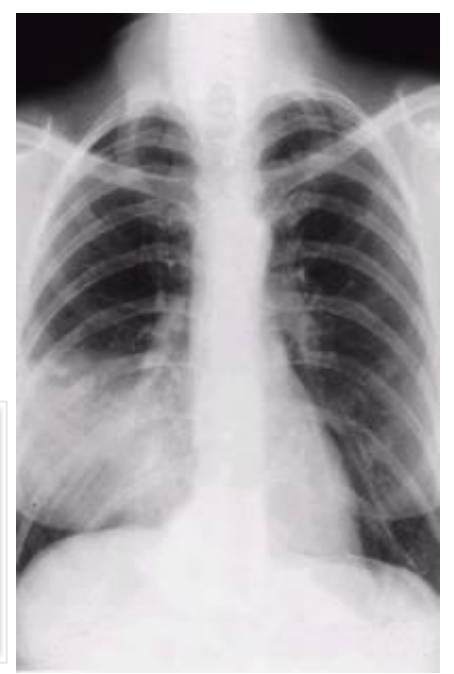
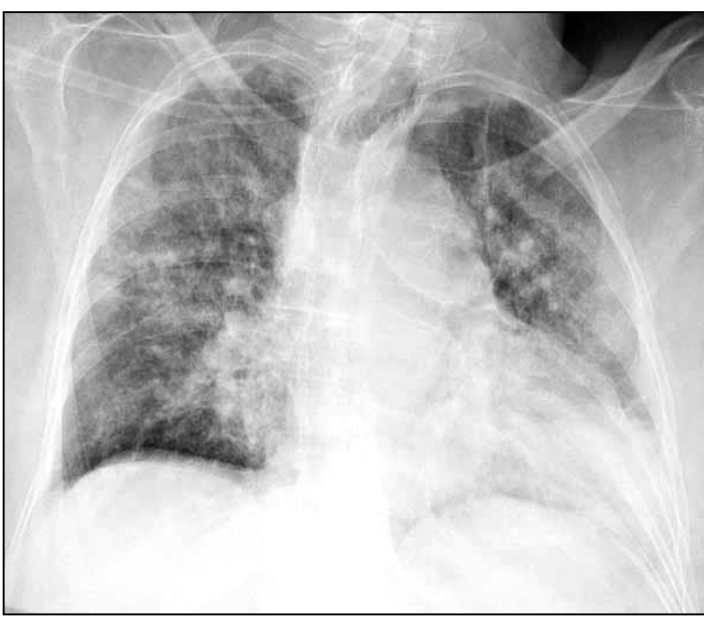
**Patchy** consolidation of the lung centered on bronchi

## ***Lobar pneumonia:***

Affects **entire lung** but now rare due to antibiotics; associated with increased virulence of organism or increased host vulnerability (infants, elderly)

(Pneumococcus)





# Atypical pneumonia

## *Mycoplasma pneumoniae*

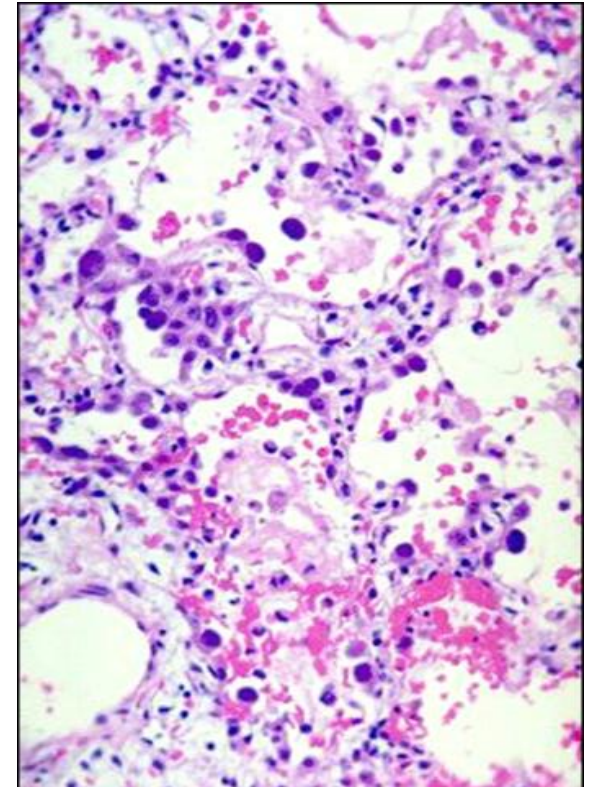
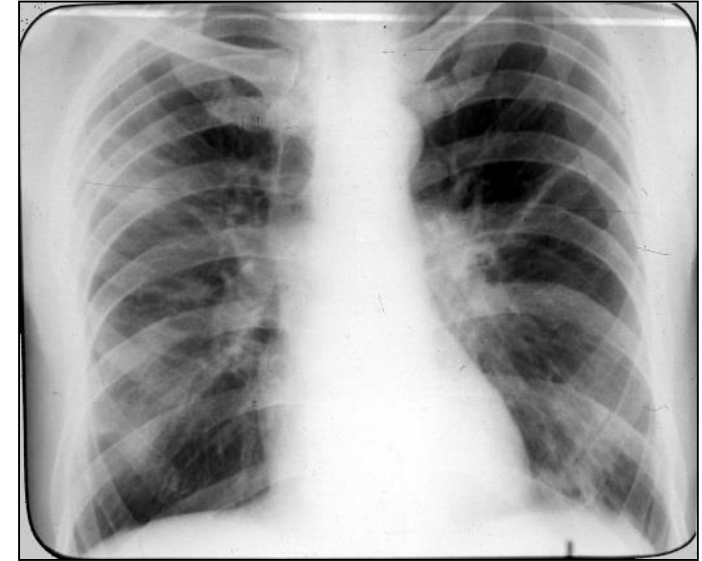
### others:

respiratory syncytial virus, rhinovirus, rubeola, varicella, Chlamydia psittacosis, Coxiella burnetti (Q fever)

**interstitial pneumonia** (usually) or bronchopneumonia

**often asymptomatic**

- **Micro:** bronchiolitis, interstitial and minimal intra-alveolar involvement with **widened alveolar septa due to lymphoplasmacytic** inflammatory cells



# Legionella pneumonia



- also **Legionellosis** or **Legion Fever**
- **Legionella pneumonia** is known as legionnaire's disease and this is an acute respiratory infection on that is caused by the **legionella pneumophila bacteria (Gram neg. Bacillus)**
- Immune-suppressed, organ transplanted patients!!!!
- The bacteria are found in the water delivery systems and can survive in warm and moist air conditioning systems.



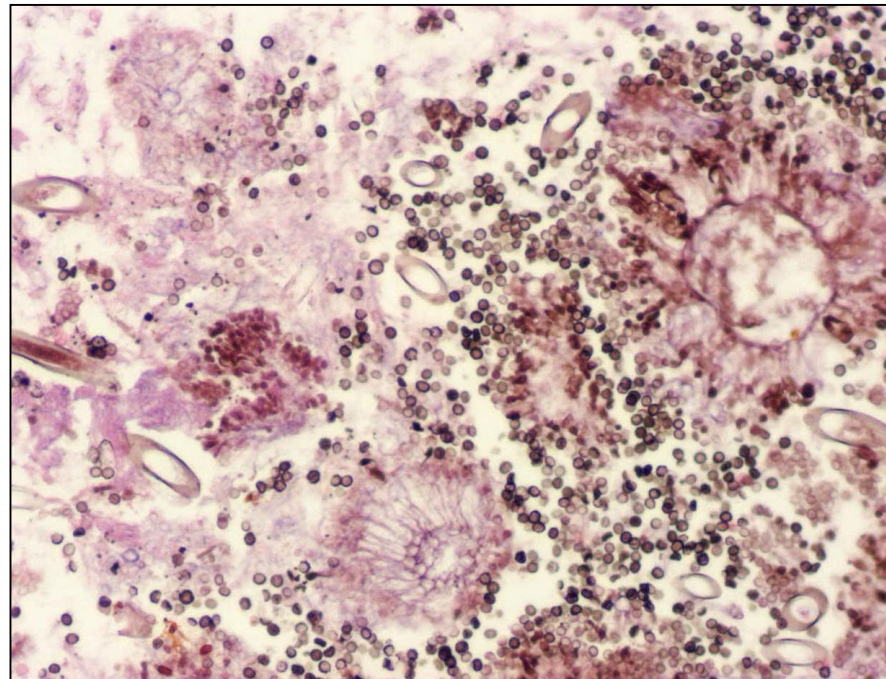
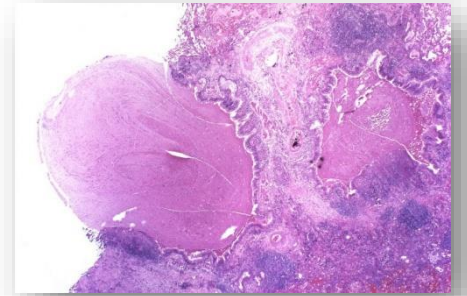
**The first** recognized cases of Legionnaires' disease occurred in **1976** in Philadelphia. Among attendees of a Legionnaires' convention held at the Bellevue-Stratford Hotel 182 Legionnaires contracted the disease and 29 of them died.

# Aspergillus

Causes fungus balls in immunocompetent patients with microabscesses or multinucleated giant cells in the lung

Mucoid impaction – in bronchial tree

Systemic aspergillosis





# Abscess

**Due to** sinobronchial infections,

- dental sepsis,
- **aspiration**
- primary bacterial infection (Staphylococcus aureus, Klebsiella pneumonia, Streptococcus pneumonia),
- fungi,
- **neoplasia induced obstruction**

**Aspiration** induced abscesses more common on right side

Air fluid level present if there is communication with air passages

Air fluid level present if there is communication with air passages





# Tuberculosis

*Mycobacterium tuberculosis hominis & bovis*

*obligate aerob*

*most common cause of death due to infacted diseases*

*vector: drops, contamination*

*pathogenesis: cell- mediated immunity: ~ 3 weeks  
after the primary contamination*

*resistency and the allergic reaction develop together  
(type IV, late)*

*mediator :  $T_H1$  cell*

*the immunerespons causes destruction in the lung  
parenchyma (necrosis, caverna)*

# Tuberculosis

**Type of inflammation:** *chronic specific granulomatous inflammatory lesion w/wo necrosis*

**primary tbc** – *primary infection*

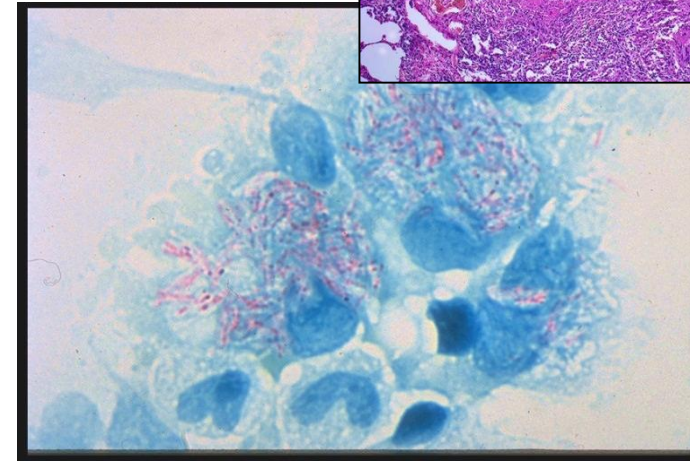
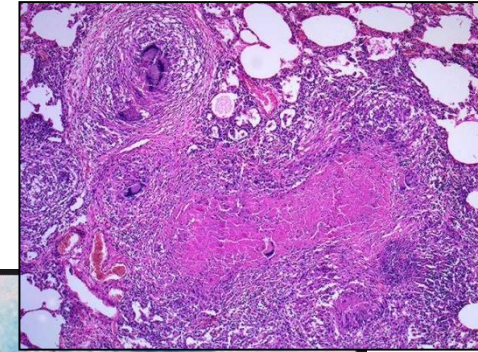
**secunder tbc** – *already sensibilized patient localizes espec in the apical parts of lung – followed by caverna*

*lymphatics – right heart – pulmonary arterial dissemination–* **miliary tbc**

**systemic or localized organic tbc**

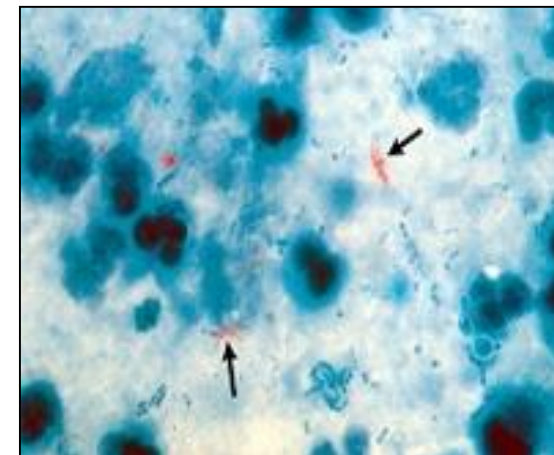
# Tuberculosis

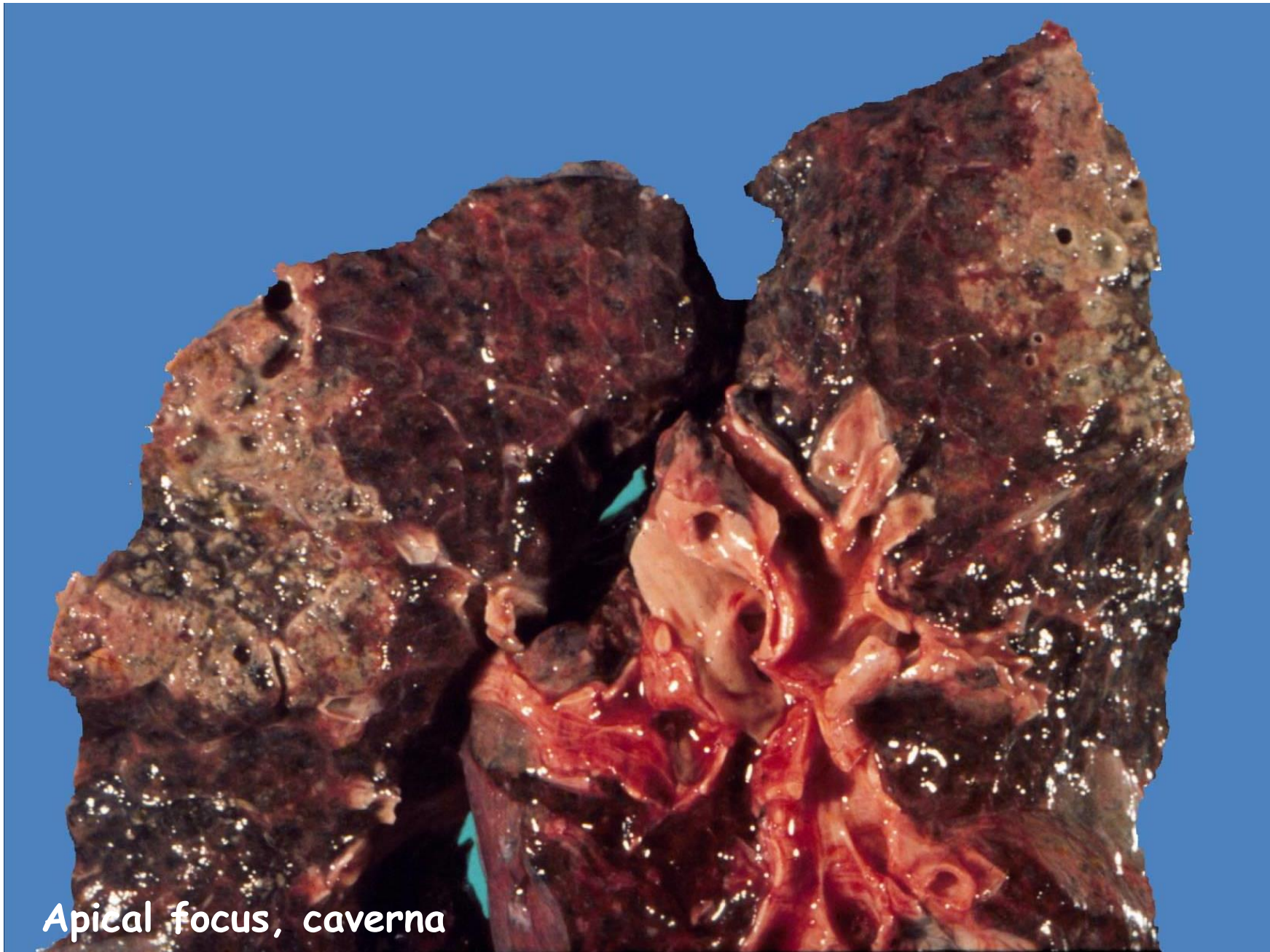
- **Diagnosis:** appearance of bacteria with acid-fast stain,
- positive smears or cultures; 1 bacillus in a 1 cm<sup>3</sup> granuloma indicates the presence of 2000 organisms



Ziehl-Neelsen

Culture  
PCR





Apical focus, caverna

# Granulomatosis w polyangiitis (GPA) (Wegener's granulomatosis)

- Triad of necrotizing angiitis, aseptic necrosis of upper respiratory tract and lungs, focal glomerulonephritis
- **c-ANCA positive in 90%**  
(*Cytoplasmic antineutrophil cytoplasmic antibodies*)
- **Gross: well circumscribed lesion with geographic necrotic appearance**

