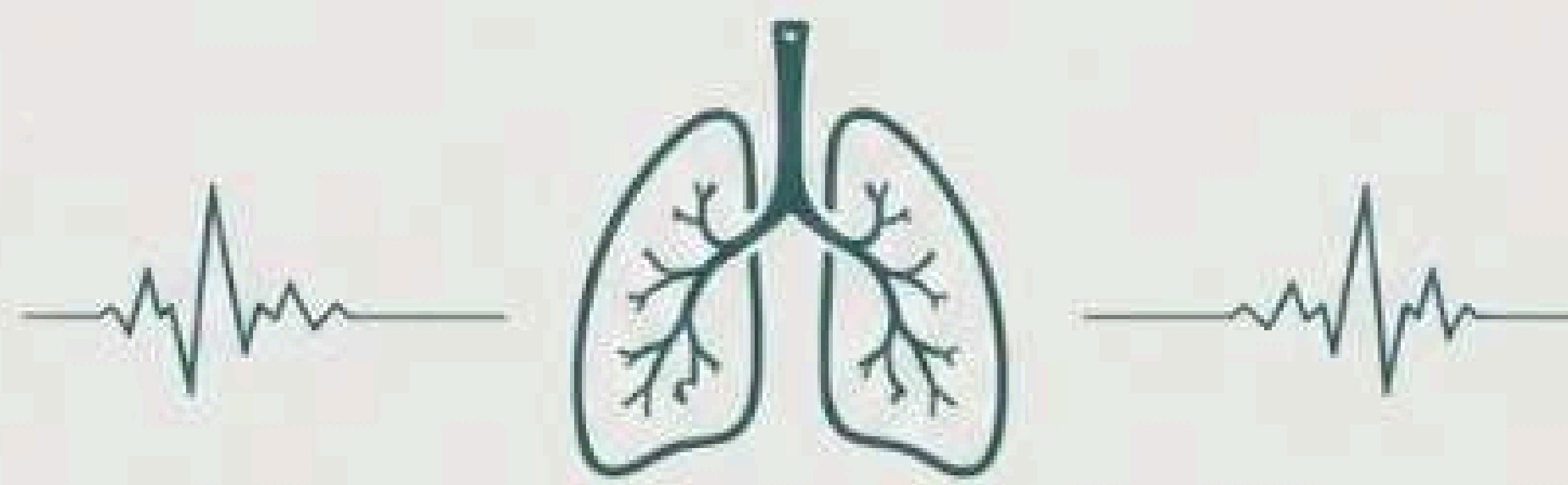
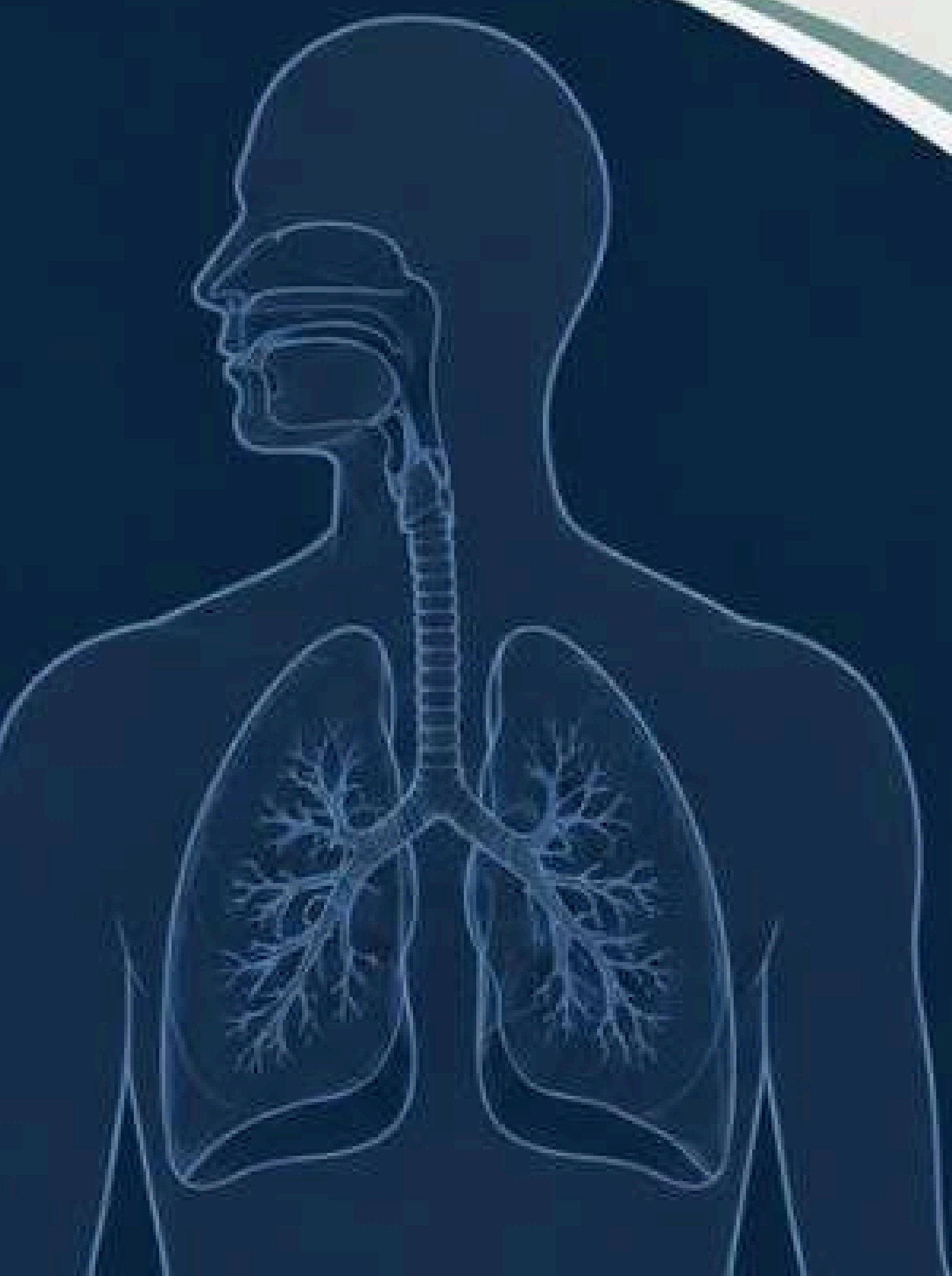


RESPIRATORY SYSTEM PATHOLOGY

• PART 1 •



Dr. Shehab Gamal



URT diseases

Acute Rhinitis (Common Cold) Sinusitis & Pharyngitis:

Caused by

- **Rhinoviruses**
- Corona v, Respiratory syncytial v, Parainfluenza v, Influenza v, Enterov, Adenov & group A beta haemolytic Streptococci

prognosis is usually mild & self limiting

Symptoms

- rhinorrhea, nasal obstruction & sneezing.
- Initially the discharge is watery then becomes thick & purulent
- with or without low grade fever

can be complicated by **bacterial infection**

Gross:

- The mucosa is **edematous** red & **congested**

Microscopic:

- Dense infiltration with neutrophils, lymphocytes & plasma cells
- Congested dilated blood vessels
- Edematous stroma

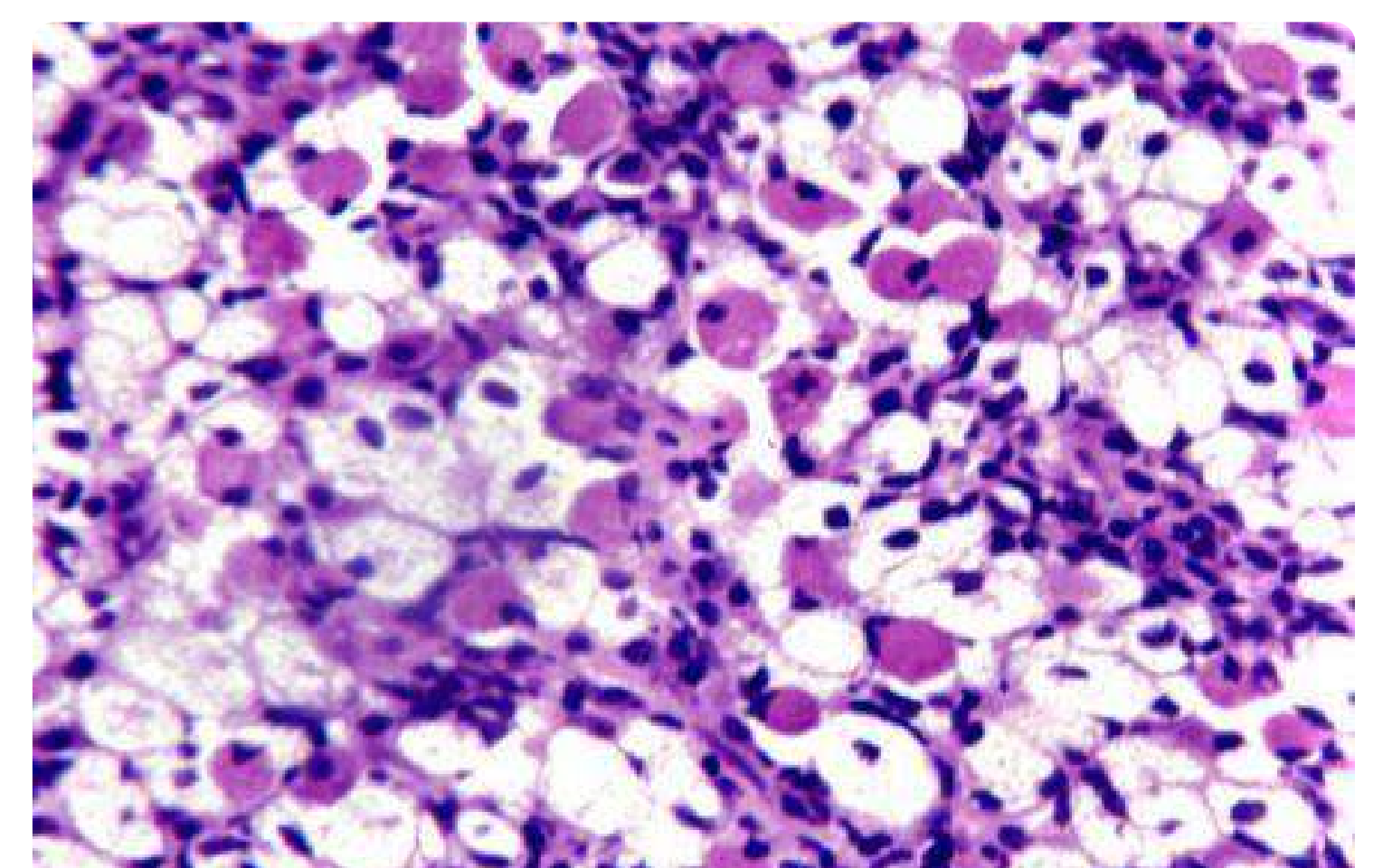
Rhinoscleroma:

Definition

Rhinoscleroma is a **chronic granulomatous inflammatory disease** of the nose and upper respiratory tract.

Microscopic:

- Infiltration by histiocytes, lymphocytes, and plasma cells
- Areas of fibrosis are present
- **Mikulicz cells**: Histiocytes with abundant clear cytoplasm
- **Russell bodies** may be present
- Squamous epithelium may be present



URT diseases

Acute Follicular Tonsillitis:

Clinical Picture

fever, chills, sore throat & dysphagia

examination

both tonsils are markedly enlarged and red with **multiple yellow spots**



Complications:

- Chronic tonsillitis
- Spread of infection to nearby tissues (peritonsillar abscess or otitis media)
- Post streptococcal complications (Rheumatic fever & acute post streptococcal glomerulonephritis)

Peritonsillar Abscess (Quinsy):

examination

- A peritonsillar mass
- Tonsils are red and swollen
- **Deviation of the uvula to one side**



URT diseases

Diphtheria:

Etiology

Caused by *Corynebacterium diphtheriae*

Pathogenesis

- Bacteria implant on the mucosa → elaboration of an **exotoxin** → necrosis of the mucosal epithelium
- This leads to formation of a **pseudomembrane**: a greyish-yellow membrane with abundant fibrinopurulent exudate

Clinical Picture

fever, chills, sore throat with difficulty in breathing

examination

- Whole throat is markedly swollen
- Greyish dirty **membrane** covers the throat

Complications

1- **Suffocation** due to:

- Extensive edema
- Detachment of part of the membrane causing airway obstruction

2- **Absorption of exotoxin:**

- Focal myocardial necrosis
- Polyneuritis



URT diseases

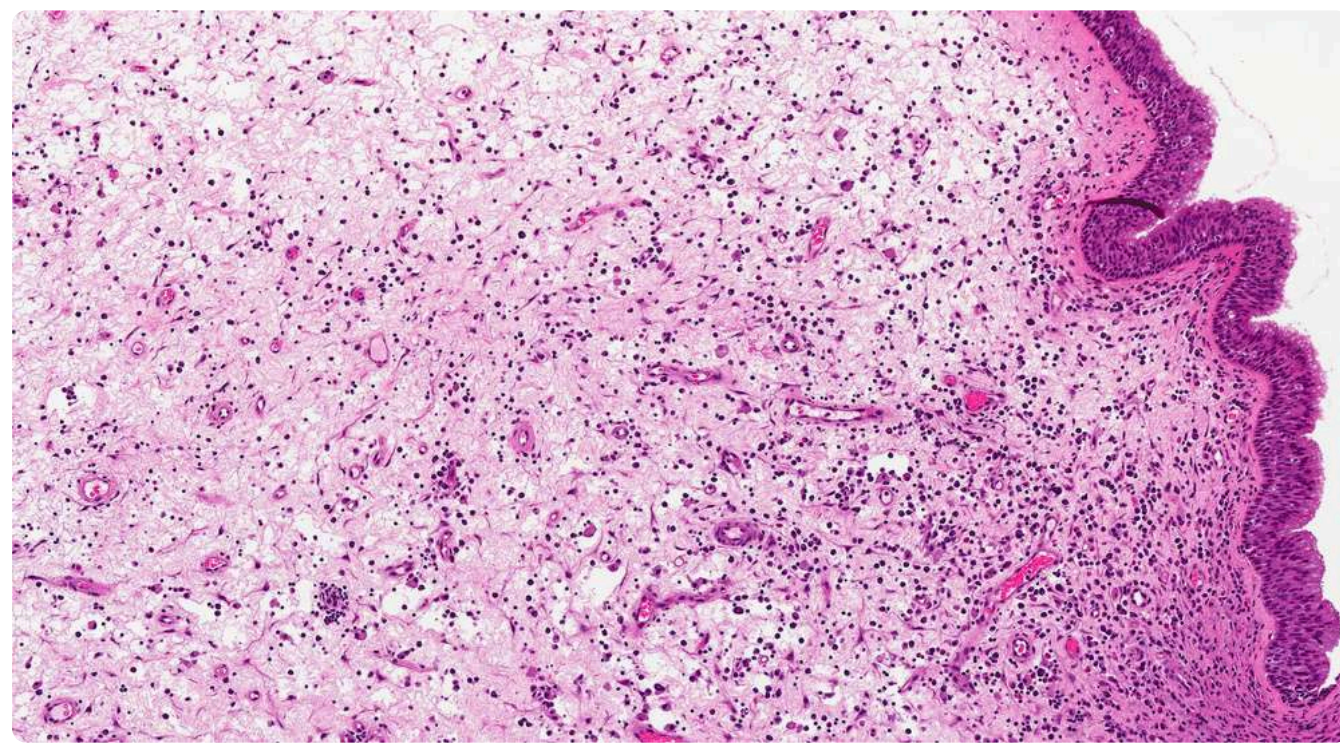
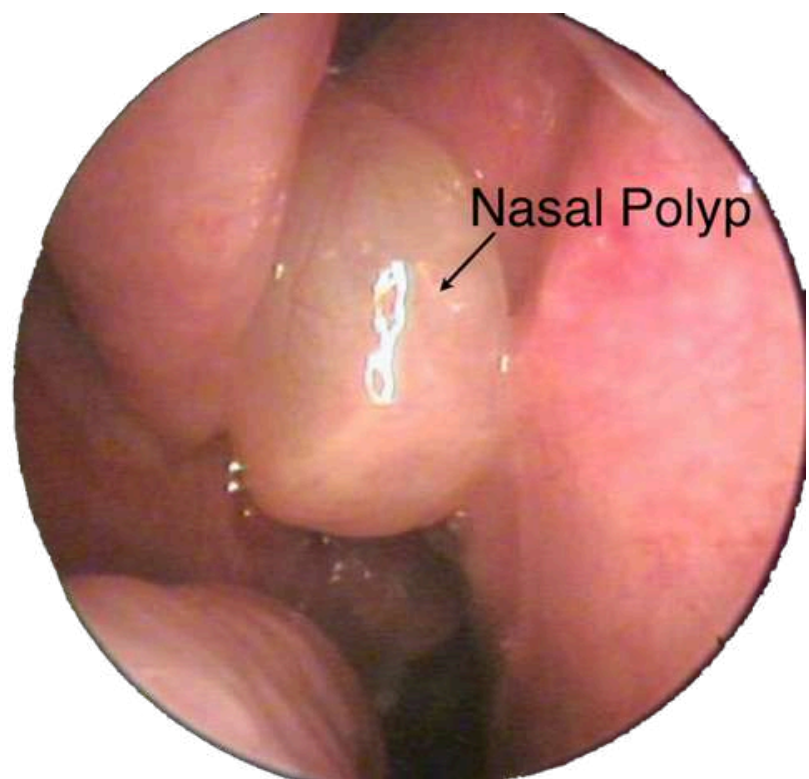
Allergic rhinitis:

type 1 hypersensitivity reaction.

- repeated attacks → chronic changes → hypertrophy and thickening + **nasal polypi**

Gross:

- soft
- glistening
- semi-translucent masses
- extending laterally from the mucosa



Microscopic:

- loose edematous stroma
- covered by respiratory epithelium that may show: **hyperplasia**, **squamous metaplasia** or **focal ulceration**
- **in lamina propria:**
 - infiltration with mixed inflammatory cells (**predominance of eosinophils**)
 - mucus gland hyperplasia

Tumors of the nose:

Nasopharyngeal carcinoma:

linked to Epstein Barr Virus

Three histologic variants:

1- keratinizing SCC

2- Nonkeratinizing SCC

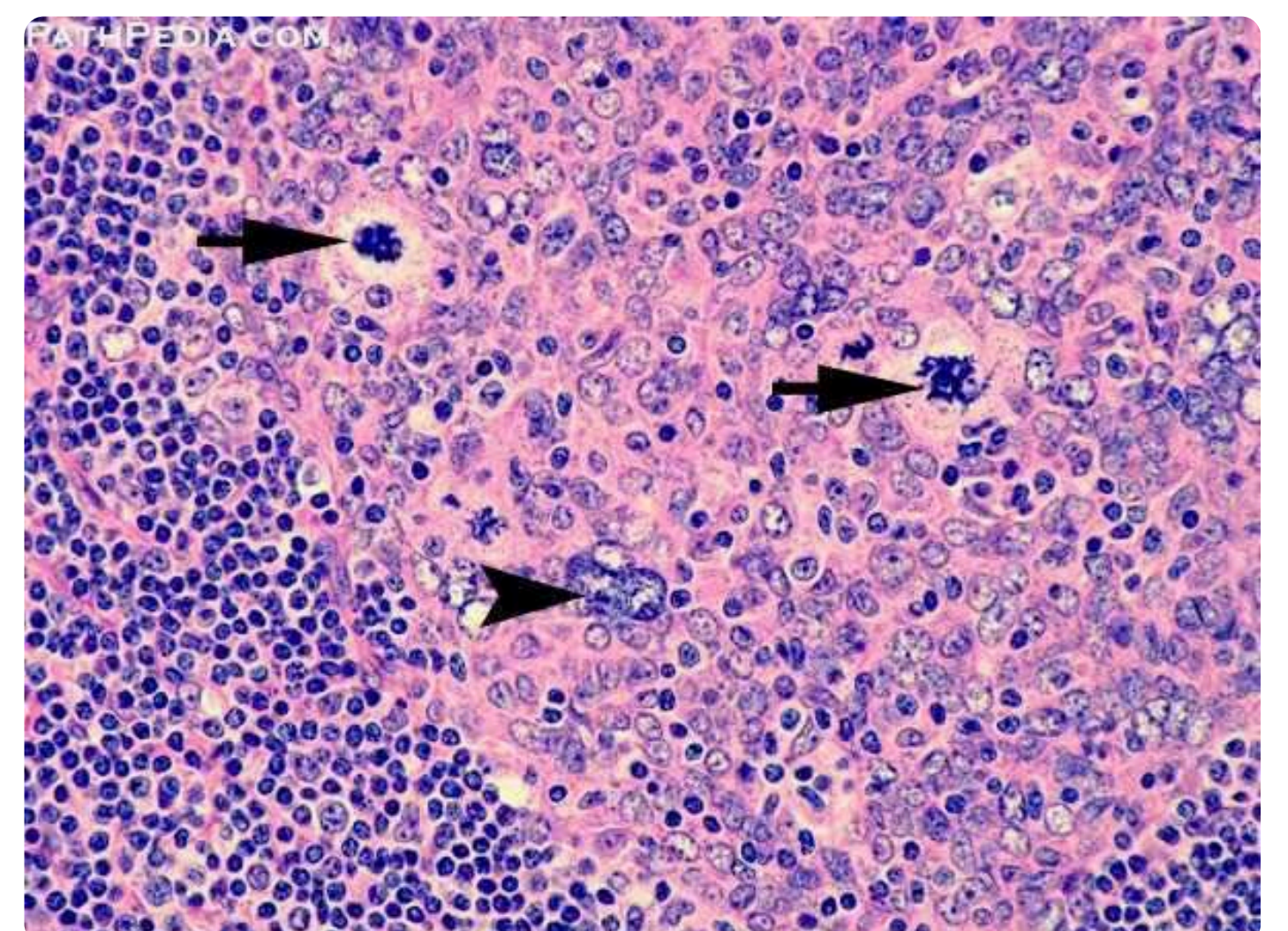
3- Undifferentiated carcinoma:

- the most common variant
- the most commonly linked to EBV
- characterized by:

- sheets of large epithelial cells with indistinct cell borders (**syncytial growth**)
- prominent eosinophilic nucleoli
- surrounded by reactive **T-lymphocytes** (Lymphoepithelioma)

invades locally → spreads to cervical LNs → metastasize to distant sites

radiosensitive



URT diseases

Laryngeal nodule (Polyp):

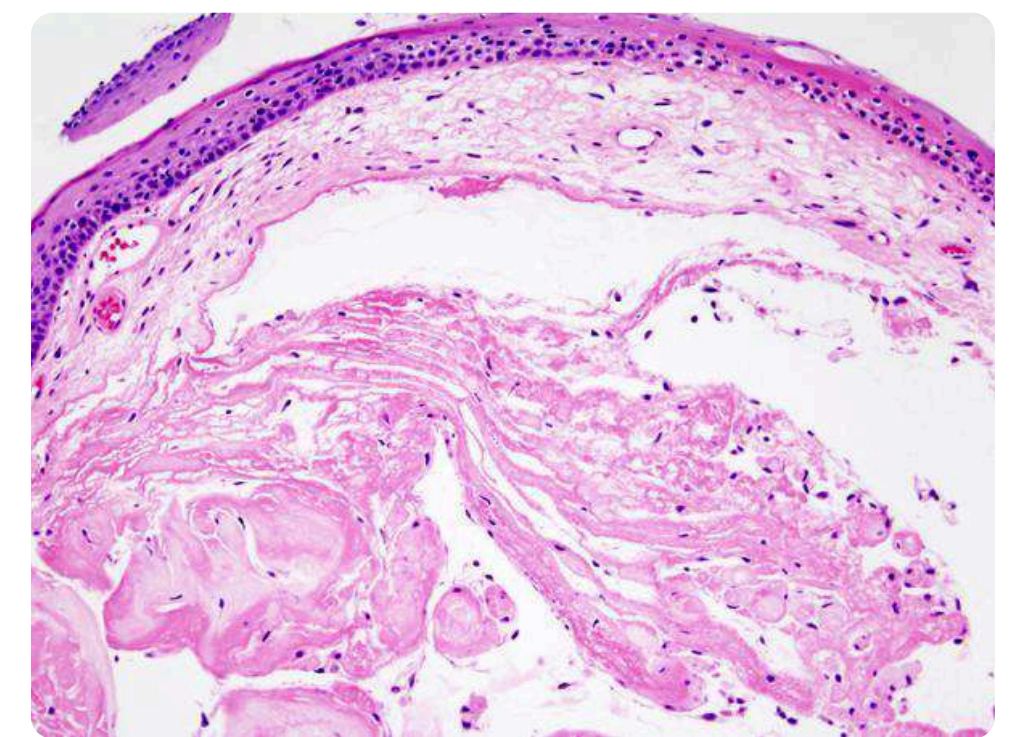
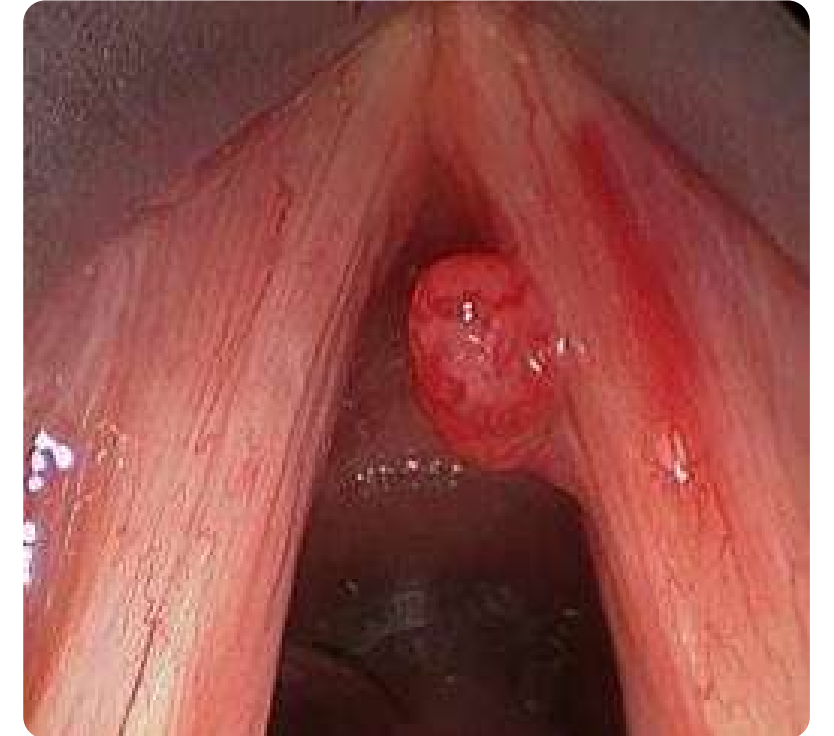
non inflammatory reaction to injury due to: **smoking** or **misuse of voice** (so called **singer's node**)
presents with **hoarseness of voice**

Gross:

- it is a hemispherical protrusion **located on the true vocal cords**
- usually **less than 0.5 cm** in diameter and **can be bilateral**
- has smooth outer surface that **can be ulcerated**

Microscopic:

- **early:** **edematous loose fibrous tissue**
- **late:** **may become hyalinized with dilated blood vessels**



Laryngeal squamous cell papilloma:

it is a **benign** surface epithelial tumor **arising from the vocal cord**

Feature	Juvenile Laryngeal Papilloma	Adult Laryngeal Papilloma
Age	Children & adolescents	Adults & more in males
Number	Usually multiple arising on true vocal cords	Mostly solitary
Extension	Extends to false cords, epiglottis & subglottic area	Doesn't extend
Recurrence	Recurs & is caused by human papilloma virus	Recurs less frequently

Both produce **hoarseness of voice** & may become ulcerated due to trauma leading to **haemoptysis**

URT diseases

Gross:

- **respberry like mass**
- usually less than 1 cm in diameter

Microscopic:

- multiple **finger like projections** supported by **vascular core of CT covered by: orderly typical squamous epithelium** showing :
 - acanthosis
 - papillomatosis
 - hyperkeratosis (+ focal parakeratosis)



Laryngeal carcinoma:

- Represents **2%** of all cancers and **95%** of laryngeal malignant tumours
- Commonly occurs in **males above the age of 50 years**
- **95%** of laryngeal carcinoma are **SCC** but rarely adenocarcinoma
- Presents as persistent hoarseness of voice especially those arising from vocal cords

Predisposing factors and precancerous lesions

- excessive smoking, alcohol and asbestos exposure
- **HPV**
- begins as **carcinoma in situ** (appears pearly gray, wrinkled plaques on the mucosal surface) → fungating, ulcerating and infiltrating mass
- the nearby mucosa may show: **squamous cell hyperplasia, dysplasia or carcinoma in situ**

Clinical Picture

persistent hoarseness of voice

with surgery, Radiation or Combined therapeutic treatments: **many patients can be cured**

URT diseases

Types of laryngeal carcinoma (according to anatomical sites)

I- Glottic (intrinsic) (60-75%):

- arises directly **from** true vocal cords with **sparse lymphatics**
- it is **slowly growing** and sends late metastasis
- usually well to moderately differentiated
- interferes with vocal cord mobility (**symptomizes early**)

} **good prognosis**

II- Supraglottic (extrinsic) (30-35%):

- arises **above** the true vocal cords from the epiglottis and epiglottic folds.
- usually poorly differentiated.
- this site is **rich in lymphatics** → nearly $\frac{1}{3}$ of these tumors metastasize early to cervical LNs

Complications:

- hemorrhage, ulceration, infection and obstruction
- **lung abscess and bronchopneumonia** (due to aspiration of septic materials from the infected necrotic tumor tissue)
- cancer **cachexia** (weakness, anemia and wasting)
- effects of **metastasize**

III- Supglottic (5%):

- arises **below** the vocal cords
- tends to remain clinically quiescent and presents as advanced disease

Gross:

- begins as a small nodule **then it enlarges as a fungating or ulcerating mass**

Microscopic:

- Masses of malignant squamous epithelial cells
- Nuclear pleomorphism, Hyperchromatism, Frequent mitotic figures, **Central keratin formation**, Large vesicular nuclei, Prominent nucleoli, Ample eosinophilic cytoplasm, Intercellular bridges

