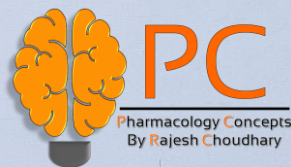


CHRONIC OBSTRUCTIVE PULMONARY DISEASE - COPD OR COAD

These are the clinical terms for a group of Pathological Condⁿ in which there is chronic, partial, or complete, obstruction to the airflow from trachea to smallest airway, that may lead to functional disability of lungs. (Diffuse Lung Diseases)

1. Chronic Bronchitis
2. Emphysema
3. Bronchial Asthma
4. Bronchiectasis
5. Small Airway Disease (Bronchiolitis)

	Ch. Bronchitis	Emphysema	ASTHMA	Bronchiectasis	Bronchiolitis
1. Location	Bronchus	Acinus	Bronchus	Bronchus	Bronchioles
2. Age	Adult	Adult	Extrinsic- Children Intrinsic- Adult	Adult	Children
3. Etiology	↳ Smoking ↳ Air Pollution	→ " — → " —	Ext - Allergy Int - Viral Infection	Infection Obstruction	Smoking Viral Infection
4. Pathogenesis	Impaired Ciliary movements	Deficiency of α -1 antitrypsin	IgE sensitized mast cell	Airway Damage	Damage to surfactant
5. Major Gross feature	Thickened Bronchial wall	Distended air sacs	Overdistended Lungs	Dilated Bronchi & Bronchioles	Occluded Bronchioles
6. Main Histology	Hyperplasia of mucous glands	Broken Alveolar Septa	Mucus plugs in Bronchioles	Inflammed bronchi	Fibrous plugs in Bronchioles
Major Clinical Feature	Persistent cough with expectoration	Exertional Dyspnoea	Bronchospasm	Copious Foul-smelling Expectoration	Cough, Dyspnoea



BRONCHIAL ASTHMA - PATHOLOGY

Asthma (Greek - Panting) is a common chronic inflammatory airway disease, characterized by increased responsiveness of "Tracheo-Bronchial tree" to a stimuli resulting in "Bronchospasm", which may be relieved by spontaneously or therapy

Severe → "Status asthmaticus" → fatal

Sign & Symptoms → Shortness of breath, chest tightness & pain, cough, wheezing, dyspnoea

Whistling or wheezing sound when exhaling

ETIOPATHOGENESIS / TYPE :-

1. **Extrinsic** - Allergic, Atopic → Childhood
↳ Allergen → IgE mediated Immune Sensitization

2. **Intrinsic** → Non-Atopic → Adult
↳ No evidence to immune sensitization

3. **Mixed type** :- Immune Sensitization in early stage & in later, by non allergic like cold, stress, & emotions

MORPHOLOGICAL CHANGES :-

Gross - # Overdistended lungs

Bronchi occlusion

Viscid mucus plugs on bronchioles

Microscopically - # mucus plugs contain respiratory epithelium twisted strips -

"Curschmann's Spiral"



Sputum contains eosinophils & eosinophil derived crystals "Charcot-Leyden Crystals"

ETIOLOGY :-

1. **Airborne substance** - Pollen, Dust mites, mold spore, Pet dander, particles of cockroach waste. # Allergy

2. Respiratory infection like common cold.

3. **Air Pollutants** - SO₂, NO₂, Fumes & Smokes # Allergy

4. **Smoking** :- Impaired ciliary movement, ↓ alveolar macrophages, Metaplasia, ↑ mucous secretion, (+) Vagus & bronchospasm, ↑ protease activity

5. Physical Activity (Exercise induced asthma)

6. Emotional Stress

7. - Foods & its preservatives - # Allergy

8. **Drug induced Asthma** → β-blocker (propranolol), Aspirin, ibuprofen & Naproxan etc

9. Gastro Esophageal Reflux Disease (GERD)

10. Industrial hazards → Smokes, cotton mills, Plastic factories etc

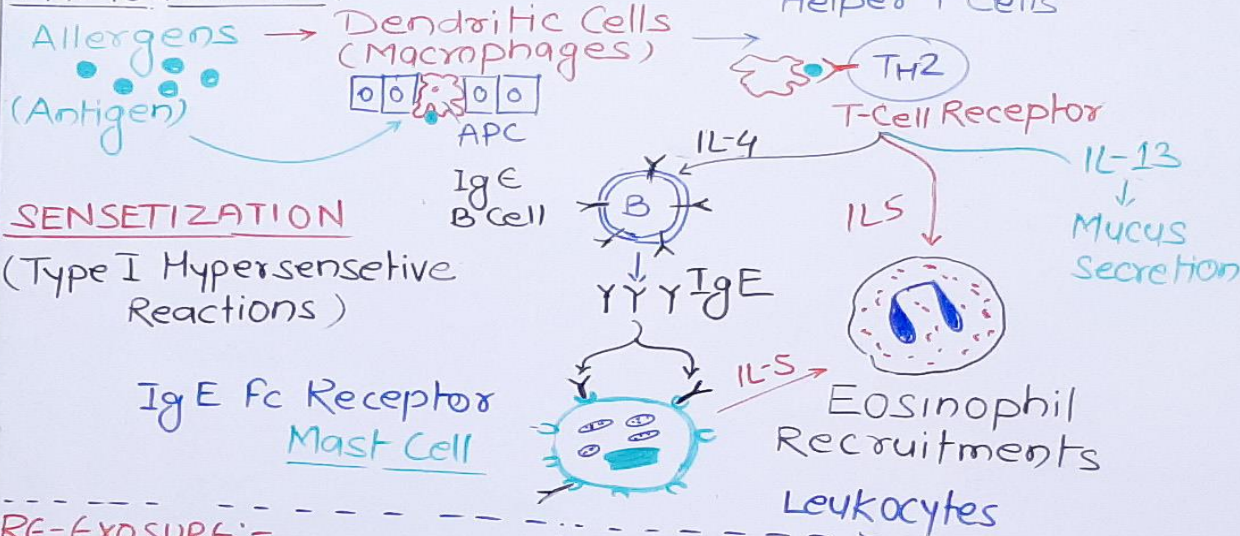
Allergic → IgE Immune Sensitization → Mediators - "Asthma"

Non Allergic → Inflammation → ↑

Some Agent → Acute Bronchospasm → ↑

BRONCHIAL ASTHMA - PATHOLOGY

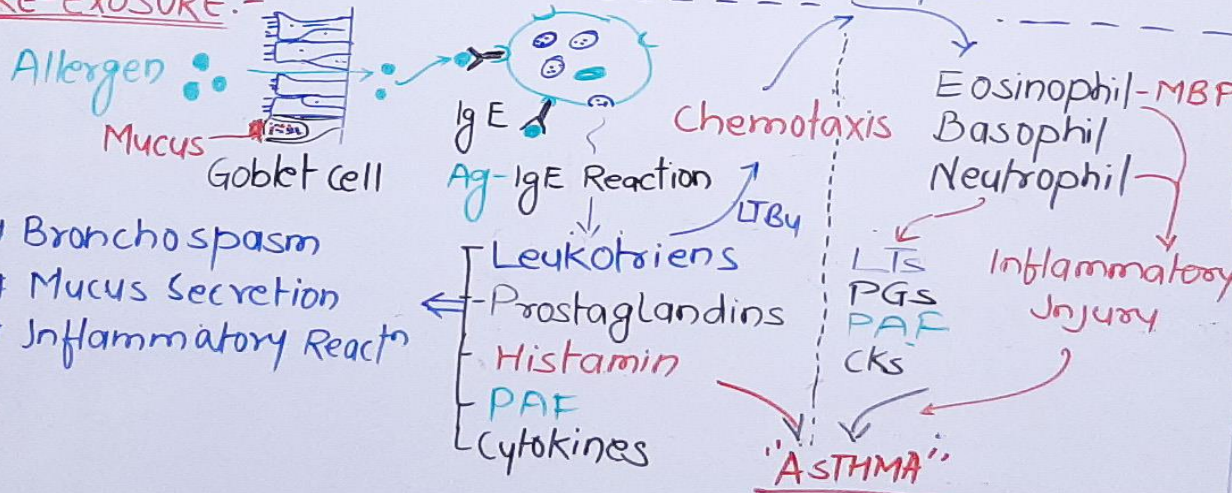
PATHOGENESIS :-



SENSETIZATION

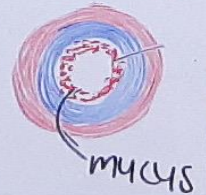
(Type I Hypersensitive Reactions)

RE-EXPOSURE:-



- # Broncho spasm
- # Mucus Secretion
- # Inflammatory Reactⁿ

IMMEDIATE PHASE
(Acute Allergy)



LATE PHASE (Hours)
(Chronic Inf.)

- ## THERAPY:
1. Healthy Life style, Yoga
 2. Avoidance of Allergens & Reseons
 3. Neutralizatⁿ of IgE → Omalizumab
 4. Anti-inflammatory - "Corticosteroids"
 - A) Systemic - Hydrocortisone, Prednisolone
 - B) Inhaled - Beclomethasone dipropionate, Fluticasone propionate
 5. Mast Cell stabilizers → ↓ release of mediators
 - ↳ Sod. Cromoglycate, Ketotifen
 6. Mediators Antagonist → Anti histamines, PAF antagonist, LTs blockers
 - # LTs (LT_{C4} to E₄) blocker → Montelukast, Zafirlukast
 - # 5-LOx inhibitor - Zileuton

7. Bronchodilators -

- (i) β_2 Agonist:- Salbutamol (Albuterol), Bambuterol, Terbutaline, Salmeterol, Formoterol
- (ii) Anticholinergic - Ipratropium, Tiotropium
- (iii) Methyl Xanthines - Theophylline, Aminophylline

