Bronchial Asthma:

- Asthma word meaning "breathlessness or Panting".
- It is the chronic inflammation associated with airway hyperresponsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing, particularly at night or at early morning.

Causes: Unknown

i) Genetic Factors (Extrinic or Atopic asthma).
   → Chromosome 17q 21
   → Familial history of asthma.

ii) Environmental factors (Intrinsic or Non Atopic asthma)
   → Hygiene hypothesis → Reduced early exposure to bacterial / viruses.
   → Altered proportion of Immune cells.

Common Triggers

Allergic	Non allergic
- Dust, Pollen, Animal dander, Sulphates,	- Exercise, Foods / drinks. Viral Infection, Smoke. Weather, Psychological.

Pathology:

Environmental triggers → Dendritic cells → Type 2 Helper cells (Eg: Cigrath smoke)

Produces

IL-4
↓
IgE antibodies (Type I Hypersensitivity)
↓
Mast cells ← Histamines, Leucotrines, Prostaglandins.

IL-5
↓
Eosinophils
↓
Cytokines, Leukotrienes.

→ Produce contraction of the smooth muscle and ↑ production of mucus which makes difficult for breathing.

Clinical features:

- Dyspnea after at rest.
- Expiratory wheeze
- Chest tightness.
- Coughing.
- Attacks shows diurnal pattern.
- Attacks are exabbrated by the triggering factors or the medication.

• Signs

Auscult wheeze expiratory is heared all over the lung field.

Inspection - Use of accessory muscles. expansion of chest reduced less than 3 cm.

- Charcot leyden crystals (Needle shaped from eosinophil breakdown)
- Curschmann spirals (Mucus plugs)
  ↳ Block the air and medication

Asthma Classified according to

- Frequency of symptoms
- Forced Expiratory volume in 1 sec (FEV1)
- Peak expiratory flow rate (PEFR)
- Frequency of Medication Use.

Types:-

Intermittent → Mild → Moderate → Severe

Diagnosis and Investigation:

- Spirometry:
  - FEV$_1$ ≥ 12% and 200ml increase following administration of a bronchodilator.
  - PEFR is >20% diurnal variation on ≥ 3 days in a week for 2 weeks.

→ Other Investigation:

→ Skin prick test for the presence of Atopy

→ IgE total value

→ Eosinophilia.

→ Chest X-ray usually normal. Lung show lobar collapse if large mucus are accumulated.

Differential diagnosis:

- All that wheezes are not asthma.

i) Cardiac asthma (⇒ Congestive heart failure ⇒ Left sided heart failure)
   ↳ Paroxysmal asthma - in the first half of the night, and BS in the second half.
   Wheeze all over the lung field in BA.
   over the cardiac area basal crepitation.

ii) Chronic Bronchitis

iii) Emphysema

iv) Tracheal obstruction

v) Foreign bodies or tumour.

Management:

- Avoid contact with the triggers.
- Medications like bronchodilators, Inhalation, Glucocorticosteroids.

Complications :

- Respiratory failure
- Frequent respiratory infections
- Mediastinal emphysema
- Pulmonary collapse
- Cough fractures
- Bronchiectasis
- Allergic bronchopulmonary aspergillosis.

Acute Severe Asthma (Status Asthmaticus)

- It is medical emergency.
- This is a life threatening condition where the patient is at the risk of developing respiratory failure.
- This severity and intensity should be noted and in this stage the patient is usually not responsive to the bronchodilators.
- Any patient of asthma may develop it and it is precipitated by infection, allergic factors or stress.
- The attack is so severe that the patient is not even able to cry for help.