

ASTHMA

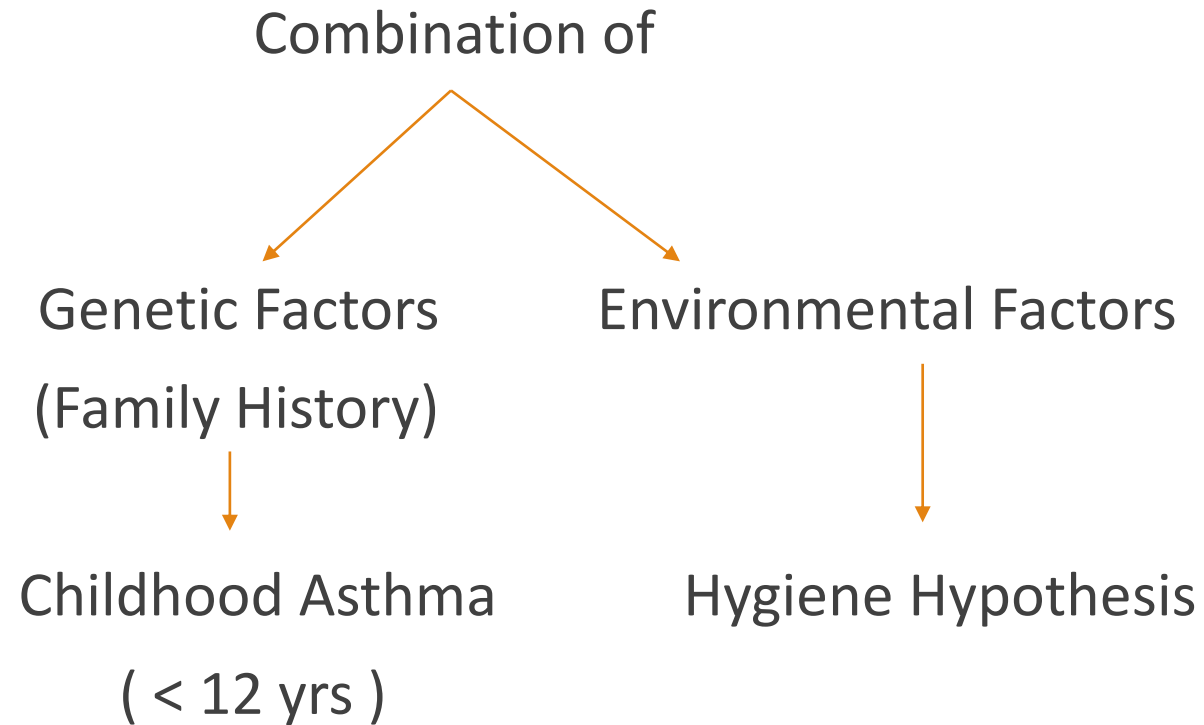
FROM
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INTRODUCTION

- ❖ It is an episodic, reversible Bronchoconstriction, resulting from increase responsiveness of tracheobronchial tree to various stimuli.
- ❖ Chronic inflammatory condition.
- ❖ Can occur at any age but most common chronic disease in children.

AETIOLOGY

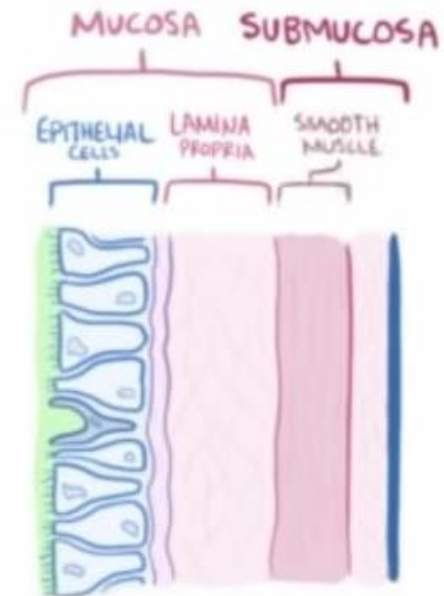
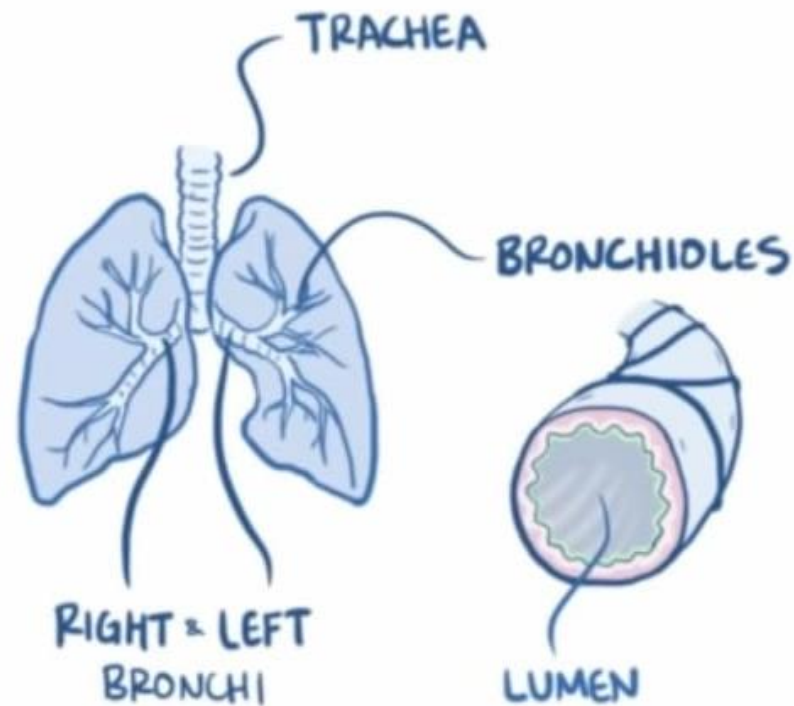
❖ Specific causes are unknown.



TRIGGERS OF ASTHMA

- ❖ Air Pollution (Cigarette smoke, car exhaust)
- ❖ Allergens (Dust, Pollen, Pet dander, Perfumes)
- ❖ Medications (Aspirin, beta blockers)
- ❖ Food
- ❖ Change in climate
- ❖ Exercise induced asthma
- ❖ Emotional stress and anxiety

Pathophysiology



Inhalation of Allergens



Picked up by dendritic cells



Th 2 cells



Produces


Cytokines



IL - 4

IL - 5

IL - 4



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graph TD; A[IL - 4] --> B[Production of IgE antibodies]; B --> C[Coats the mast cells ( Mast cell sensitization )]; C --> D[and stimulates them to release granules containing things like ( mast cell degranulation )]; D --> E[Histamine, leukotrienes, ( C4, D4, E4 ) and Prostaglandin]; E --> F[Type I Hypersensitivity reaction];
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Production of IgE antibodies

Coats the mast cells (Mast cell sensitization)

and stimulates them to release granules containing things like (mast cell degranulation)

Histamine, leukotrienes, (C4, D4, E4) and Prostaglandin

Type I Hypersensitivity reaction

IL - 5



Activates eosinophils which promotes an immune response by releasing



More CYTOKINES and LEUKOTRIENES

BIPHASIC RESPONSE



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graph TD; A[BIPHASIC RESPONSE] --> B[Early response]; A --> C[Late Response]
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Early response

Late Response

Early Response

- ❖ Bronchospasm

- ❖ increased mucus secretion



This leads to narrowing of the airways



Airway obstruction

Late Response



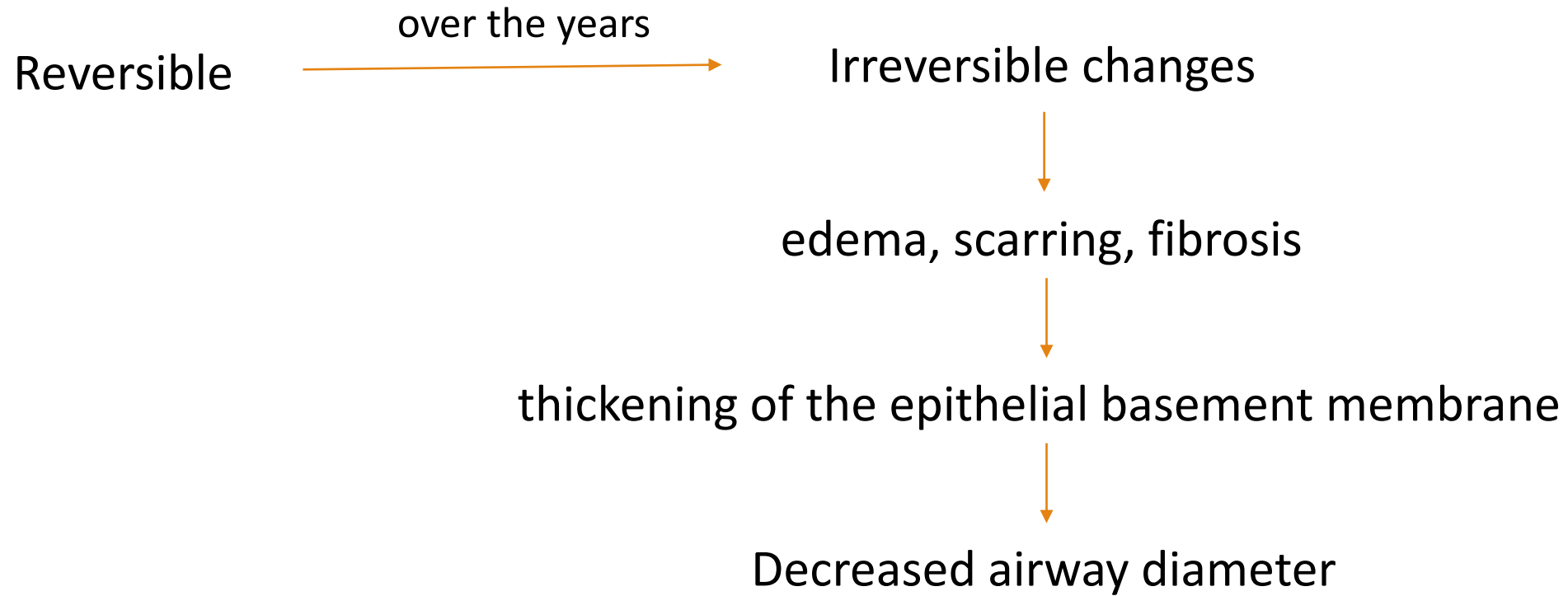
Release of chemical mediators



Damage the endothelium of the lungs



Airway obstruction



Classification

	EXTRINSIC ASTHMA	INTRINSIC ASTHMA
CAUSE	Atopy: type 1 hypersensitivity reaction	Non atopic / non allergic
TRIGGERS	Environmental factors	Cold weather, aspirin, exercise, stress
IgE MEDIATED	Yes	No

❖ From least to most severe, types of Asthma are :

- Intermittent Asthma (episodic)
- Mild Persistent
- Moderate Persistent
- Severe Persistent

OTHERS

- ❖ Exercise – induced Asthma
- ❖ Occupational Asthma
- ❖ Nocturnal Asthma
- ❖ Cough – Variant Asthma
- ❖ Mixed Asthma

Clinical Features

❖ TRIAD OF ASTHMA

- Dyspnoea
- Wheezing
- Cough

❖ Limitation of activity

❖ Sweats Profusely

❖ Accessory muscles of Respiration are used excessively

❖ Fatigue and restlessness

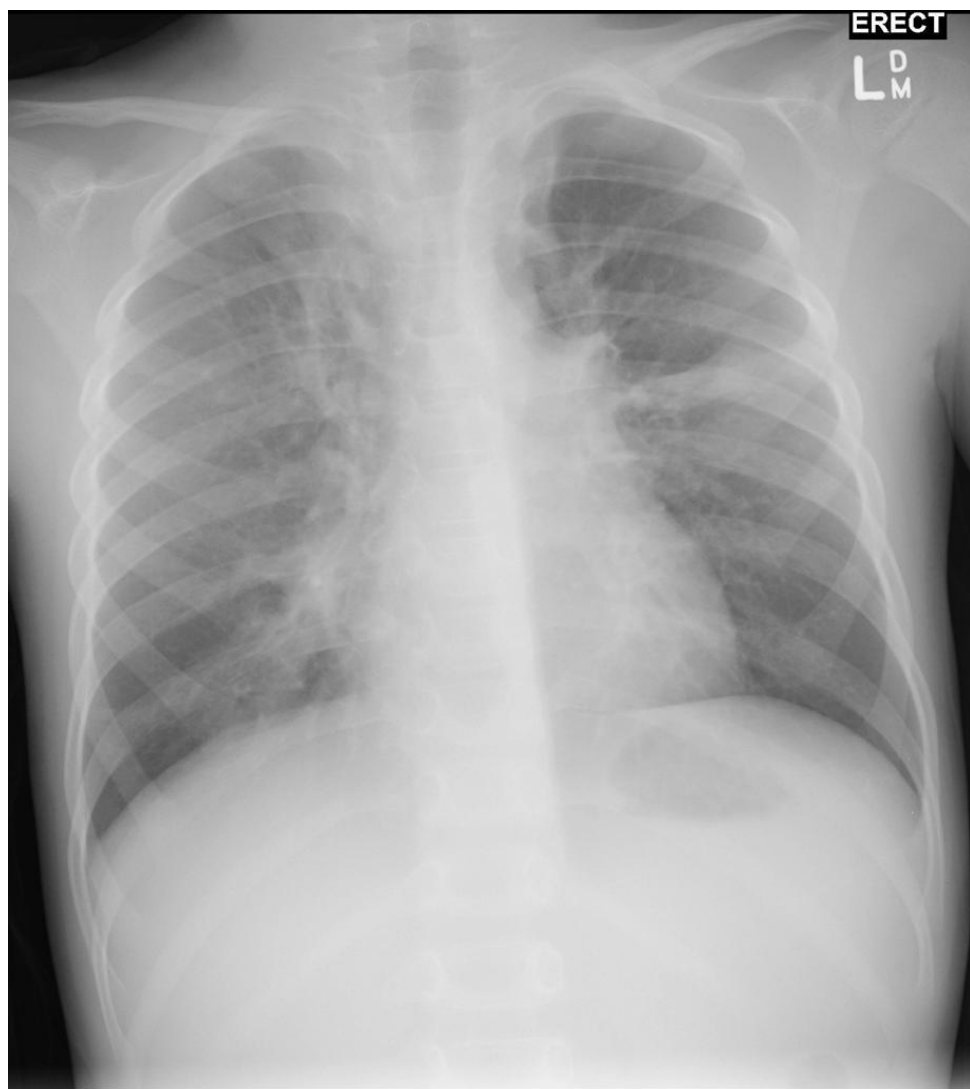
❖ Cough (non productive in early phase)

❖ Hyper – Resonant Chest

Investigations

❖ Chest Radiography :

- Chest Radiography shows normal in 75% cases or shows signs of segmental or lobar collapse & lungs are hyperinslated.



❖ Lung Function Test:

- Gold standard Test for asthma
- Spirometry shows reduction in FEV1, FEV1 / FVC ratio PEF (Peak Expiratory Flow)

- ❖ As per asthma is reversible increase in FEV1 > 12% or minutes after inhalation of 200 – 400 µg of salbutamol is consider as asthma.
- ❖ The important thing to remember here is that we can do this test only when the patient is symptomatic.
- ❖ What if patient is asymptomatic or with normal spirometry value?

Methacholine Challenge Test (Provocation Test)

- ❖ Perform under most supervision & guidance.
- ❖ First do spirometry for FEV1, FEV1/FVC ratio.
- ❖ Patient is now given methacholine. It will do bronchoconstriction.

- ❖ So, if the patient will be having asthma, we already know they have a hyperreactive smooth muscle so the bronchi would go into contraction very easily.
- ❖ So will repeat their PFT.
- ❖ Their FEV1 will drop 20% or more from the original FEV1 it confirms that the diagnosis is asthma.

- ❖ CBC : Elevated Eosionphil may indicate asthma.
- ❖ Skin test : may confirm allergens.
- ❖ Serology : Elevated IgE antibodies may indicate asthma.

Thank You 😊