



## SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES

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### ASTHMA

#### DEFINITION

A chronic inflammatory condition which is characterised by narrowing of the respiratory passage ways which cause difficulty in breathing.

Three triads of asthma:

- Airway obstruction
- Smooth muscle hyperplasia with hyperactivity ( Bronchospasm)
- Inflammation

#### EPIDEMIOLOGY

- About 330 million people are affected with the disease. 4 lakh people die every year from the disease.
- More common in developing countries.
- In adult, women have higher rate of asthma than men.

#### SIGNS AND SYMPTOMS

- Dry irritating cough
- Chest tightness
- Wheezing
- Dyspnea

#### ETIOLOGY

Atopic asthma

- It is also called extrinsic asthma
- Occur due to exposure to external environment
- It may occur due to pollens, dust.
- Genetic cause., Highly familial inherited
- 80% of the people are tolerable with allergic reactions
- 20% of the people don't tolerate hypersensitive allergic reactions

Non-atopic asthma

- It is also called as intrinsic asthma
- Aspirin sensitivity
- COLD
- Exercise
- Stress
- Occupational toxins

## **PATHOGENESIS**

Allergens engulfed by the dendritic cells. On engulfment of allergens dendritic cells get activated. Dendritic cells secrete chemokines and attract T-helper 2 cells and get activated.

On activation of T cells, it secretes IL-13 and IL-4 to promote IgE production in plasma cells.

This IgE gets bound with the mast cells. Then allergens from the mucus membrane bind with IgE which is present in mast cell. On binding, mast cells release mediators such as Histamine, Prostaglandin and Leukotrienes.

These three act on smooth muscle, stimulate smooth muscle and causes BRONCHOCONSTRICTION

And Prostaglandin causes inflammatory reactions.

On the other hand, this T helper 2 cell releases IL-5 and promotes Eosinophil production in bone marrow.

This Eosinophil is attracted by epithelial cells which is present below the mucus membrane.

This causes increased production of Eosinophil in mucus membrane.

Because of Eosinophil production, there is an increased mucus production.

## **DIAGNOSIS**

Pulmonary function test

It is performed by Spirometer

FEV1: Forced Expiratory Volume in the first second. The volume of air that can be forced out in one second after taking a deep breath, an important measure of pulmonary function.

FVC: forced vital capacity, is the full amount of air that can be exhaled with effort in a complete breath

## **TREATMENT**

### 1. Beta-2-agonist:

- Salbutamol
- Salmeterol
- Terbutaline
- Formeterol

### 2. Non-selective sympathomimetics:

- Adrenaline
- Isoprenaline
- Ephedrine.