

BRONCHIAL ASTHMA

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- Asthma is a disease of airways that is characterised by increased responsiveness of the tracheobronchial tree to variety of stimuli resulting in widespread spasmodic narrowing of the air passages which may be relieved spontaneously or by therapy.
- Asthma is an episodic disease manifested clinically by paroxysms of **dyspnoea, cough and wheezing**

ETIOPATHOGENESIS AND TYPES

- Based on the stimuli initiating bronchial asthma, two broad etiologic types are traditionally described:
- *extrinsic (allergic, atopic) and*
- *Intrinsic (idiosyncratic, non-atopic) asthma.*
- A third type is a *mixed pattern* in which the features do not fit clearly into either of the two main types

1. Extrinsic (atopic, allergic) asthma

- This is the most common type of asthma. It usually begins in childhood or in early adult life.
- Most patients of this type of asthma have personal and/or family history of preceding allergic disease such as rhinitis, urticaria or infantile eczema.
- Hyper sensitivity to various extrinsic antigenic substances or 'allergens' is usually present in these cases

- Most of these allergens cause ill effects by inhalation e.g. house dust, pollens, animal danders, moulds etc.
- Occupational asthma stimulated by fumes, gase and organic and chemical dusts is a variant of extrinsic asthma.
There is increased level of IgE in the serum and positive skin test with the specific offending inhaled antigen representing a IgE-mediated type I hypersensitivity reaction which include an 'acute immediate response' and a 'late phase reaction':

- *Acute immediate response* is initiated by IgE-sensitised mast cells (tissue counterparts of circulating basophils) of the mucosal surface.
- Mast cells on degranulation release mediators like histamine, leukotrienes, prostaglandins, platelet activating factor and chemotactic factors for eosinophils and neutrophils.
- The net effects of these mediators are bronchoconstriction, oedema, mucus hypersecretion and accumulation of eosinophils and neutrophils

- *Late phase reaction* follows the acute immediate response and is responsible for the prolonged manifestations of asthma
- It is caused by excessive mobilisation of basophils, eosinophils and neutrophils.
- These result in further release of mediators which accentuate the above-mentioned effects.
- In addition, inflammatory injury is caused by neutrophils and by major basic protein (MBP) of eosinophils

2. Intrinsic (idiosyncratic, non-atopic) asthma

- This type of asthma develops later in adult life with negative personal or family history of allergy, negative skin test and normal serum levels of IgE.
- Most of these patients develop typical symptom complex after an upper respiratory tract infection by viruses.
- Associated nasal polypi and chronic bronchitis are commonly present.
- There are no recognisable allergens but about 10% of patients become hypersensitive to drugs, most notably to small doses of aspirin (aspirin-sensitive asthma)

MORPHOLOGIC FEATURES

- *Grossly*
- the lungs are overdistended due to over-inflation.
- The cut surface shows characteristic occlusion of the bronchi and bronchioles by viscid mucus plugs

- **Microscopically, the following changes are observed**

1. The mucus plugs contain normal or degenerated respiratory epithelium forming twisted strips called Curschmann's spirals.

2. The sputum usually contains numerous eosinophils and diamond-shaped crystals derived from eosinophils called Charcot-Leyden crystals

3. The bronchial wall shows thickened basement membrane of the bronchial epithelium, submucosal oedema and inflammatory infiltrate consisting of lymphocytes and plasma cells with prominence of eosinophils.

There Is hypertrophy of submucosal glands as well as of the bronchia smooth muscle

CLINICAL FEATURES

- Asthmatic patients suffer from episodes of acute exacerbations interspersed with symptom free periods.
- Characteristic clinical features are paroxysms of dyspnoea, cough and wheezing.
- Most attacks typically last for a few minutes to hours.
- When attacks occur continuously, it may result in more serious condition called status asthmaticus.

Homoeopathic medicines

- ARSENICUM ALBUM
- BROMIUM
- ANTMONIUM TART
- NATRUM SULPH
- KALI CARB

Reference

- Harsh Mohan Text Book of Pathology