Chronic Stable Asthma

Sanjeev Mehta, Vishisht Mehta*, Karishma Bhatia*

Introduction

Asthma is a serious medical condition that ranks amongst the commonest chronic illness in the world. It affects all ages, with its greatest burden in the younger age group. Inadequately treated or controlled disease places severe limitations on daily activities. Asthma deaths are rare but unfortunately do occasionally occur. Early diagnosis and proper management reduce the socioeconomic burden of asthma and enhance patients’ quality of life.

In spite of significant development in effective, and in our country, reasonably affordable, medications, in asthma delivery devices, and in education, large sections of the asthma affected population, in India as in the rest of the world, suffer from this disorder.

Social stigma, unfounded fears, prejudices, lack of education, poor motivation, persistence of triggers, possibly pollution, and economic factors are reasons for poor control.

This being said, it is being increasingly recognised that asthma and is complex disorder and one size does not fit all. There are many phenotypes of asthma and disease heterogeneity, steroid resistance and non responsiveness to present treatments may contribute to poor control of asthma.

New treatments, recently approved, and those in advanced stages of trials, may fill an important gap in our therapeutic armamentarium.

Definition

Asthma has significant genetic and environmental components, but since the pathogenesis of asthma is unclear, it is defined by its clinical, physiological and pathological characteristics.

GINA (Global Initiative For Asthma) Report 2012 defines asthma as ‘A chronic inflammatory disorder of the airways in which many cells and cellular elements play a role. The chronic inflammation is associated with airway hyperresponsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing, particularly at night or in the early morning. These episodes are usually associated with widespread, but variable, and often reversible, airflow obstruction within the lung, that is often reversible either spontaneously or with treatment.’

Epidemiology

Asthma is estimated to affect about 300 million people worldwide with the annual worldwide mortality estimated at about 250,000. The global prevalence ranges from 1% to 18%. Part of this variation may be explained on the basis of genetics and environmental reasons, and part of it is probably due to lack of a good definition and varying standards. The increase in asthma symptoms is Asia, Africa and Latin America indicates that the epidemic is on the rise though due to a decrease in prevalence in Europe and America, the global differences are decreasing. The WHO estimates that 15 million DALYs (Disability Adjusted Life Years) are lost due to asthma.

Asthma Development

The factors that affect asthma may either cause the development of asthma or may trigger asthma, some may do both.

Pathogenesis

The exact pathogenesis is inadequately understood, probably reflecting the complexity of the asthma syndrome. Hence the one causation or one pathogenesis model does not explain all types of asthma. Given this limitation, the generally accepted view of asthma is, asthma is an inflammatory disorder of the airways, which involves several
Cells and mediators, that result in characteristic pathophysiological changes. In ways that are still not well understood, this pattern of inflammation results in airway hyperresponsiveness and the symptoms of asthma. The cells, mediators and the proposed mechanisms are shown in the pictures and tables below.

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**Factors Influencing the Development and Expression of Asthma**

**Host Factors**
Genes predisposing to Atopy or the Airway Hyperresponsiveness
Obesity
Sex

**Environmental Factors**
Allergens
Indoors - Domestic Mites, furred animals, cockroach allergen, fungi, mold, yeast
Outdoors - Pollen, fungi, mold, yeast
Occupation Sensitisers
Infection (esp. viral)
Tobacco smoke - active or passive
Air pollution - outdoor/indoor
Diet

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**Clinical Features**

Clinical presentation is episodic shortness of breath and cough, usually nocturnal and often seasonal or following a trigger. It is often associated with one of the attributes that we use to define asthma namely its trigger, such as exercise, or exposure to dust or to an occupation. The hallmark of these symptoms is that
they usually start at a young age and vary with the triggers, often with the same intensity. This is a major difference from other diseases such as CF or COPD that are persistent and usually progressive over time.

**Assessment and Monitoring**

Since these features are variable and fluctuate over time, follow up is difficult but is needed so as to adjust treatment. Follow up is by assessing clinical symptoms, clinical scores such as ACT, and lung function assessment by Peak Flow Meter, and Spirometry. Recent advances such as biomarker assessment may more accurately reflect disease activity and hence may be useful in assessing asthma and planning treatment. FeNO and exhaled breath condensates are a step in this direction but need further evaluation.

**Treatment**

Treatment is directed towards maintenance of Asthma Control as outlined in the GINA guidelines

In view of the present understanding of the inflammatory nature of asthma, corticosteroids form the mainstay of treatment. Inhaled corticosteroids

Below is the stepped approach of treating asthma as outlined in the GINA report 2010.

Clinical features, monitoring and treatment are dealt in greater details in other chapters.

**References**