Asthma control in the first decade of 21st century

There is a long history of changing concepts on asthma from the antiquity to the modern times. Derived from the Greek root meaning “to pant heavily” or “gasp for breath”, asthma was known by different names in different cultures of China, Egypt, Hebrew, Mesopotamia and of the Greco-Roman periods. Known as “tamka swasa” in the ancient Vedic texts, asthma has got a good clinical description in “Charaka Samhita”- the first Ayurveda materia medica from India. There has been a remarkable understanding of the illness in the last century with a clear and relatively sudden change in its definition and pathogenesis in just one decade between 1985-1995. Clearly, humans have lived with asthma in spite of all the disability caused by this illness. We also know of celebrities and top achievers of modern age in all spheres of life who have effectively coped with asthma. It is obviously an illness which one can control and live with – even though it lasts till life.

The asthma burden

There is an enormous global burden of asthma with prevalence figures up to 10-11 per cent in children in countries such as Australia and New Zealand. Most of the Asian countries including India and China, although report a relatively lower prevalence rates than those in the West, account for a huge burden in terms of absolute numbers of patients. In India, there is a median prevalence of about 2.4 per cent in adults of over 15 yr of age.

The prevalence is higher in children. The total burden of asthma in India at an overall prevalence of 3 per cent is estimated at over 30 million patients. A nationwide multicentric study on prevalence and risk factors of asthma is already on under the auspices of Indian Council of Medical Research (ICMR).

What is asthma control?

There is lack of a precise definition of control of asthma. While clinical asthma control is relatively easy to understand, the pathophysiological control of airway inflammation and hyper-reactivity, the two critical features of asthma, is rather difficult to define. The Global Initiative for Asthma (GINA) guidelines include several criteria as goals of asthma management. Minimal (or absence of) symptoms during day and night as well as during exercise, minimal need for reliever medication, normal physical activity, absence of exacerbations and maintenance of normal lung function are some of the objectives of asthma control. Prevention of side effects of asthma treatments, of development of irreversible airflow obstruction, and of asthma related mortality are other important goals.

How to control asthma?

Pharmacological management occupies the key position in the overall plan of management. The GINA guidelines recommend a comprehensive management plan which includes a treatment...
programme stepped up or down depending upon the disease severity for an adequate control of asthma. Based on the GINA guidelines, the Indian experts and associations used a consensus approach in a World Health Organization and Government of India Biennium Collaborative Programme to adopt guidelines for practice at different levels of health care. The treatment plans recommended in these guidelines are broadly similar to the GINA and other international guidelines but are somewhat simpler and practical based on the Indian experience and applicability. Asthma control was generally based on the stage of severity. There is frequently an overlap of some of the clinical criteria used for staging. A patient is generally assigned to the most severe stage in which any feature may occur and the presence of one of the features of severity is sufficient to place a patient in that category. In any case, a stage is not a permanent feature and an individual’s classification will change with time and treatment. Therefore, the new GINA guidelines base the management strategy as level of disease control.

The two types of anti-asthma drugs are grouped as controllers or relievers based on their clinical use in asthma. The controllers are the drugs used on a long term basis for maintenance therapy to keep asthma under control. Relievers on the other hand are the short and rapid acting bronchodilators which relieve the acute symptoms of asthma (such as the cough, breathlessness and wheeze). Asthma controllers are essentially the drugs which suppress the ongoing airway inflammation, reduce bronchial hyper-responsiveness and improve the lung function. Inhaled corticosteroids (ICS) constitute the best available anti-inflammatory asthma controllers as of today. Oral or parenteral administration of corticosteroids is reserved for shorter periods for acute exacerbations. Combined preparations of ICS such as fluticasone or budesonide with a long acting beta agonist (LABA) such as salmeterol or formoterol offer the most effective control for moderately severe and severe asthma. Ciclohale, a recently marketed long acting ICS in India is a good alternative for once a day administration.

Essentially, the control of asthma is best achieved with inhalation therapy introduced since 1938. In India, the inhalational management of respiratory disorders had been popular in the medieval era through the use of smoking of medicinal plants such as “dhatura” cigarettes containing anticholinergic agents. Some of the more ancient descriptions contain detailed directions on smoking of various medicines. But the use of modern inhalational drugs initially with the help of atomizers and later with dry powder or metered dose inhalers was rather delayed than in the West. It is also very pertinent to note that the inhalational therapy is both a boon and a bane in asthma control strategies. The treatment method is advantageous because of its immediate, local action in the respiratory tract, smaller dosages and fewer side effects. But there are the important disadvantages of higher costs and difficulties of techniques. It is one of the costly and complex methods of self administration of treatment at home for a sick person to understand. A lot of poor control of asthma, in spite of the regular treatment is related to the incorrect use of inhalers. Nonetheless, the inhalation therapy remains the treatment of choice of remarkable superiority over oral drugs. Precisely therefore, the patient and his family especially in the case of young children and the very old, have to carefully understand the method of using inhalers.

Education of patient is also important to develop a partnership in asthma management. This is the second or perhaps the first most important component of asthma control. Adequate information and training should be provided on the disease, the risk factors and the use of relievers vs controllers. Self adjustment of drugs and dosages to maintain a satisfactory quality of life is allowed. Avoidance of risk factors and triggers is another important subject for discussion with the patient. There is a large body of data on community asthma control programmes. It is generally found that physicians are under-treating asthma, especially when severe.
Community based interventions therefore, constitute an important tool in asthma control\textsuperscript{12}.

**Difficult asthma**

A significant number of patients are difficult to control in spite of the regular use of maintenance therapy\textsuperscript{13}. Such difficult to control patients also include some special phenotypes such as ‘brittle asthma’ and ‘near fatal asthma’, besides the patients with persistent risk factors, poor responders or steroid resistant patients (and others). There is also a group of patients who present with asthma like symptoms but suffer from other illnesses such as vocal cord dysfunction, upper airway obstruction or other similar causes. All these asthma mimics need to be clearly separated out.

Trigger control is an important step in overall management programmes especially for difficult asthma. Environmental exposures to allergens, dusts and smoke require avoidance. Both the active tobacco smoking and passive environmental tobacco smoke (ETS) exposure are important and avoidable asthma triggers\textsuperscript{14}. The other causes of poorly controlled asthma include the concurrent drug intake, occupational exposures, gastroesophageal reflux and psychogenic factors\textsuperscript{13}. Although foods are commonly blamed for asthma attacks, only the clearly identified items need avoidance. One need not impose unnecessary restrictions on foods and exercise. This may prove to be counterproductive in case of growing children as well as the pregnant and lactating mothers.

**Monitoring asthma control**

There are several clinical and laboratory parameters which are used to monitor asthma control. Besides the presence or absence of symptoms, physical activity and clinical signs, the assessment of lung function tests, bronchial hyper-reactivity and markers of inflammation have also been used to define and monitor asthma control in recent literature. Asthma control implies a multifactorial assessment of patient’s activities\textsuperscript{15}. It includes patient’s symptoms and the impact of the disease on a patient’s daily life in the presence of a therapeutic intervention. Several organizations including the American Lung Association have used an Asthma Control Test (ACT) as a measure to guide treatment\textsuperscript{16}. Tests such as the ACT, which incorporate the “patient reported outcomes” will serve to shift the focus of control of asthma from physician’s assessment to patient’s own assessment of the disease.

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**References**


