Controlling asthma and improving quality of life

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Asthma is a common chronic condition which usually presents with the symptoms of wheeze, cough, shortness of breath and chest tightness due to the underlying inflammation and bronchoconstriction present in the lungs. This condition causes considerable distress to the patient and negatively affects other members of the family. To date we cannot cure asthma, but we can aim to achieve optimum control as recommended by international guidelines.

Current therapeutic options offer the possibility of enabling the patient to lead as normal a life as possible with minimal interference from the condition. Successful outcomes for asthma control necessitate health care professionals to understand the experiences, expectations and needs of male and female asthma patients of all ages.

Introduction

International asthma management guidelines state that the aim of therapy is to achieve control of asthma (Table1).[1] Inadequate control of asthma contributes to increased morbidity and mortality and places considerable restrictions on the physical, emotional and social aspects of persons with asthma. These restrictions have a substantial negative impact on the quality of life of asthma sufferers and their carers.

Effect of asthma on quality of life

The limitations placed on physical activities, such as getting around the house, shopping, gardening, exercising and engaging in sports are significantly more of a burden on asthma suffers than on patients with other chronic conditions, such as diabetes, and are even more pronounced in young women with asthma. [2,3] The emotional impact of asthma is felt across all age groups, however it is particularly evident in children, who experience feelings of anger, frustration, sadness and guilt because of their condition.[4] Persons with asthma often choose to refrain from engaging in social activities or do so with reluctance and possibly trepidation due to fear of experiencing an exacerbation.[5]

Inadequate control, leads to increased asthma symptoms, decreased quality of life and could promote a lack of confidence in the medical care being given. The lack of perceived benefit from therapy decreases adherence to prescribed medication and in some cases also stimulates patients to substitute medication with alternative therapies, which are not validated by conventional standards, potentially leading to detrimental effects on health. It is therefore essential to provide patients with therapy which is safe, effective at the physiological level, provides adequate symptom control and allows them to live a normal life i.e. patients need to be provided with medication that works and that they perceive is working.

The use of guidelines in the management of asthma

While guidelines are well accepted as being an effective tool in the management of asthma, studies show that the desired degree of control is still not being achieved.[6] Various reasons have been cited for this, the main ones being inappropriate implementation of guidelines, under treatment of asthma and inefficient communication between health care provider and patient.[7] Evidence shows that appropriate management according to guidelines, close monitoring and increased access to health care professionals i.e. delivery of pharmaceutical care, improves therapeutic outcomes and patient

Table 1: GINA defined asthma control[1]

- Minimal (ideally no) cough, wheeze, chest tightness, breathlessness including nocturnal symptoms
- Minimal (infrequent) exacerbations
- No emergency room visits
- Minimal (ideally no) use of prn short acting $ß_2$ agonist
- No limitations on activities, including exercise
- Peak expiratory flow (PEF) circadian variation of less than 20%
- (Near) normal PEF
- Minimal or no adverse effects from medication

satisfaction.[8] The close monitoring of the patients permits adaptation of treatment to the current severity of the disease, addressing the variable and dynamic nature of this chronic condition.

Achieving and maintaining control of asthma in daily clinical practice, in the real world as opposed to clinical trials, is challenging. It is therefore essential for health care professional to be equipped with the necessary skills which include appropriate diagnostic tools and the ability to select the appropriate therapy according to the patient's needs. The selection of the correct medication/s-dose, dosing frequency and a delivery system which is appropriate and acceptable to the patient is of primary importance. The ability to listen to and address the patients' concerns is paramount if successful outcomes are desired. It is important for the health care professional to enquire what the expectations of the patient are and to try and fulfil them adequately. A study conducted with school children demonstrated the feeling of anger experienced by adolescents with asthma who felt ignored by their doctors as the latter choose to address their parents when determining the degree of asthma control.[4] Such evidence indicates vast room for improvement and the need for health care professionals to have better training in communication skills.

The stepwise approach to management in asthma (Table 2) is ideal as it is flexible and therapy is initiated at the relevant step of asthma severity and stepped up when control is not achieved. A clear indication of inadequate control is the use of reliever medication more than 4 times a day. The patient is stepped up only after inhaler technique and degree of adherence to therapy have been assessed.

Pharmacotherapy

Control of asthma is achieved by using controller medications daily on a long term basis. Inhaled glucocorticoids are, to date, the most effective controller, anti-inflammatory medications available.

Table 2: Medication by severity (Adults)[1]

Severity	Daily Controller Medication
Step 1: Intermittent Asthma	None
Step 2: Mild Persistent	Inhaled Beclomethasone dipropionate ≤500µg
Step 3: Moderate Persistent	Inhaled Beclomethasone dipropionate 200-1000µg + LA $ß_2$ agonist
Step 4: Severe Persistent	Inhaled Beclomethasone dipropionate >1000µg + LA $ß_2$ agonist + oral prednisolone
Short acting $ß_2$ agonist prn not more than 3-4 times daily	

Inhaled glucocorticoids are indicated for all levels of asthma severity except when asthma is intermittent. A patient's asthma is classified as intermittent only if (i) symptoms are experienced less than once a week over a period of 3 months and are brief, (ii) nocturnal symptoms are experienced no more than twice a month and (iii) lung function between episodes is normal. If, however, rapid acting $ß_2$ agonists are needed more than once a week over a 3 month period, therapy should be stepped up and inhaled glucocorticiods introduced.[1]

A dose of 500µg of beclomethasone dipropionate daily (or equivalent - Table 3) controls most adult asthma. In general, at this dose or less, systemic side-effects are not a problem in adults, although this may vary on a patient to patient basis. Should a dose of 500µg of beclomethasone dipropionate, prove to be insufficient to control asthma it is preferable to add on another class of controller medication, such as a long-acting (LA) $ß_2$ agonist, rather than increase the dose of inhaled glucocorticoids.[9] Other alternative add-on controller medications include anti-leukotrienes and sustained release theophylline. Control should be maintained at the lowest dose of inhaled glucocorticoid possible. It is recommended that the patient is reviewed on a regular basis, ideally every 3 months. If a patient is well controlled and stable, a gradual reduction in dose by 25-50% is suggested. When stepping down, the factors to be taken into account include severity of asthma, side-effects/beneficial effects of treatment and patient preference.[1,10,11] It should however be emphasised that the selection of the appropriate dose of inhaled glucocorticoid and additional controller medication for a patient requires clinical judgement. Some patients may benefit from high doses of inhaled glucocorticoids, as this would permit control without the use of oral glucocorticoids, whose side-effect profile is by far more pronounced.[12,13]

There is a significant body of evidence which suggests that the combination of a long acting $ß_2$ agonist such as salmeterol/formoterol and an inhaled glucocorticoid is the most effective means of controlling asthma in the majority of patients. There is a strong scientific rational for the combination of these two types of controller medication since they each target different and complimentary aspects of the inflammatory process.[14] $ß_2$ agonists and glucocorticoids interact in a beneficial way. Glucocorticoids prevent the development of tolerance to $ß_2$ agonists, while the latter probably potentiate the local anti-inflammatory action of glucocoticoids.[15] This evidence has led to the development of fixed combination inhalers of fluticasone/salmeterol (Seretide®) and budesonide/formoterol (Symbicort®) in one inhaler device.[16,17] Various clinical trials have

Table 3: Estimated equipotent doses of inhaled glucocorticoids in adults[1]

Drug	Low Dose	Medium Dose	High Dose
Beclomethasone dipropionate	200-500µg	500-1000µg	>1000µg
Budesonide	200-400µg	400-800µg	>800µg
Fluticasone	100-250µg	250-500µg	>500µg

demonstrated the effectiveness of combination therapy in controlling asthma.[18,19,20] Since combination therapy achieves better control of asthma than doubling the dose of inhaled glucocorticoids it has a very important steroid-sparing role, thus enabling attainment and maintenance of control at the lowest possible dose of inhaled glucocorticoid.[21,22] Recently published evidence has shown that combination therapy can achieve guideline defined asthma control (Table1).[23] Combination therapy is now regarded as the new 'gold standard' of asthma therapy.[24]

In practice combination therapy offers the advantage of controlling asthma using two complementary controller medications delivered through one inhaler device, with a convenient twice daily dosage increasing the possibility of adherence to therapy. It is delivered as a dry power inhaler offering the advantage of increased ease of use.

Adherence to therapy

Adherence to therapy plays a major role in asthma control. Adherence is influenced by dosage regimen, beliefs regarding effectiveness, recall of dosing times and access to therapy.[25] Data pertaining to the local situation indicates that, while access to medication is not a problem, 55% of patients studied were unable to mention their asthma drugs and/or did not follow their regimen, while 97% had barriers to adherence due to recall, indicating 'sporadic non-adherence' which can be addressed by adjusting and simplifying the regimen. Interestingly, 60% of patients had negative beliefs regarding the effectiveness of their medication, stating that they did not believe their asthma medicine worked well and/or that their prescribed therapy bothered them.[26] It is therefore imperative for prescribers to identify and take into account potential barriers to adherence in order to achieve better outcomes.

Conclusion

Attaining and maintaining control in asthma is complex. It entails more than appropriate drug selection. Unless the healthcare provider is willing to understand the patient's perspective of asthma control, listen to the patient's concerns and address any issues causing anxiety to the patient, control is bound to be lost. In this day and age we are also sufficiently aware that there is a relationship between gender and health and it is necessary to take into consideration sex and gender differences when treating a male or a female patient with asthma.[27] Health care professionals need to work with the patient and adopt a holistic approach to improve all aspects of asthma control thus enhancing the quality of life of the individual.

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