Asthma treatment of children and adolescents: Strategies for a global approach

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Strategies for a global approach to the management of asthma in children and adolescents are described. Such an approach requires the physician to explain to the patient the pathophysiology of asthma, to evaluate and, whenever possible, change predisposing environmental factors, to establish a written plan of action and to maintain a close follow-up of the patient to ensure compliance.

Key Words: Action plan, Asthma, Environmental factors, Global management

The primary role of the attending physician is that of educator. It is essential to explain carefully the nature of asthma, distinguishing clearly the two phenomena involved - bronchospasm and inflammation. To illustrate this distinction, it is very useful to draw an analogy with the nasal phenomenon during hay fever season. One observes mucosal edema and secretions (the inflammatory component) but also sneezing (the dynamic component).

Several factors are known to cause bronchial inflammation and hyperreactivity. In general, respiratory viruses are the first inducers of the asthmatic response during the first few years of life. Thus, daycare centres become particu-
lady fertile reservoirs of such inductions in preschool chil-

Later, after infancy, specific allergies develop that may cause asthma: allergies to dust, mites, molds, cats, dogs, etc (2.3). Special attention must be given to atopic children during the first months of life; their potential for becoming asthmatic is high.

It is also desirable to discuss the characteristic symptoms of asthma (4.5) - coughing, shortness of breath and wheez-
ing. For a while, the wheezing associated with the clinical improve-

ment brought on by treatment with an adrenergic agent (subcutaneous adrenaline or inhaled salbutamol) was con-
sidered the hallmark of asthma. Today, frequent, repeated

and persistent coughing is considered a symptom of asthma.
The shortness of breath associated with coughing or wheez-
ing is also part of the symptom triad. If, at one time, it was said that all patients who were wheezing were not necessarily asthmatic (referring to the possibility of an intrabronchial obstruc-
tion), the asthma (referring to the possibility of an intrabronchial obstruc-
tion) today it is recognized that every case of wheezing or coughing should first suggest asthma.

EVALUATING ENVIRONMENTAL FACTORS

In an effort to explain the recent dramatic increase in asthma cases, attention is now being paid more and more to the micro-environment and phenomena such as industrial pollution, acid rain and changes in the ozone layer.

However, other respiratory irritants are also present in the micro-environment of the home. It is important to know how well the temperature is maintained in an asthmatic child’s home between the end of September and the end of May, a period when this micro-environment is self-contained. Ide-

ally, the ambient temperature should be maintained between 18 and 20°C. It should also be remembered that, over the past 20 years, most houses have been overinsulated and they are frequently overheated. Another important aspect is the hu-
midity level. For several years, it was thought that maintain-
ing a high level of humidity (greater than 50 to 60%) was preferred for every child with respiratory problems. Since the mid '80s, the opposite has been recommended: the ideal relative humidity level in a house should be between 30 and 45%. Parents should therefore have at hand a thermometer and a hygrometer to monitor and control as efficiently as possible the temperature variations in the house.

Cigarette smoke is another irritant than can and must be absolutely avoided. As physicians, we often feel that our recommendations are not always put into practice; but it has been proven that if we insist, during each visit, on the impor-
tance of eliminating tobacco smoke, parents feel more re-

sponsible as far as asthma management is concerned.

ESTABLISHING A WRITTEN PLAN OF ACTION

To optimize both patient and family treatment compli-

ance, it is of the utmost importance to give them a treatment diary in which they will describe symptoms and doses of medication for an objective evaluation. Even if an asthmatic patient only suffers episodic airway obstruction, it is useful to note these episodes on a calendar and to write down the medication taken.

For the chronic asthmatic it is very useful and effective to ask, at the start, for the symptoms and drugs used to be noted each day in a diary to indicate clearly the evolution of the disease. Follow-up visits should be used to reinforce the overall management strategy (6.7).

The main consensus recommendations (8-11) all define the following drug treatment regimen for the asthmatic child.

Occasional asthma with symptoms well controlled by a short treatment with adrenergic agents.

Mild asthma with frequent symptoms (cough, shortness of breath, dyspnea, wheezing, more than seven to 10 days a month), which interfere very little with everyday activities and rarely cause a visit to the emergency room or hospital admissions. Nonsteroidal agents such as cromolynate, nedoc-
cromil or ketorol are recommended as first-step treatment, as are the inhaled steroids in the dose range of 200 to 400 μg per day. Taken continuously for a few weeks (generally four to six weeks) these drugs will alleviate symptoms in patients with mild asthma.

Moderate asthma with more marked symptoms that require visits to the emergency room and sometimes admission to hospital. Corticosteroids at doses ranging from 400 to 800 μg per day are used in the long-term treatment of moderate asthma.

Severe asthma with daily symptoms that interfere with the child’s or teenager’s normal life. These patients regularly have to be treated in the emergency room and are often hospitalized. It is often difficult to defer the use of bronchodil-

ators. Whatever the level of treatment, the signs of an effective control of asthma are the absence of symptoms, being able to pursue everyday activities and, finally, the greatest possible reduction in the use of adrenergic agents (12.13).

On active function measures (spirometry with or without bronchial challenge, peak expiratory flow) is lim-

ited in ordinary practice to school age children and adoles-
cents. In children less than five years old, different tests (rapid chest compression in the case of newborn infants, oscillation test in children two to five years old) are available in specialized centres.

For many children with moderate to severe asthma, serial measurements with a peak expiratory flow meter help both the parents and the doctor to evaluate the airway obstruction crisis objectively and to make more effective adjustments to the long term treatment plan (14.15).

CLOSE FOLLOW-UP AND ACTION PLAN

When starting treatment, it is essential to plan a close follow-up of the patient. Prescribing inhaled medication dur-
ing the acute phase and the period immediately following does not mean that an adequate control of asthma will be automatically achieved. Too many unpredictable factors and difficulties have to be faced, making it impossible to achieve effective therapy and prevention so easily. Education
and support are of the utmost importance when the child and his or her parents undertake the task of asthma self-management. This effort must not be undertaken in a context of crisis. A good relationship has to be established at the beginning of treatment, and must be reinforced every four to five weeks and then at intervals determined by the quality of asthma control. It is also useful to see a patient again two weeks following a significant exacerbation to review the treatment plan.

The use of an action plan written down by the doctor and given to the patient at the same time as the symptom diary increases patient compliance and makes him or her feel more responsible for managing the disease. Moreover, because most drugs are delivered by different inhalers, it is essential to ask the patient to bring the medications to the office and demonstrate repeatedly that he or she masters the inhalation technique. The importance given to this effective use of medication will demonstrate how seriously the maintenance treatment of the asthmatic patient is considered. Finally, it is a good idea to plan in one office session (eg, the same morning or afternoon each week) all appointments of patients followed for asthma; repetitive application of strategies in different types of asthma will reinforce the message that we value a coherent and continuous management of our asthma patients (16,17).

CONCLUSION

The global approach to asthma treatment is much more demanding than the simple prescribing of a specific drug; the essential role of educating children with asthma and their families is the most important of these responsibilities. At the first evaluation and at each follow-up visit, the attending physician must give special attention to all the essential factors of successful control of asthma: explain clearly the pathophysiology and significant symptoms of asthma; eliminate systematically all avoidable environmental factors to which the child is exposed; write down a plan of action for long-term management; check regularly the quality of the patient’s inhalation technique; and, finally, constantly reinforce the everyday treatment strategy. For the asthmatic child, the ultimate goal is to live a normal daily life.

REFERENCES

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