Asthma is the most common of all chronic childhood diseases. It is frequently underdiagnosed and undertreated [1]. Early diagnosis and accurate assessment of the severity of asthma are necessary to minimize its physical, psychological and socioeconomic consequences both in childhood and in adulthood.

This chapter will emphasize some aspects of childhood asthma which daily experience shows to be essential for its management, yet which are frequently misunderstood and/or neglected (Table 41.1).

### 41.1 Clinical Patterns

**Asthmatic attacks:** Acute asthmatic attacks are the main reason for seeking medical advice. Some attacks have an abrupt onset. Generally, frank nocturnal dyspnea, with tachypnea and sometimes low-grade fever in younger children, develops more gradually. Cough is frequent and may induce vomiting. Wheezing, like dyspnea, predominates during expiration.

Little information is essential before initiating treatment at the time of an acute attack: the apparent precipitating factor, the duration of dyspnea, the amount and effect of drugs already administered and the outcome of previous episodes.

With immediate therapy mild asthmatic attacks show definite improvement within two hours. Yet all attacks must be closely watched. Patients at higher risk of acute respiratory failure are children under 5 years and those with severe asthma and/or a history of status asthmaticus. Ominous symptoms include a poor response to treatment, cyanosis, diminished breath sounds in spite of marked respiratory effort with use of accessory respiratory muscles, pulsus paradoxus \( \geq 20 \text{ mmHg} \), appearance of weariness and altered state of consciousness. Hospitalization is required for immediate laboratory investigations (particularly blood gases determination) and intensive treatment.

**Assessment of the asthmatic child:** After reversal of acute bronchial obstruction, particularly if there is a history of previous episodes, a confident and prolonged physician-patient family relationship must be developed. The keystone of successful management of asthma is its clinical history [2].
**History:** The main factors involved in proper management of asthma are summarized in Table 41.1. Some of them deserve further comment.

As asthmatic attacks constitute the most troublesome event in the child's life, great attention should be paid to triggering factors. They can vary with age (for example virus-induced attacks are more frequent in early than in later childhood). They vary from one child to another. Some triggering factors are overlooked although they regularly precipitate attacks in many asthmatic children. These include long trips, or returning home after hospitalization or residential schooling and reopening of school. With preventive intensification of treatment numerous attacks would not occur.

A key element of the history is the recognition of the prodromal phase (most often rhinitis or cough) which precedes the overt attack by a few hours or days and is the optimal moment for adjusting treatment. Teaching a family to detect and to cope with early worsening of respiratory status decreases the number and severity of asthmatic attacks and is essential in building self-confidence in the child and family [3].

**Classification of asthma:** Defining the grade of asthma is often easy and is essential for tailoring treatment to the needs of each individual child.

Most children, at least 75%, have a mild or moderate form of asthma with infrequent attacks and normal interim pulmonary function. In contrast, severe asthma is generally characterized, from its onset, by frequent and distressing attacks with a varying degree of corticosteroid dependence.

However the diagnosis of severe asthma may be questioned in a family with a history of mild or quiescent asthma. It should be remembered that wheezing may represent only the tip of an iceberg and that significant airway obstruction and hyperinflation may persist after obvious signs of asthma have cleared. The failure of self-assessment of asthma emphasizes the value of objective signs: barrel-chest deformity correlated with roentgenologic hyperinflation, air trapping with diminished diaphragmatic excursion and persistent hyperinflation at repeated pulmonary function studies during symptom-free intervals [4].

Much time and skill will be required of the medical team for maximum prevention of the major complications of severe asthma. In practice, only severe asthma can lead to status asthmaticus or even death. These accidents can frequently be prevented by early recognition and treatment. Regular home measurements of PEFR may prove very helpful.

When the child reaches adulthood, height can be expected to be normal [5] except in those who received continual and excessive corticosteroid treatment.

Previous school absenteeism can have disastrous consequences when the individual enters the labor market.

Finally, numerous factors (especially associated persistent atopic dermatitis) seem to predispose to chronic asthma in adulthood, the most important of which is the severity of asthma at its onset [6].

**Equivalents of asthma:** Chronic cough may be the main manifestation of asthma. It is poorly responsive to antitussive and anti-infectious drugs as well as to adenoidectomy and tonsillectomy (which sometimes seem to precipitate overt asthma). Chronic nocturnal cough thus remains distressing for most parents. Diagnosis is facilitated by the presence of an atopic background, an increased airway reactivity and the efficacy of bronchodilators and/or immunotherapy.

The same comments apply to persistent or recurrent pneumonia [7] which may occur as the initial symptom of asthma. The right middle lobe is the one most commonly involved.

### 41.2 Differential Diagnosis

The diagnosis of asthma is generally evident especially in older children. A comprehensive list of the conditions to be differentiated from asthma is found elsewhere [8]. Only the most common will be discussed. Many of them may coexist with asthma or be accompanied by bronchial hyperreactivity.