

Short communication

Medical treatment of asthmatic children before referral to a clinic for allergy

A comparison between the periods 1979–83 and 1988–91

Østergaard PA, Nielsen JP. Medical treatment of asthmatic children before referral to a clinic for allergy. A comparison between the periods 1979–83 and 1988–91.

Allergy 1994; 49: 390–392. © Munksgaard 1994.

The use of antiasthmatic agents in children before referral to a children's clinic for allergy was studied in two periods (1979–83 and 1988–91). In the latter period, in contrast to the former, significantly more children were treated with peroral (73 and 43%, respectively) or inhaled β_2 -agonists (40 and 22%, respectively). In addition, considerably more children in the latter than the former period were or had been treated with inhaled steroids. On the other hand, most children used these agents either in short courses (41%) or on demand (30%). We conclude that, although there have been intensive educational programs specifically focusing on the proper use of antiasthmatic drugs during the last 10 years, still more information is needed by general practitioners.

P. A. Østergaard, J. P. Nielsen

Children's Allergy Clinic, Department of Pediatrics, Aalborg Hospital, Aalborg, Denmark

Key words: antiasthmatic drugs; appropriate use; children; two-period comparison.

P. A. Østergaard
Department of Pediatrics
Aalborg Hospital
DK 9000 Aalborg
Denmark

Accepted for publication 22 November 1993

Asthma is the most common chronic disease in childhood. It is characterized by extensive morbidity and increasing mortality; in children it leads to frequent contact with general practitioners (GPs), and to referral to hospital because of acute attacks. In addition, insufficiently treated asthma in children gives rise to psychosomatic dysfunctions, leading to overprotection by parents, absence from school, and the feeling of defeat (1, 2, 5, 9). Our previous study (7) has shown that in a clinic for childhood allergy only one-third of 322 children with recognized or suspected asthma were treated with antiasthmatic drugs such as β_2 -agonists, theophylline preparations, or inhaled sodium cromoglycate and inhaled steroids. In addition, we found that more than 80% of the treated patients received only oral symptomatic medication instead of more effective antiinflammatory prophylactic drugs such as inhaled sodium cromoglycate and inhaled steroids (3, 6). Therefore, we found it of interest to compare the medication of asthmatic children in our previous study with the use of antiasthmatic drugs in children who attended our clinic approximately 10 years later.

Material and methods

The original patients comprised 389 consecutive child patients, who from 1 July 1988 to 30 June 1991 were referred to the Children's Allergy Clinic, Aalborg Hospital, Denmark, with a diagnosis of bronchial asthma or suspected bronchial asthma. Twenty-six were found not to have asthma. The remaining 363 (median age 7 years, age range 3–14 years) fulfilled the criteria of asthma: recurrent wheezing and cough (children below the age of 5 years) or a spirometrically demonstrable increase of FEV₁ of 15% or more after inhalation of a β_2 -agonist.

Before examination at the clinic, the parents of the children were asked to fill in a questionnaire in which they were specifically asked whether their children had previously been treated with antiasthmatic drugs and, if so, which type(s). When visiting the clinic, the parents were again carefully questioned about the same item, and, in doubtful cases, their GPs were consulted.

Afterwards, the following items were considered:

- 1) Had the child actually been treated with antiasthmatic drugs before entering the study?

Table 1. Antiasthmatic treatment in two periods (1979–83 and 1988–91) of children with asthma before examination at Children's Allergy Clinic

Drug	Route of administration	Patients treated 1979–83 <i>n</i> (%)	Patients treated 1988–91 <i>n</i> (%)	<i>P</i>
β ₂ -agonists	Oral	44 (42.7)	191 (73.1)	<0.001
β ₂ -agonists	Inhaled	22 (22)	102 (30)	<0.02
Theophylline	Oral	12 (11.6)	31 (11.5)	>0.10
Theophylline	Rectal	22 (21.4)	21 (8)	>0.05
Sodium cromoglycate	Inhaled	18 (17.4)	22 (6)	>0.06
Steroids	Inhaled	11 (10.7)	61 (23.1)	<0.05

2) If the child had been treated, then with which drugs:

- β₂-agonist (oral or inhaled)
- theophylline preparation (oral or rectal)
- inhaled sodium cromoglycate
- inhaled steroid.

The data cited above were compared with the results of a similar study, which was conducted in 322 asthmatic children from 1 June 1979 to 30 June 1983 (12).

If treated, patients (parents) from the period 1988–91 were questioned on the following points:

- 1) use of drugs on demand
- 2) use of drugs over short periods (daily for 1–2 weeks)
- 3) use of drugs regularly (daily for more than 2 months).

These data were not available for the study period 1979–83.

In the following discussion, the patients from the periods 1979–83 and 1988–91 are referred to as patients in the former or latter period, respectively.

Statistical analysis of the results was done by the Mann-Whitney U-test. Differences in the results were considered to be significant at the 0.05 level.

Results

In the former period (1979–83), only 103 (32%) of 322 asthmatic children had been treated with antiasthmatic drugs before referral to our clinic (see above). In the latter period (1988–91), however, 206 (70%) of 361 patients had received treatment before referral ($P < 0.001$; Table 1). The increase in admin-

istration of drugs to the patients in the latter period was, however, almost certainly due to a considerably increased tendency by GPs to prescribe β₂-agonists. As regards another bronchodilator such as theophylline, a trend to administer this agent was either unchanged (oral) or decreasing (rectal). As regards the use of antiinflammatory drugs (sodium cromoglycate, steroids), Table 1 also shows that when comparing the data of the latter with the former treatment period the use of sodium cromoglycate had declined, whereas a statistically significant use of inhaled steroids was observed.

In the latter as compared to the former investigation period, there was a tendency, although not statistically significant, to refer children earlier for evaluation. On the other hand, the duration of asthma did not seem to have had any effect on the prescription of drugs to patients.

Finally, the results for regular or short-term use, or use on demand of antiasthmatic drugs by the children from the latter period are summarized in Table 2. As for the use of β₂-agonists (oral or inhaled, most patients preferred (as recommended by their GPs?) to use these drugs either in short-term periods or on demand. On the other hand, most patients who were prescribed a peroral theophylline preparation used these drugs (more than 90% a slow-released preparation) regularly. As expected, rectal application of theophylline was used only on demand.

Before referral to the clinic, only a minority of the patients from the latter period used antiinflammatory remedies on a regular basis (sodium cromoglycate, inhaled steroids); 30% used them in periods of

Table 2. Regular treatment, short-term treatment, or treatment by demand of patients in 1988–91

Drug	No. of patients (total)	Regular use <i>n</i> (%)	Short-term use <i>n</i> (%)	Use on demand <i>n</i> (%)
β ₂ -agonists (oral)	191	25 (13)	62 (32.4)	104 (54.1)
β ₂ -agonists (inhaled)	102	17 (10.7)	52 (51)	33 (32.4)
Theophylline (oral)	31	21 (68)	6 (19.7)	4 (13)
Theophylline (rectal)	21	0 (0)	0 (0)	21 (100)
Sodium cromoglycate (inhaled)	22	3 (13.7)	11 (50)	8 (36.4)
Steroids (inhaled)	61	18 (29.7)	25 (41)	18 (29.7)

a few days. Furthermore, approximately a third of the patients taking these drugs stated that they had been instructed by their GPs to use them only on demand.

After examination at the clinic, a substantial number of patients from the latter period monitored their daily morning and evening peak flow and their use of inhaled β_2 -agonists at home for 1–2 months, and filled in a daily symptom score card. From these data, in 141/246 (58%) of patients from the latter period, we found a need of regular treatment with inhaled steroids (several months, years?).

Discussion

In the early and mid-1980s, several investigators pointed out that asthma in children was both underdiagnosed and undertreated. Like others (4, 9–11) dealing with this subject, we in a previous paper (7) found that only a minority of children with recognized or suspected asthma had been treated regularly with antiasthmatic drugs before referral for investigation. In contrast to our previous study, the main result of the present paper was that significantly more children had been treated with bronchodilating drugs. In addition, we found that the prescription of inhaled steroids had doubled. Thus, the observed tendency in later years to an earlier treatment of asthmatic children might have been the result of successful information campaigns on the proper use of antiasthmatic drugs.

On the other hand, in our opinion, the prescription by GPs of oral in contrast to inhaled β_2 -agonists is still too high because inhaled β_2 -agonists are usually more effective, give earlier symptom release, can be used effectively in children 4–5 years of age, and have fewer side-effects (8). Furthermore, in the second period, despite intensive educational programs for GPs in Denmark and abroad on the proper use of antiasthmatic drugs in children, it was worrying to find that more than two-thirds of the patients were treated with sodium cromoglycate or inhaled steroids for only a few days or on demand. Although

others (12) have found that preschoolchildren can be treated at home with intermittent high-dose inhaled beclomethasone dipropionate, which modifies the severity of acute episodic asthma, children with moderate to severe asthma should be treated regularly, maybe for years, with inhaled antiinflammatory agents such as sodium cromoglycate or steroids to prevent or delay the development of deteriorating lung function and emphysema (6).

Therefore, we feel that the results of our study show that further information is needed.

References

1. ANDERSEN HR, BAILY PR, COOPER JS, PALMER JS. Influence of morbidity, illness label, and social, family, and health service factors on drug treatment of childhood asthma. *Lancet* 1981; ii: 1030–4.
2. ANDERSEN HR, BAILY PR, COOPER JS, WEST S. Morbidity and school absence caused by asthma and wheezing illness. *Arch Dis Child* 1983; 58: 777–84.
3. BERMAN BA. Cromolyn: past, present, and future. *Pediatr Clin North Am* 1983; 915–30.
4. MARTIN AJ, LANDAU LI, PHELAN PD. Asthma from childhood at age 21: the patient and his disease. *BMJ* 1982; 284: 380–5.
5. MCQUEEN F, HOLDAWAY MD, SEARS MR. A study of asthma in a Dunedin suburban area. *N Z Med J* 1979; 89: 335–45.
6. MORRISON-SMITH J. Inhaled steroids in the management of childhood asthma. In: CLARK DHJ, ed. *Asthma. I. Steroids in asthma*. New York: AIDA Press, 1983: 193–209.
7. ØSTERGAARD PA. Medikamentel behandling af astmabørn før henvisning til allergiklinik. *Ugeskr Laeger* 147: 168–70.
8. PEDERSEN S. Aerosol treatment of bronchoconstriction in children with or without a tube spacer. *New Engl J Med* 1983; 308: 1328–30.
9. SEARS MR, JONES DT, SILVA PA, SIMPSON A, WILLIAM SM. Asthma in seven-year-old children: a report from the Dunedin Multi-Disciplinary Child Development Study. *N Z Med J* 1982; 95: 533–41.
10. SPEIGH APN. Is childhood asthma being underdiagnosed and undertreated? *BMJ* 1978; 280: 331–42.
11. STELMAN JL, SPICER JE, CAYTON RM. Morbidity from chronic asthma. *Thorax* 1982; 37: 218–25.
12. WILSON NM, SILVERMAN M. Treatment of acute, episodic asthma in preschool children using intermittent high dose inhaled steroids at home. *Arch Dis Child* 1990; 65: 407–10.

This document is a scanned copy of a printed document. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material.