Chronic or recurrent cough in children—a presentation of asthma?

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SUMMARY. Thirty-five children between the ages of one year and 11 years who presented with chronic or recurring cough over a two-year period were treated for asthma. They were given bronchodilator syrup for a trial period of one month. All the children improved symptomatically.

It is suggested that any child with a persistent cough or recurring cough should be given bronchodilator syrup even in the absence of wheeze and particularly when there is a family history of asthma. This might result in the early diagnosis of unrecognized asthma and help to reduce the amount of unnecessary antibiotics and cough linctus that these children receive.

Introduction

IT has been asserted that asthma in children is often misdiagnosed and undertreated by general practitioners.[1,2] This is understandable in children under the age of five years in whom auscultation during forced expiration and measurement of peak flow are difficult. Most general practitioners will first diagnose asthma in a child who presents with an acute asthmatic attack or attends frequently with episodes of wheezing. However, it was shown by Speight[2] that out of 32 cases of asthma referred to outpatient clinics the word 'asthma' was used by general practitioners in only six cases. In 12 cases no reference was made to wheeze or bronchospasm, and terms like 'bronchitis', 'recurrent cough' and 'recurrent chest infections' were used. It would seem, therefore, that general practitioners should look more closely at any young child with persistent or recurring cough and consider a diagnosis of asthma even in the absence of wheeze. This should not only help to detect more asthmatic children but also improve the present position where children with a persistent or recurring cough receive frequent prescriptions for antibiotics and cough linctus.[3] It is hypothesized that many children with chronic or recurrent cough have asthma.

Method

Over a period of 29 months in two separate, rural, single-handed practices, any child presenting to the author with a history of chronic or recurring cough was assessed. The study lasted for 18 months in the first practice and 11 months in the second. The following information was recorded by questioning the parent: duration of cough, presence of nocturnal or exercise-induced exacerbation, family history of asthma, type of bedding and pillow used, and the quantity of antibiotics and cough linctus used in the previous year.

Any child with a chronic or recurring cough, or whose cough had nocturnal or exercise-induced exacerbations, was treated with an oral bronchodilator for a trial period of one month. Any child with a chronic or recurring cough who had previously received more than the average courses of antibiotics taken as 4.5 courses (SD ± 3.9) was also given a bronchodilator.[3] When possible, physical examination included measurement of peak flow.

A total of 35 children were considered for treatment. They were given terbutaline or salbutamol syrup; orciprenaline syrup was prescribed for those aged two years or younger. In more severe cases where there was a distressing cough, the child was also given a paediatric slow-release aminophylline tablet. If the cough did not clear and if the degree of distress indicated it, then a short course of soluble prednisolone was given. All parents were advised about the nature of asthma and were instructed in ways of minimizing house-dust mite in the bedroom. An antibiotic was only prescribed if the accepted criteria were met.[4] No cough linctus was prescribed. The parents were asked to report in two weeks if any improvement was noted, particularly improvement in any pre-existing nocturnal or exercise-induced exacerbations. Treatment was discontinued after one month if the cough had disappeared.

Results and Discussion

The age of the 35 children ranged from one year to 11 years. The largest group consisted of nine two-year-olds, none of whom had any clinical signs. One of the children was adopted. Of the remaining 34 children, 26 (76 per cent) had a family history of asthma. In 12 cases there was a parental history and in six a sibling history. Two children had eczema, three had had severe nappy rash as infants and one child had a past history of hay fever. The cough was worse at night in 24 cases (68 per cent), and five parents (14 per cent) reported that there was an exacerbation after exercise.

On physical examination 22 children (62 per cent) had ronchi, often minimal and best heard during forced expiration. Measurement of peak expiratory flow rate (PEFR) was difficult in view of the age group involved: 68 per cent of the children were aged five years or under

and only one of these could perform satisfactorily. In the other age groups seven children (63 per cent of those recorded) had a reduced PEFR. One child was febrile. There were no clinical signs whatsoever in 12 children (34 per cent).

Twenty-one of the children (60 per cent) had previously received more courses of antibiotics than the average child, and all 35 children had received repeat bottles of cough linctus. The majority of children had been symptomatic for almost one year, four children had had a recurring cough for four years and one child had had symptoms for seven years.

At follow-up one child failed to return. The parents of the 34 remaining children were questioned after two and four weeks treatment: 29 (86 per cent) reported a very good response, five (14 per cent) a good response, and in no case was there no response to bronchodilator. The PEFR in all seven recorded children was 48–72 per cent higher than the previous recording.

All 29 children with a very good response had treatment stopped after four weeks. The others either continued the same treatment or had additional therapy as previously outlined. Seven children required one further course, five children required two further courses, two children needed three courses and one received five courses of bronchodilator. Three children were put on maintenance therapy. No child required hospital admission. During the period covered by the report three of the children subsequently developed the typical asthmatic picture with wheeze and bronchospasm. One child developed bronchopneumonia—diagnosed radiologically—and was treated at home.

Medication consisted of terbutaline syrup in 17 cases (48 per cent), salbutamol syrup in 15 cases (42 per cent) and orciprenaline syrup in three cases where the child was aged two years or under. In addition to the above, seven children (20 per cent) required slow-release paediatric theophylline. Two children required a short pulsed dose of prednisolone to relieve a prolonged distressing cough after only partial response to bronchodilator. One child eventually required sodium cromoglycate to prevent recurrence of the cough. Antibiotics were prescribed in four cases, including the case of bronchopneumonia.

General practitioners are likely to have a significant number of children who present regularly with persistent or recurring cough that is often worse at night. These children will, in the past, have received more than the average number of antibiotics and cough linctus and will often have a family history of asthma. On physical examination they will often appear normal, with only occasional ronchi heard on auscultation and more obvious on forced auscultation. The measurement of peak flow rate is difficult when the majority of the children are in the two- to three-year-old age group.

It is suggested that some of these children have asthma even in the absence of wheeze and often without any clinical signs. Treatment with a bronchodilator and instruction in the avoidance of house-dust mites may result not only in an improvement of the cough but also in the earlier detection of undiagnosed asthmatic children.

References

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Human hepatitis B vaccine from recombinant yeast

The worldwide importance of human hepatitis B virus infection and the toll it takes in chronic liver disease, cirrhosis and hepatocarcinoma, make it imperative that a vaccine be developed for worldwide application. Human hepatitis B vaccines are presently prepared using hepatitis B surface antigen (HBsAg) that is purified from the plasma of human carriers of hepatitis B virus infection. The preparation of hepatitis B vaccine from a human source is restricted by the available supply of infected human plasma and by the need to apply stringent processes that purify the antigen and render it free of infectious hepatitis B virus and other possible living agents that might be present in the plasma. Joint efforts between two laboratories led to the preparation of vectors carrying the DNA sequence for HBsAg and antigen expression in the yeast *Saccharomyces cerevisiae*. Here the authors describe the development of hepatitis B vaccine of yeast cell origin. HBsAg of subtype adw was produced in recombinant yeast cell culture, and the purified antigen in alum formulation stimulated production of antibody in mice, grivet monkeys and chimpanzees. Vaccinated chimpanzees were totally protected when challenged intravenously with either homologous or heterologous subtype adr and ayw virus of human serum source. This is the first example of a vaccine produced from recombinant cells which is effective against a human viral infection.

Source: McAleer W, Buynak EB, Maigetter RZ, Wampler E, Miller WJ, Hilleman MR. Human hepatitis B vaccine from recombinant yeast. *Nature* 1984; **307:** 178-180.