
Contemporary Themes

Asthma in primary schools

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Abstract

Seven schools in the Lewes area were visited to identify which children were using inhalational treatment for asthma. The attitudes of the parents and schools were assessed, as was the children's skill in using inhalers. Five per cent of all children were receiving inhalational treatment with bronchodilator drugs. On average they had missed seven school days in the past year.

The opinions of the parents about treatment appeared to be determined by the severity of the child's asthma. Most schools coped well with giving bronchodilators, though there was no real understanding of the nature of the disease or treatment. Most children who had received pressurised inhalers could not use them satisfactorily.

Introduction

Asthma is common in childhood,¹ and its underdiagnosis and undertreatment are well documented.² After a diagnosis has been made it is important that parents understand the treatment and ensure that inhalational treatment is carried out correctly. Thirty per cent of a child's waking hours are spent at school, yet teachers receive no instruction on managing children who wheeze.

We carried out a survey of all primary schools in the town of Lewes to find out what the attitudes of parents and teachers were about asthma in children and to identify problems in the use of inhalational treatment at school.

Methods

The Lewes area is well defined geographically, which allowed us to identify most of the children with asthma by visiting all of the local primary

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schools. The survey was limited to children who were taking inhalational treatment for asthma. We identified these children by visiting classrooms and showing demonstration inhalers to teachers and children. Questionnaires were sent to the mothers of the children identified. All schools had a policy of recording asthma and other known medical problems in the school register. By consulting the register and talking to teachers we determined how many asthmatic children were known to the school. We inquired into the school routine and recorded opinions and questions about the management of asthma.

A second visit was made to each school one week later to collect questionnaires and examine the children. The school nurse was present and parents had given signed consent. The primary aim was to examine inhaler technique, but we also hoped to identify children whose asthma was poorly controlled or whose ability to exercise was limited. Inhalational drugs were not stopped on the day as we were not questioning the diagnosis of asthma. Chest deformity was noted and the chest auscultated. This was followed by a six minute outdoor run and, after resting, giving a bronchodilator drug with the child's usual inhaler. The technique was carefully assessed. Peak expiratory flow rates were measured initially, after the run, and after inhaling the bronchodilator. Mothers of the children whose asthma appeared to be inadequately controlled were visited by the school nurse.

Results

We visited seven schools; two had separate infant and junior schools. Seventy six children who were using inhalers were identified from a population of 1554 pupils. The children were aged between 4 and 12 years; 32 were girls and 44 were boys. Information was obtained on 67 pupils, eight questionnaires were not returned, and one child was absent from school with asthma.

Most children had never been admitted to hospital with asthma, though 26 had had between one and 25 admissions. Two children regularly attended an outpatient clinic for asthma. On average children had lost seven days from school because of asthma in the past year, though 56 had been free of symptoms for periods of one month or more. Forty eight children were using a rotahaler, 16 a pressurised inhaler, and three a spacer device. The use of these inhalers varied from occasional to 20 times a day if required. Median values were twice a day for minimum usage, four times a day for average usage, and eight times a day for maximum usage. Two children had home nebulisers; 11 were receiving regular inhaled steroid and 17 cromoglycate, though two used cromoglycate for exacerbations only. One child was receiving theophylline regularly, and one used theophylline for exacerbations.

Parents were asked what precipitated their child's asthma. Answers in order of frequency were colds, exercise, changes in the weather, dust, animals, excitement, cigarette smoke, and food. Most parents had tried regular vacuuming and removing feather pillows. Twelve had tried excluding foods, four had tried homoeopathy, four had got rid of a pet, and four of the 19 mothers who smoked had tried unsuccessfully to give up for their child's sake. Thirty parents encouraged and 18 discouraged physical activity. Twelve parents said that they would prefer to give sufficient medication to control most symptoms and 43 preferred to use less medication and accept some symptoms (table).

Attitude of parents to treatment against days lost from school in the past year due to asthma

Days lost	Parents accept some symptoms	Parents give adequate medication
<10	31	4
≥10	12	8
	p=0.036*	

*Fisher's exact test.

On examination five children had Harrison's sulci and two of these children had symptoms. Twelve had mild wheezing before the run. Initial peak expiratory flow rates were normally distributed with a mean (SD) of 98 (18.4)% of expected peak expiratory flow values. All children attempted a six minute run; 10 did not complete it, but in only five was this due to bronchospasm, the remainder being unfit or unenthusiastic. Eight children had a fall in peak expiratory flow rate of over 15%, and 22 children had a rise of over 15% after using a bronchodilator. Three children who had recently been playing games had initial wheezing but tolerated the run well with an improvement of over 10% in peak expiratory flow rate.

In 24 cases the school did not know of the child's asthma, though only one child brought his inhaler to school. Twenty children kept their inhalers, and inhalers were kept by the school for 23. Of the last, 18 were allowed inhalations as needed, and 10 were usually given prophylaxis before games. Seven of those who did not receive prophylaxis before games were dyspnoeic during or after their run, with a ≥ 15% reduction in peak expiratory flow rate in five.

Eleven of 16 children who used pressurised inhalers were unable to coordinate their use, whereas only 19 of the 48 children who used rotahalers had a deficient technique; four of these may have been confused by using the peak flow meter and blew out instead of sucking in. The others had a poor suck, breathed in and out through the inhaler, or failed to hold the inhaler horizontally so that some powder fell out.

The schools were generally helpful, although the attitudes of the head teachers varied from "not interested at all in any of the children's medical complaints" to genuine interest in asthma and in our request to talk to teachers on the subject. Some teachers were concerned that children might develop a psychological dependency on using inhalers before games or use them as "comforters." Three schools allowed older children to keep their own inhalers despite believing it to be against the district education policy. Where children were not in charge of their own medication inhalers were kept either by the class teacher or by the school secretary. Two schools would give inhalers only according to clear instructions from parents, whereas some were more lax. The implication from one school was that giving inhalers at times other than at lunch times was too inconvenient.

Discussion

The reported incidence of childhood asthma in the community varies from 1.4% to 11.4%.³ In this study 5% of schoolchildren aged 4 to 12 years were using inhalational bronchodilator treatment. Two thirds of these children kept their inhalers at school.

Asthma is the commonest medical condition that teachers have to deal with. They not only have to give drugs at specific times but also have to decide whether to give extra treatment, whether to allow children to play games and go out in cold weather, and whether to send children home from school.

Having chosen a middle class area, we were pleasantly surprised by the ability of the schools to manage their asthmatic children. Children were rarely sent home; most school absence resulted from children being kept away after becoming ill at home. Prophylactic treatment with bronchodilator drugs before games was, however, underused by all schools. Most older children were allowed to keep

their own inhalers. The class teacher or the school secretary kept the inhalers for younger children. When the school secretary kept an inhaler it was less readily available and caused more disruption to the class if the child needed it. Teachers realised that their knowledge about asthma was poor, and they were keen to learn more about common medical conditions that they might encounter. Their main worry was that they might get into trouble for allowing children to use their inhalers too often, and some teachers were surprised that children might be allowed to request treatment when they felt like it.

Perhaps not surprisingly, parents indicated that they would prefer to minimise the children's treatment if possible. There was, however, no evidence from the questionnaire that they were giving their children suboptimal doses, and the only criticism that could be made was that a number of children would have benefited from inhaled steroid or cromoglycate. Considering days lost from school with the attitudes of parents, the more severe a child's asthma the more willing the parents appeared to give treatment to control symptoms.

Although regular treatment with bronchodilators was normal, most children had mild symptoms with periodic exacerbations of varying severity, and this made it difficult to assess the severity of asthma in the group. Thirty nine per cent of the children, however, had been admitted to hospital at least once in the past, 70% coughed at night, and 42% were receiving prophylactic treatment with an inhaled steroid or cromoglycate; a further five children (7%) were thought to be in need of such treatment. Most children were thought to enjoy games unless they were wheezy after an upper respiratory tract infection, and most thoroughly enjoyed the run. A third, however, had a ≥ 15% rise in peak expiratory flow rate after a subsequent bronchodilator, even though regular treatment had been taken that morning, and up to 15% were reported as having recurring difficulties with exercise. The best predictor of poor exercise performance was the total number of asthma precipitants listed by the parents. Apart from indicating the severity of a child's asthma these lists had little clinical relevance.

Despite previous reports^{4,5} it is clear that pressurised inhalers are being given to children who are too young to use them or whose inhalational technique has not been adequately checked. Most children showed improvement in the technique after instruction, but further checks would be necessary to maintain this. It is also clear that checks on the use of the rotahaler are necessary.

Only two of the 67 children we studied were being followed up regularly at a hospital outpatient clinic. Clearly this is a problem that needs to be tackled. Two pharmaceutical companies are employing nurses who are specially trained to teach inhalational techniques to both adults and children. There is a need for such work to be done in schools, and a school nurse with a particular interest in this could monitor children's use of inhalers and give advice to parents and teachers. Because children spend so much time at school it is important that teachers understand asthma and are instructed on when and how to give inhalational treatment.

This study was an expedition into unknown territory and may encourage further research. The local education authority has been slow to respond to our comments and offer of help, but lectures that were arranged for teachers in Brighton have been well attended.

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