REVIEW ARTICLE

The child with a cough

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"My Mum says can I have a bottle of cough medicine for the littl'uns"
"Cough, cough, cough all night long poor little mite. I didn't get a wink of sleep"
"Something for his chest please doctor. He's got all this phlegm on his chest and it chokes him"

AS students in hospital we are taught that diagnosis based on clinical examination, x-rays and laboratory tests must precede treatment. Children admitted to hospital because they are coughing commonly have some organic lesion such as pneumonia or bronchiectasis, which will not get better without treatment aimed at the underlying cause of the disease.

In contrast, in general practice we are called on to treat coughing children by the dozen, without the help of special investigations. The vast majority have no disease in the lungs; their coughs are due to a cold or some other acute infection which will get better without specific treatment. We are called on to relieve the symptoms and reassure the parents.

Cough in childhood induces anxiety out of all proportion to its seriousness. Mothers lying awake listening to the noisy cough of a child think of relatives with asthma, chronic bronchitis or consumption. Doctors worry about missing bronchiectasis and feel they are doing a poor job handing out bottles of linctus without fully investigating the child. The problem is made worse by the endless variety of illness which respiratory infections produce, defying classification. Many of the textbook descriptions are of little help since the classifications they use are based on radiological and laboratory studies. Spence wrote "as we watched and recorded we felt again the perplexity of the young practitioner in trying to take the nomenclature of the laboratory and classroom into the maze of undiagnosed respiratory illnesses in his practice".

The general practitioner's problem is how to treat the large number of cases in a limited time and how to recognize the tiny minority with serious disease. He must resist pressure from relatives who demand that "something must be done" in situations where the right thing is to wait and the dangers lie in overtreatment; in particular giving antibiotics unnecessarily. In this paper I have attempted to describe and define the clinical conditions to be met with among coughing children and discuss the management from the viewpoint of the general practitioner in his surgery.

The child with a cold

The commonest cause of cough in children is the simple, uncomplicated cold, which produces a noisy cough, worse at night, which mothers think is coming from the lungs. There are no abnormal signs in the chest. The cough comes from the nose and throat, where the mucus makes all the bubbling and wheezing noise. Colds vary in severity from epidemic to epidemic. There are mild ones that produce little upset and severe ones with fever, vomiting and loss of sleep; the child goes off his food and loses weight. Nasal obstruction is a distressing symptom, particularly at night.

Treatment of the cold is symptomatic. Aspirin relieves the discomfort and linctus helps the cough. The cough arises from irritation of the upper respiratory tract, is unproductive and exhausting. There are no good reasons for withholding linctus. One of

the modern preparations containing codeine and an antihistamine is to be preferred; the antihistamine acts both as a cough suppressant and a sedative, relieving distress in the day and bringing sleep at night. Nasal obstruction may be relieved by the old-fashioned remedy of rubbing 'Vick' on the chest. The menthol vapourises as the child gets warm in bed and the vapour is inhaled. 'Karvol' capsules squeezed on to the pillow may also be used. Vasoconstrictor nose drops produce short-lived relief and to most children are more distressing than the disease. Exception may be made for babies who are unable to feed as a result of nasal obstruction, or the nose may be sucked out with a midwife's mucus aspirator.

There is no place for antibiotics in the treatment of the uncomplicated cold. The commonest condition calling for antibiotics is acute otitis media. A cold should clear up in a fortnight. If there is purulent discharge after that there is secondary bacterial infection in the nose or sinuses, which is another indication for antibiotic therapy.

The child who has a cough or a succession of colds all winter

The early years bring the child into contact with the numerous viruses that cause colds and he must acquire immunity to each in turn. Between the ages of three and seven, children commonly get one cold after another and have runny noses and coughs most of the winter. This spoils the appetite, disturbs sleep and the child looks pale and unwell. The tonsils and cervical glands enlarge, the adenoids cause nasal obstruction and mothers bring their children to the doctor asking that "something should be done". Tonics and vitamins, cod-liver oil and malt, vaccines and antibiotics are given and advice is asked about removal of tonsils and adenoids.

Unhappily the truth—that mothers must be taught to accept—is that nothing can be done to prevent frequent colds at this age. This is an inevitable stage of development to be endured since it cannot be cured. The child will grow out of it at about seven or eight and the chief danger that faces him in the meantime is overtreatment. Fresh air and exercise helps to clear the nose and is better than too many clothes and a stuffy room. There is no evidence that vitamins and tonics do any good. Removal of tonsils and adenoids will not prevent colds, though there is a place for the operation if the child has recurrent tonsillitis, sinusitis or otitis media.

It is prudent to have the child's chest and sinuses x-rayed if the cough persists to exclude sinusitis and pulmonary consolidation or collapse. Sinusitis is the common cause of persistent cough and may present with thick yellow or green discharge from one or both sides of the nose, and pain or aching in the face. Many cases are not diagnosed until x-ray shows an opaque sinus. Many cases will clear up after a course of antibiotics, but a few need to be referred to the ear, nose and throat department of the hospital.

Another condition needing specific treatment is allergic rhinitis. The allergic nose is irritable and streams with a clear fluid, giving rise to paroxysms of sneezing. The mucosa is pale and swollen. As in hayfever the eyes may irritate and run as well. Some patients benefit from antihistamines. Skin testing is of doubtful value, since the skin is not necessarily sensitive to the same substances as the nasal mucosa.

Desensitization is time-consuming and painful. It is doubtful if the slight benefit that may be produced is worth the pain of frequent injections. Seasonal allergies are more likely to be helped than perennial ones. Antibiotics do no good unless there is infection and the long-continued use of vasoconstrictor drops does harm.

Whooping cough must be considered when a child's cough persists. In most cases seen today among immunized children the diagnosis is largely guesswork and made in retrospect. To begin with the child with whooping cough has the same sort of cough that he gets with every cold and often a runny nose as well. The cough becomes paroxys-

mal, worse at night and accompanied by vomiting and choking, but this is also true of colds in many children. Most doctors will sooner or later have the humiliating experience of being told "That's what you said last year" by a mother to whom he has just broken the news that her child has whooping cough. Or else hear a child whoop unmistakably just as he has told its mother that he has a simple cold.

Only two observations confirm the diagnosis beyond doubt. The first is hearing a typical whoop, which happens infrequently since most immunized children never whoop and those that do, whoop at night. The next best thing is for the doctor to demonstrate a whoop and ask the mother if that is what the child's cough sounds like. A paroxysm consists of a rapid succession of short coughs leading to full expiration, a short period of apnoea when the child chokes and goes red in the face, followed by a long crowing inspiration. The second observation is the isolation of *Haemophilus pertussis* from a postnasal swab or cough plate. Lymphocytosis is additional evidence.

With the difficulties in mind it must be admitted that whooping cough is an imprecise diagnosis, often overlooked unless there is an epidemic.

The child with a cough and abnormal signs in the chest

Most children with coughs have no abnormal signs in the chest. A few have. The child, though feverish, does not appear seriously ill. He may be brought to the surgery or be sitting up in bed playing with his toys. Nevertheless the presence of abnormal signs indicate some involvement of lungs or bronchi and these signs fall into the following categories:

Diffuse rhonchi over both lungs. This indicates bronchitis and is common in children of all ages, particularly toddlers. Most cases clear up in a few days without antibiotics, which need not be given unless the child's general condition fails to improve in a few days. Linctus, aspirin, hot drinks and rest make the child more comfortable. Sedation at night is important both to the child and his parents.

Moist rales or coarse crepitations limited to one area. This suggests segmental pneumonia, a localized area of consolidation in one of the segments of a lobe, with or without some degree of collapse. It follows a cold, measles or whooping cough and may lead to permanent lung damage, collapse or bronchiectasis. This condition must be treated with antibiotics in the acute stage and subsequently physiotherapy. A chest x-ray should be arranged when the child is over the acute stage and he must be kept under observation until he is clinically well, free from physical signs and the x-ray normal. The presence of an inhaled foreign body, such as a pea inhaled from a peashooter is sometimes responsible for persistent abnormality.

The wheezy child

Wheezing in childhood is usually not asthma. Something like one in five children have at least one wheezy attack at some time between the first year and the age of school entry. The incidence falls after eight. Sixty-three per cent of the 126 children studied by Fry had only one attack and only eight per cent more than three. Ninety-five per cent had grown out of wheezy attacks by the time they left school (Fry 1961). Thus the great majority of children with wheezy attacks do not become chronic asthmatics in adult life.

The onset usually follows a cold. Most children appear less ill than one would expect, continuing to play with their toys while wheezing away noisily. Most attacks are mild and clear up spontaneously in two or three days. Sedation with chloral or antihistamines is of value. Antibiotics are not needed.

A few children have severe, recurrent attacks needing active treatment. There is usually a family history of asthma and eczema. In the acute attack adrenaline may be

injected subcutaneously, 0.1 ml at one year, 0.2 ml at two years, and 0.3 ml at five years. The injection may be repeated in one hour if necessary. Ephedrine by mouth is effective if given early in the attack, though its effectiveness diminishes with repeated use. The dose is 8 mg (gr $\frac{1}{8}$) at one year, 15 mg (gr $\frac{1}{4}$) at two years and 30 mg (gr $\frac{1}{2}$) at five years. Steroids should be kept as a last resort when other remedies have failed. Long term use brings side effects which includes stunting of growth, but short courses of the smallest effective dose are invaluable in severe cases.

The child with croup

Croup is the inspiratory stridor and hoarse cough caused by laryngeal obstruction due to inflammation, oedema, or spasm. Boys are affected more commonly than girls in the three-months to three-year age group. The onset is sudden, commonly during the evening and in most cases improvement comes rapidly after a few hours or a day or two. Croup is a distressing condition to all concerned. The child is anxious, restless and awake much of the night, needing constant attention from his mother who is frightened he may suffocate. The doctor must decide whether the child should stay at home or be moved to hospital. Croup can be a dangerous disease leading to asphyxia. Pallor, cyanosis and limp exhaustion call for immediate admission to hospital, where oxygen and tracheotomy are available. Most cases the general practitioner sees are pink and not seriously ill, though the risk of sudden deterioration is always to be reckoned with. They may be settled down for the night with a sedative such as chloral, 0.2 g (gr 3) at six months, 0.3 g (gr 5) at one year, 0.6 g (gr 10) at two years and 1 g (gr 15) at five years. Chloral elixir contains 0.2 g in 5 ml. Chloral syrup contains 0.6 g in 5 ml.

Alternatively promethazine ('phenergan') can be used. The elixir contains 5 mg to the 5 ml teaspoon and is more palatable than chloral. The dose is one teaspoonful at six months, one and a half at two years and two teaspoonsfuls at five years. It is well tolerated and the dose can be increased if necessary. These drugs will induce sleep without respiratory depression. The mother should be asked to call the doctor again if the child's breathing becomes rapid or his colour changes from pink to pale or blue.

Croup is usually due to a virus infection, though diphtheria must be remembered and some cases are thought to be due to *Haemophilus influenzae*. Antibiotics are ineffective in the majority of cases, but ampicillin or tetracyclines may be given. Giving antibiotics should not lull one into false security. The chief danger comes from anoxia and it is oxygen and the relief of airway obstruction that the serious case needs.

The child who is seriously ill

"*He is lying there like a little dead thing*"

The child is visited at home as a result of an urgent call and his poor condition is apparent as soon as one enters the room. He lies inert, limp, showing no interest in his toys; or is restless, crying feebly and struggling for breath. He is too weak to feed. Respiration is rapid, shallow and wheezy, while the colour is white or grey. Signs in the chest are inconspicuous, limited to diffuse fine crepitations. This condition is caused by an acute infection of the smaller bronchi, bronchioles or alveoli and comes in epidemics variously designated as epidemic bronchitis, bronchiolitis or bronchopneumonia. The respiratory syncytial viruses are considered to be the cause of some epidemics, and the staphylococcus is commonly implicated.

This is a dangerous disease and all but the mildest cases should be in hospital. The urgent need is for oxygen. The mortality rate in hospital varies in different epidemics but overall is of the order of two to five per cent.

The child whose cough is due to chronic lung disease

A small minority of the coughing children that the general practitioner sees have

bronchiectasis. This starts in the first five years of life, usually after measles, whooping cough or pneumonia. Thereafter the child is frequently chesty; as well as the cough there are localized signs in the chest—dullness and crepitations—and the child is ill and feverish. Commonly the cough persists between colds, but so it does with any child going through the catarrhal stage during the winter. A cough that persists through the summer and is precipitated by exertion is suspicious, especially if productive of purulent sputum. Clubbing of the nails, haemoptysis and delayed growth are signs of advanced disease. Suspected cases should be investigated before they reach this stage.

Chest x-ray will show changes in most cases, but a normal x-ray should not be taken to exclude bronchiectasis if the clinical picture is suggestive. Full investigation requires a bronchogram and tuberculosis, fibrocystic disease, foreign body and hypogammaglobulinaemia must be excluded.

REFERENCES

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I warn you against all ambitious aspirations outside of your profession. Medicine is the most difficult of sciences and the most laborious of arts. It will task all your powers of body and mind if you are faithful to it. Do not dabble in the muddy sewer of politics, nor linger by the enchanted streams of literature, nor dig in far-off fields for the hidden waters of alien sciences. The great practitioners are generally those who concentrate all their powers on their business. If there are here and there brilliant exceptions, it is only in virtue of extraordinary gifts, and industry to which very few are equal.

To get business a man must really want it; and do you suppose that when you are in the middle of a heated caucus, or half-way through a delicate analysis, or in the spasm of an unfinished ode, your eyes rolling in the fine frenzy of poetical composition, you want to be called to a teething infant, or an ancient person groaning under the griefs of a lumbago? I think I have known more than one young man whose doctor's sign proclaimed his readiness to serve mankind in that capacity, but who hated the sound of a patient's knock, and as he sat with his book or his microscope, felt exactly as the old party expressed himself in my friend Mr Brownell's poem:

"All I axes is, let me alone."

The community soon finds out whether you are in earnest, and really mean business, or whether you are one of those diplomaed dilettanti who like the amusement of *quasi* medical studies, but have no idea of wasting their precious time in putting their knowledge in practice for the benefit of their suffering fellow-creatures.

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