

PRACTICE OBSERVED

Trainees' Corner: Diseases in Children

Upper respiratory tract infection in children

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This article is based on an audiovisual presentation made for vocational trainees in general practice by the MSD Foundation. Further information about the tape-slide programme on which this series is based is available from the MSD Foundation, Tavistock House, Tavistock Square, London WC1.

Upper respiratory tract infection (URTI) is the final diagnosis in one-third of general practice consultations with children and represents one-half of all illness in preschool children. In some urban areas of Britain children under five years of age suffer an average of seven respiratory infections each year. Most of these illnesses do not come to the attention of a doctor, but some parents seem to bring their children with almost every cold. Understanding the aetiology and natural history of such illnesses and knowing how much anxiety they produce in parents can improve the quality of care that the general practitioner provides and, paradoxically, even reduce long-term work load. If such consultations are regarded as neither routine nor trivial they may add to the interest and purpose of daily work and be seen as a tiresome chore. This article aims to assist trainees in practice to understand the natural history of childhood upper respiratory infections, thus enabling them to develop schemes of management for them, and to achieve a fuller understanding of their impact on families.

Although upper respiratory infections are often divided into neat categories—tonsillitis, otitis, croup, common cold—in

practice these overlap. Indeed the clinical distinction between upper and lower respiratory tract infection is arbitrary, obviously so since the respiratory tree is continuous from pharynx to alveoli. This may be illustrated by the fact that sometimes children with URTI are admitted to hospital and a chest x-ray examination is ordered by the house officer. This frequently shows minor changes such as bronchial thickening or scattered small areas of collapse. Theoretically the diagnosis of URTI is thus incorrect, but the condition is clinically no more severe simply because of these radiological findings. In this article the definition of URTI excludes pneumonia, acute bronchitis, and bronchiolitis. What remains might be most helpfully looked at on a functional rather than on an anatomical basis:

- (1) The very few conditions that are potentially severe and need urgent expert treatment.
(2) Conditions that may not be severe but may cause long-term problems, thus requiring particularly careful diagnosis, treatment, and follow-up.
(3) Conditions that cause acute distress and might recur but usually without serious long-term morbidity.
(4) The majority of conditions—which are self-limiting and best managed by educating parents (and possibly doctors).
(5) A common thread links all of these groups—the effect of the family's anxiety. A mother's attitude may be all important because her own childhood experiences, domestic chaos, or her fears in coping with a sick child might alter her capabilities, so the doctor's approach may need to be individualised. A sick child is frequently presented when the real problem lies within the family—for example, it has been shown that mothers who are high users of psychotropic drugs have children who are more frequently seen with acute respiratory illness and have an above average intake of antibiotics. In such cases it is arguable as to who is really the patient—mother or child.
So far as epidemiological factors are concerned, there are many that the doctor can do little about—such as the close association of URTI with overcrowding, poor housing, and low social class, for example. But there are factors within the influence of the

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acute middle-ear infection, in which case the drum may be bulging, the landmarks indistinct or invisible, and the drum may have to be made "blind." In this position a child who results examination is more likely to be hiding a red drum, while the child who seems free of pain when his ear lobe is pulled back probably does not have otitis media.

Even assuming that the initial treatment is successful, Sharon's mother should be asked to return to the surgery if after three or four weeks she is concerned about her daughter's hearing. The ability to hear a whisper at 10 feet is a reasonable screening test in a 7 year old, though the trainee may wish to learn more complex methods using a simple audiometer. Up to 15% of children in primary school at one time or another suffer enough hearing loss to interfere with learning, so that the ability to test hearing in children of any age is important. During the paediatric post in hospital the trainee should request and obtain tuition in the skills necessary to do this.

Case 3—Peregrine, aged 7 years, is in fact quite well when brought to the surgery but his record shows that he has been seen four times in the past year because of sore throats, and his mother, who is obviously worried, asks for a referral to hospital so that he can have his tonsils removed.

The trainee needs to know the indications for tonsillectomy. Indeed, he should ask himself if there are any that are truly objective. In particular he should consider in advance what his approach will be to parents who request surgery. There are several points worth investigating from the published reports on the topic.

- (1) The tonsillectomy rate in Britain has fallen to about a third of the rate 25 years ago.
(2) Geographical differences are enormous for reasons that are unexplained on normal epidemiological grounds.
(3) It is more useful to look at the action of surgeons than the prevalence of disease, since the indications for operation given by ear, nose, and throat surgeons are diverse, and they disagree on the importance of the appearance of the tonsils. Thus, one Scottish study has shown that the number of children referred annually for tonsillectomy by different but neighbouring general practitioners ranged from about two to 15, and ENT surgeons accepted from 40% to 85% of requests to operate.
(4) In the few published studies on the efficacy of operation the best results that can be shown are a measurable but not striking reduction in throat infection and some reduction in mouth breathing. But no controlled studies have ever been performed in children with recurrent tonsillitis.
(5) The incidence of mortality from operations in the United States is estimated to be from 1 in 3000 to 1 in 27000 operations.
(6) When children who have been diagnosed as having recurrent tonsillitis are observed prospectively as a study group they have no more episodes than control children.
Although tonsillectomy is the commonest diagnosis at discharge for children who have been in hospital there are probably only two general accepted absolute indications for operation: cor pulmonale owing to airways obstruction, and quinsy, both of which are very rare. A third indication that is frequently quoted is four or more episodes of tonsillitis in the previous year with documented systemic ill health during each episode. But it should be remembered that this last indication is based on a distillation of different opinions and not on tested experimental evidence. In the end the trainee may have to decide on grounds that are not strictly clinical and may be asking an ENT surgeon to accept the evidence of his records. So perhaps there is a danger in labelling any sore throat as tonsillitis. Sadly, there still is a shortage of data on the incidence and natural history of pharyngotonsillitis.
Case 4—Wayne, aged 6 years: 48-hour history of cough and running nose. Vomited twice; sleep disturbed. History of recurrent URTI. Mother separated with two other children

younger than patient. Examination: temperature 37°C, mucous nasal discharge. Chest clear, except sound transmitted from upper airway. Tonsils and tympanic membranes redder than normal.

Trainees should understand and be able to explain to parents the natural history of such illnesses. The limitations of antibiotics should be understood by observing patients during the trainee year in general practice and in the hospital paediatric post, as well as by reviewing published reports. There is no convincing evidence that prescribing antibiotics shortens such illnesses, prevents complications, or reduces return attendances or the total practice work load. A trainee should be prepared to justify to a group of trainees the use of antibiotics, particularly when prescribed by telephone, by repeat prescription, or when left permanently with parents to use when they think fit.

Wayne's diagnosis is not organ-specific because there is inflammation of the nasopharynx and tympanic membrane. For convenience this is labelled URTI, but there is likely to be some lower tract infection as well and the early stages of measles resemble a simple cold, so Koplik spots should be looked for. On the other hand, the trainee should be aware that Mycoplasma spp. known to cause epidemics of URTI, might also be endemic, and the organism is sensitive in vitro to certain antibiotics, such as erythromycin. A decision to prescribe antibiotics for Wayne is as likely to be due to maternal anxiety, the doctor's self-protection, or to reassurance value as to the application of strictly "scientific" clinical criteria. Cough medicines may be useful but may also inhibit the search for a more definite diagnosis such as asthma.

Summary

In terms of potential danger acute stridor must be taken seriously. Most cases are self-limiting. Indeed, recurrent spasmodic croup may last a few hours only. But an occasional case of laryngotracheitis may progress to severe obstruction, and epiglottitis, though rare, may be fatal. In terms of morbidity otitis media is perhaps the most important of these conditions. There are children in every practice who need to have their serious otitis treated by the insertion of tympanostomy tubes or by adenotomectomy. Some of them are undiagnosed and suffer from learning disorders, speech problems, and undesirable behaviour. In general practice it should be possible to test children's hearing at any age. Recurrent sore throat certainly causes acute distress but is only rarely a genuine cause of long-term ill health. Colds and most coughs are self-limiting, and teaching parents about their incidence and natural history is perhaps the most valuable therapeutic tool available.

Bacteria can rarely be convincingly shown as a cause of colds and coughs, though mycoplasma may play a part. In any case, not every runny nose and cough is caused by infection. There is no doubt that atopy is underdiagnosed, and the trainee should be very cautious in labelling as bronchitic the child with recurrent episodes of fever and cough, particularly if he wheezes. He may have asthma, for which specific and effective treatment is available. Likewise, the child with a runny nose may have perennial rhinitis rather than a persistent cold.

Parents should be helped to understand when to phone, when to attend, and when to give medicines to their children. Some practices have prepared booklets, which in simple language help parents to understand how much importance to attach to these illnesses. In the end self-interest and the patient's interest will nearly coincide. As families learn self-help, the general practitioner's work load may be reduced.

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doctor: URTIs are more common (or more troublesome) in atopic children (and atopic illness may be misdiagnosed as a cold or bronchitis), and they seem to be more common in obese infants and in those whose parents smoke.

Four patients

Four patients are discussed in this article: each typifies a common problem that the trainee should be able to deal with competently.

Case 1—Susan, aged 2 years: 12-hour history of noisy breathing and crowing cough. Examination: tired, irritable, with stridor. No wheeze. Minimal intercostal recession; not cyanosed.

TABLE I—Croup*

Table with 3 columns: Very severe, Severe, Mild. Rows include respiratory stridor and expiratory wheeze, recession at rest, recession on exertion, and colour.

*Table adapted from Lewis et al.

The major considerations before settling on a diagnosis of "croup" are: (a) might this condition be dangerous? (b) what diagnoses need to be excluded? (c) what telephone advice should be given? (d) should every such child be visited? General practitioners differ widely in the importance they attach to the physical sign of stridor and the trainee needs to pursue a defined policy that later experience will modify. Thus it is essential to recognise the severity of illness since the occasional patient with laryngotracheitis may progress to profound airways obstruction (table I).

The trainee should also be able to recognise the possibility of epiglottitis (table II). This is one of the few true immediate non-traumatic emergencies in childhood: the mortality rate is high, the disease progresses rapidly, and death may be sudden

Bearing in mind these two major complications of what is generally a benign disease, trainees and course organisers need to assist trainees to determine a philosophy of management—particularly the balance between home treatment and hospital admission. In particular, offering telephone advice without seeing the child—except in the case of recurrent spasmodic croup—must put an occasional child at serious risk.

In Susan's case the diagnosis is likely to be acute laryngotracheitis, as in the vast majority of children with stridor. It is managed by excluding epiglottitis and an inhaled foreign body, and by explaining to the parents the natural history and how to use humidity to relieve the symptoms. With a very irritable child the mild sedative effects of an antihistamine may be helpful, and an arrangement should be made so that the doctor will know if the child's condition is deteriorating when the child is nursed at home.

Immunofluorescence will show a virus in 70% of such patients—generally parainfluenza, so that antibiotics have little if any theoretical place although they are often prescribed in both hospital and general practice even if only as a placebo for the doctor or relatives.

Case 2—Sharon, aged 7 years: late night telephone call to say she has woken with severe earache and cannot get back to sleep. Past history of recurrent otitis media. Surgery attended 10 days before, with several weeks' history of irritability and disobedience.

The questions that should arise in the trainee's mind on receiving such a call include: (a) should a visit be made? (b) is telephone advice sufficient and, if so, what advice should be given? In addition: (c) how confident is the trainee of his ability to make an accurate diagnosis using an auroscope? (d) what treatment and follow-up is adequate?

The overriding need is to relieve pain and allow the child to sleep, so aspirin or paracetamol should be prescribed, and a decongestant may be helpful though the means by which it works is not clear. Pain relief is more important than the immediate use of an antibiotic, so a decision on the latter can wait until the child is seen, preferably at the next surgery session (or the next morning, if a weekend). Certainly a child with acute suppurative otitis media should be treated with an antibiotic, but it is not uncommon for a child to awaken with sudden severe earache only to recover completely by morning; such pain is due to pressure changes in the middle ear because of obstruction in the Eustachian tube, and antibiotic treatment is unnecessary. If an antibiotic is used it should be chosen by referring to table III.

TABLE III—Bacteriology

Table with 2 columns: Acute laryngotracheobronchitis, Acute epiglottitis. Rows include variable length of symptoms before GP called, usually preceding URTI, can eat and drink, and usually flushed.

When examining the ear drum the trainee needs to understand the importance of colour, the visibility of bony landmarks, the presence of light reflex, retraction or bulging, and fluid levels or bubbles. Few doctors, even 10 years of experience, will guarantee the accuracy of their otoscopic diagnoses, and sometimes when this diagnosis varies with the clinical picture it may be wise to let the symptoms be the guide to management. For a full discussion and review of the published reports on the appearance of the tympanic membranes the trainee should read Rowe's article.

In Sharon's case the recent history of behaviour disturbances might imply the presence of partial deafness owing to serous otitis media (glue ear), and the trainee should look for signs of drum retraction, abnormally prominent landmarks, and visible fluid. At the time of the call this may of course be obscured by an

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New Idea

Simple SOAP system

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I report on a new method of problem-oriented record keeping based on the SOAP system—subjective, objective, assessment, plan. The SOAP system has been used in the following manner:

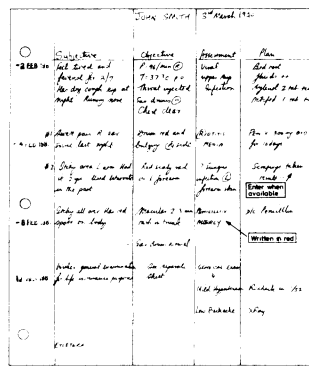
S: Feels tired and feverish x 2/7. Dry cough. Runny nose. O: P: 96/min. T: 37.3°C by mouth. Throat infected, ear drums normal, chest clear.

A: Viral upper respiratory infection. P: Bed rest. Ample oral fluids. Aspirin every 6 hours as required. Decongestant/antihistamine preparation.

This way of recording medical information certainly leads to an organised chart, compared to previous methods of record-keeping. As the record envelope grows thicker with time, however, information retrieval becomes more difficult. My method is as follows: the patient's history and physical sections and the data entered as shown in the figure. This type of record reads as a continuous flow sheet and thus contributes to continuity of patient care. One has only to glance down the assessment column and a summary of the patient's problem is there. Reading the plan column gives a clear idea of the drugs the patient has been prescribed.

This system of record-keeping takes no more time than the conventional SOAP method. The results of x-rays and other investigations are inserted in the assessment column—in different coloured ink, if preferred. Referrals to consultants and therapists are inserted in the plan column. Important information about positive or negative results may be written in red ink.

I have found that the best width for the columns on letter-sized lined paper is 4.5 in, subjective column 2.1 in, objective column 1.1 in, assessment column 1.1 in, plan column



11 in. The width of the columns may be varied according to the doctor's needs.

By using this method I can rapidly retrieve information on a patient's past medical problems and treatments, which improves patient care.

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rather than follow gradual deterioration. If the trainee has not seen this condition during his hospital paediatric post he is advised to read the relevant published reports. *