PRACTICE OBSERVED

Practice Research

Acute pharyngitis: a symptom scorecard and microbiological diagnosis

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Upper respiratory tract infections are the commonest reasons for patients to consult their general practitioners, annually accounting for 240 consultations per 1000 patients, of which 40 patients will present with acute sore throat.¹ *Streptococcus pyogenes* is responsible for approximately 5 to 30% of acute sore throats and tonsillitis. The clinical differentiation between streptococcal and non-streptococcal infection remains poor,² however, and thus treatment with antibiotics is both variable and empirical.

The bacteriological investigation of acute pharyngitis in general practice is not always done.³ Reasons for this are the geographical separation of the practice from the diagnostic laboratory, the necessary delay in obtaining a result early enough to influence the clinical management of the patient, and the repeat consultation that is necessary to start treatment. If bacteriological samples were processed in general practice these obstacles might be overcome.⁴

In the United States in attempts to discriminate between streptococcal and non-streptococcal infection scorecards that apply different weightings to various clinical features have been used.⁵ We decided to evaluate such a scorecard in the diagnosis of *Streptococcus pyogenes* pharyngitis and to assess whether it was possible to do simple bacteriological investigation in general practice.

Methods

The study was conducted by two trainees in general practice over four months in two general practices during their attachment. One

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practice had five partners and a list of 12 500 patients, the other was a rural prescribing practice with two partners and 3500 patients. Both were in purpose-built health centres.

The scorecard with nine items (table 1) was a modification of that described by Brees⁶ and was completed during each consultation. In addition an overall clinical assessment of the likelihood of a streptococcal throat infection was made. Once completed the scorecard was not used in the management of the patient.

For the bacterial isolation and identification of *Streptococcus pyogenes* in pharyngeal swabs each practice was provided with a 37°C incubator (LEIC), 0.1 unit bacitracin discs, 0.0002% crystal violet horse blood agar plates, and a selective broth medium to detect haemolytic streptococci containing 5% horse serum, 0.0002% crystal violet, naltrexide acid 100 mg/l, and colistin sulphate 5 x 10³ units/l in 4.5 ml nutrient broth.

Fresh supplies were obtained weekly from the hospital laboratory and refrigerated at 4°C. The equipment was placed and samples processed in an area separate from where patients were seen and a "laboratory" code of practice observed. The top of the incubator was a suitable work surface and was disinfected. All infected material was doubly wrapped and returned to the hospital laboratory for disposal. Patients with sore throat were investigated non-continuously. A throat swab sample from both fauces was placed onto the crystal violet horse blood agar medium and a bacitracin disc applied directly to the inoculated agar. The swab was then broken off into the haemolysin broth. Both plates and broth were incubated overnight at 37°C in candle extinction jars. The plates were subsequently inspected for β -haemolytic colonies and zone of inhibition around the bacitracin disc. At the same time 1 ml of sheep erythrocytes was added to the selective broth, which was further incubated for 1 hour at 37°C and then inspected for haemolysis.

Each trainee received one hour of training in these bacteriological techniques before starting the study. Samples read by the trainees were checked by a medical laboratory scientific officer, and all streptococcal isolates were grouped.

Patients were told to either telephone or attend the health centre the following day to find out whether they should redeem the prescription provided at their first visit. Patients with positive pharyngeal cultures were treated orally with penicillin V 250 mg four times a day for 10 days or erythromycin 250 mg four times a day if allergic to penicillin.

Organising a Practice

Giving the best to a trainee

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"What is the structure of the practice and how is it organised?" These are two of the routine questions to be asked when appointing a trainee for a vocational training scheme in general practice. The trainee may then be seen in the context of the setting in which the training will take place. Most training practices are group practices and this article is influenced by that fact. Trainees in small partnerships—that is, two or three doctors—and those who are single-handed have special problems, and the techniques of organisation may well be different from those found in group practice. When preparing to take on a vocational trainee, the trainer must be sure that the existing high standard of organisation takes account of the special needs of training, for only if this is done can the trainee give of his best to the practice.

Because the system of remuneration in general practice is complex the grant that is given to trainees is often misunderstood—particularly by those who have no experience as principals in general practice under the National Health Service. Apart from remunerating the time and effort that is spent in teaching, the grant also compensates for spending more than the average amount of time on practice organisation before being selected as a trainee. It also allows for those special expenses that will arise when the trainee is in post. This being so, it is not unreasonable for regional postgraduate committees to look for evidence of a high degree of practice organisation when a trainee is appointed.

In considering the question: "How can I improve my practice organisation to give the best to my trainee?" the phrase "emulation, communication, and revelation" will concentrate the mind.

Emulation

Most trainees have nothing with which to compare their training practice: the structure and organisation will be new to them, and they will tend to accept it as the norm. The formative effect that this has on future generations of young principals will be considerable. Trainees tend to be very loyal to their trainers, rather than critical, and are more likely to learn by emulating than by rejecting standards.

The trainee will be influenced by the standard of the practice premises and by the way they are laid out and equipped. Not only will the trainee be influenced by the standard of the practice but the other partners and ancillary staff, and the end result must

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give an impression of care, interest, and commitment to the patient.

Vocational training is only one phase in the continuum of medical education, so it is unreasonable to ask that during training the young doctor is exposed to attitudes that endorse the concept of continuing education. The partnership that foregoes regular business meetings at least once each month does so at its peril. The practice organisation will suffer unless the partners are to keep a tight rein on events. Some of these meetings are valuable experience for a trainee, but others might be so private that the trainee would reasonably be excluded.

Professional people have an implicit duty to review continually the standard of their own work. In a group practice this needs another series of clinical review sessions, which may be held monthly, or, at the very least, quarterly. Trainees and ancillary staff may be usefully deployed to provide groundwork material for these reviews. The example of the repeated questioning of standards, both by the trainee and by the practice, is a form of continuing education that is vital in moulding the attitude of the future principal.

Communication

The basis of good group practice is good records. Even the single-handed doctor who maintains that he keeps his records between his ears has no excuse, for the moment he takes on a trainee, he becomes a group, and communication becomes essential.

Most family doctors would admit that the state of records in general practice is below standard. The logical starting point for improvement is in teaching practice. This is so, firstly, because of the need for doctors, staff, and trainees to communicate with each other—and this is greatly facilitated by good records; and, secondly, because the example that the trainee takes from the teaching practice should influence standards in the practice as a whole. The carbon copies that are kept with the patients' records provide valuable communication between the partners in the practice and the trainee. It is hard to see how in the 1980s teaching practices that still use handwritten letters for referral can justify it as good practice.

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Results

A total of 269 swabs was collected from patients with 269 separate episodes of pharyngitis; 219 were collected from the urban practice and 50 from the rural practice. Fifty-four (20%) samples were positive for *Streptococcus pyogenes*. Analysis of each factor on the scorecard is shown in table 11, in patients who were culture-positive and a further two blood samples were interpreted as false positive. This gave specificity scores for the broth and agar media of 96.4% and 97.3%, respectively.

The distribution of the overall scores for patients determined by the scorecard, according to the results of the throat cultures, is shown in the figure. The mean symptom scores for patients who were culture-positive and culture-negative were 29.5 and 27.4 respectively, the difference being significant at $p < 0.02$. Analysis of each factor on the scorecard is shown in table 11, in patients who were culture-positive the presence of an abnormal pharynx or abnormal cervical lymph nodes was significantly greater than for those who were culture-negative ($p < 0.001$).

TABLE 11—Ten-item scorecard

(1) Month	Score	(2) Age (years)	Score
February, March, April	4	5-10	4
January, May, December	3	4, 11-14	3
June, October, November	2	15-17	2
July, August, September	1	18-20	1
		21-24	
(3) Temperature 100.5°C	<i>Present</i>	<i>Absent</i>	<i>Not established</i>
(4) Sore throat	4	2	2
(5) Cough	2	4	2
(6) Headache	4	2	2
(7) Abnormal pharynx	4	2	2
(8) Abnormal cervical lymph nodes	4	2	3
(9) Abnormal conjunctival membranes	4	2	3
(10) Coryza	4	4	3