PRACTICE OBSERVED

Practice Research

Clinical judgment in the diagnosis and management of frequency and dysuria in general practice

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Abstract

In a study of 40 women with the urethral syndrome and 46 women with conventional urinary tract infection, none of whom was pregnant, general practitioners predicted the diagnosis correctly before the report on the midstream urine specimen was received, as evidenced by their management. They seemed to do this by balancing the symptom of dysuria with the psychological make up of the patient: patients with the urethral syndrome suffered appreciably less dysuria than patients with urinary tract infection; patients with the urethral syndrome suffered appreciably more psychological illness. This ability to distinguish between the two disorders has important clinical and economic implications.

Introduction

Traditionally, general practitioners have found the management of frequency and dysuria difficult. Laboratory diagnosis of a midstream specimen of urine takes at least 48 hours and many clinicians are reluctant to withhold treatment for this long when the patient is suffering distressing symptoms. Up to 50%, of women presenting with frequency and dysuria, however, do not have severe bacterial infection.[1 2] This condition has been called the "urethral syndrome" which is defined as frequency and dysuria with less than 10^5 conventional organisms/ml, or with sterile urines. Few doctors have believed it possible to distinguish clinically between urinary tract infection and the urethral syndrome before seeing the results of the midstream urine analysis.

In carrying out a research project to measure the incidence of *Chlamydia trachomatis* and fastidious organisms in adult women who were not pregnant and who presented to their general practitioner with frequency and dysuria we noticed that clinicians seemed to distinguish between urinary tract infection and the urethral syndrome before seeing the report on the midstream urine specimen, as evidenced by their choice of treatment. In this paper we describe the factors that seemed to lead doctors to make a correct clinical diagnosis.

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Method

As part of the original prospective project all the doctors who were practising from one health centre were asked to adhere to the following protocol on all women over 16 years of age who presented with frequency and dysuria and were not pregnant:

(1) Give the patient a specially designed symptom card to monitor symptoms for the next four days.

(2) Provide verbal and written instructions on collecting midstream urine samples.

(3) Follow an agreed treatment plan: (*i*) increased fluid intake, or (*ii*) mixture of potassium citrate (mist pot cit)—an alkalinising agent, or (*iii*) Mandelamine four times a day—a urinary antiseptic, or (*iv*) nalidixic acid three times a day—an antibiotic.

(4) Make an appointment for the patient to attend the research sister for the result of the midstream urine sample and to have more detailed microbiological investigations for *Chlamydia* and fastidious organisms.

this rate of accuracy. Possible explanations may be that: (*a*) a desire to relieve symptoms may have been satisfied by the use of an agreed treatment plan, but these are all generally accepted and readily available formulations; (*b*) doctors in this practice have for some years been accustomed to using problem orientated medical records and are encouraged to make a firm diagnosis only when there is evidence to support the diagnosis,[3,4] hence the diagnosis of urinary tract infection can be made only if supported by a positive result on the midstream urine specimen. Howie suggested that general practitioners seem to balance illness factors with other patient factors in reaching a decision on whether or not to use antibiotics.[5,6] We suggest that in this study doctors balanced the illness factor, "dysuria," with patient factors, "psychosomatic markers," in arriving at the correct treatment decision. They were surprised at their apparent accuracy. General practitioners may be doing this on a wider scale but the accuracy of prediction has not emerged because it has not been measured.

Does a midstream urine specimen need to be examined at all when an adult woman who is not pregnant presents to her doctor with urinary symptoms? Doctors took the correct management and treatment decision independently, and without the help of a urine specimen in such cases. These findings need to be reproduced because they have important clinical and economic implications.

Feinstein showed that decisions on treatment may be assessed—and improved—by the same rational procedures used for any other set of experimental science.[13] Certainly, it was possible to assess the decisions about treatment taken by a group of general practitioners in managing frequency and dysuria and thus give valuable information for the future management of the condition. The results of this study should provide general practitioners with a degree of security about their decision making.

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Urethral syndrome: a self limiting illness

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Abstract

Thirty nine adult women who were not pregnant and had the urethral syndrome in a general practice underwent detailed microbiological investigations. Patients monitored their own symptoms, and those with persisting symptoms were entered into a randomised controlled trial of treatment with doxycycline and placebo. *Chlamydia trachomatis* and Neisseria gonorrhoeae were not isolated and fastidious organisms were not causally associated with the urethral syndrome. Treatment with doxycycline showed no benefit; each episode of the urethral syndrome was short and self limiting and there were no recurrences in a median observation period of 12 months.

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Introduction

The results of prevalence studies have shown that one in five women suffers urinary frequency and dysuria each year.[1 2] About half of these consult their general practitioner about the symptoms and half of this group do not have appreciable bacteriuria, defined as 10^5 or more conventional pathogens per ml of freshly voided urine.[2 3] Urinary symptoms with sterile urine or without appreciable bacteriuria are variously called the urethral syndrome or the frequency and dysuria syndrome.[4]

Recent investigations in genitourinary[4] and campus clinics[5] have implicated *Chlamydia trachomatis* as a cause of the condition, although in one study in general practice evidence of

We observed early in the study that there was a trend for doctors to prescribe nalidixic acid for those patients from whose urines $< 10^5$ conventional organisms/ml were subsequently grown (urinary tract infection) and to prescribe symptomatic relief for those who were subsequently shown to have sterile urines or from whose urines $< 10^5$ conventional organisms/ml were grown (urethral syndrome).

To examine this in more detail we devised a further study of the first 40 patients with the urethral syndrome and the first 46 patients with urinary tract infection who presented during the first 11 months of the original study. Data were collected from three sources: (*a*) patient recorded symptom cards, (*b*) an administered questionnaire (both (*a*) and (*b*) were part of the original prospective study), and (*c*) the patients' case notes which were reviewed blindly by a trained observer for the following predetermined criteria: (*i*) demographic details and consultation rate in previous 12 months; (*ii*) predominant symptom(s) —frequency/dysuria/nocturia as recorded on day 1 of the self monitored symptom card; (*iii*) diagnostic aids used by the doctor at the initial consultation—Labstix or microscopy, or both; (*iv*) day of week consultation took place; (*v*) psychosomatic markers in the past history: four episodes of recurrent abdominal pain recorded for the previous year, a diagnosis of "anxiety" recorded in the case notes, and tiredness of unexplained origin as recorded in the case notes; (*vi*) tranquilliser use in the last 12 months; (*vii*) treatment chosen by the doctor.

Results

Forty patients with the urethral syndrome and 46 with urinary tract infection were studied. There were no appreciable differences in social class, civil status, or consultation rate between the two groups. The day of the week that consultations took place did not affect therapeutic accuracy. The following differences were noted between the two groups:

(*a*) Patients with urinary tract infection reported significantly more dysuria than those with the urethral syndrome (table I).

TABLE I—*Mean (SD) number of symptoms of frequency, nocturia, and dysuria as recorded prospectively by 40 patients with the urethral syndrome and 46 matched women with urinary tract infection*

	Patients with the urethral syndrome (n = 40)	Patients with urinary tract infection (n = 46)	
Frequency Mean (SD)	9·8 (3·87)	11·34 (4·99)	NS
Nocturia Mean (SD)	1·85 (1·69)	2·62 (2·47)	NS
Dysuria Mean (SD)	0·45 (0·50)	0·96 (0·21)	p < 0·01

NS = Not significant.

TABLE II—*Psychosomatic markers in patients with the urethral syndrome and urinary tract infection*

	Patients with urethral syndrome (n = 40)	Patients with urinary tract infection (n = 46)
Anxiety	17	1
Recurrent abdominal pain	9	0
Unexplained tiredness	4	1

TABLE III—*Treatments chosen by doctors in treating urethral syndrome and urinary tract infection before receiving report on midstream urine specimen*

	Patients with the urethral syndrome (n = 40)	Patients with urinary tract infection (n = 46)
Alkali	10	1
Antiseptic	6	4
Antibiotic	9	37
No treatment	15	4

(*b*) Those with urinary tract infection had more recorded episodes of frequency and nocturia than the other group of patients but the difference between the two groups was not significant (table I).

(*c*) Doctors used microscopy or Labstix, or both, in almost one third of cases of urinary tract infection but in only three out of 40 cases of urethral syndrome.

(*d*) Women with the urethral syndrome were recorded as having had more episodes of abdominal pain and anxiety than those with urinary tract infection (table II).

(*e*) Eight out of 40 patients with the urethral syndrome had received tranquillisers in the previous year while only one out of 46 patients with urinary tract infection had received tranquillisers over the same period.

(*f*) Symptomatic relieving agents such as mixture of potassium citrate (mist pot cit) and the antiseptic Mandelamine were used more often in the management of urethral syndrome than in the management of urinary tract infection (table III). Doctors prescribed an antibiotic in 37 out of 46 cases of urinary tract infection but in only 9 out of 40 cases of the urethral syndrome before they knew the result of the midstream urine specimen. This difference is highly significant ($p < 0{\cdot}00001$).

Discussion

In a Public Health Laboratory survey[3] 94% of general practitioners stated that they started antibiotic treatment for urinary symptoms before receiving the report on the urine specimen. This practice is understandable because the doctor wishes to relieve distressing symptoms as quickly as possible and waiting for the laboratory report would delay treatment for two to three days. But starting antibiotic treatment immediately the patient presents with her symptoms means that many women with frequency or dysuria, or both, may receive antibiotics unnecessarily. In our study the patients with proved urinary tract infection complained of more severe dysuria than patients who had the urethral syndrome. This finding challenges the implicit acceptance that there is no difference between the symptoms of urinary tract infection and those of the urethral syndrome. Previous studies have not highlighted this important difference between the two conditions. Lawson *et al* noted that only 57% of their patients with the urethral syndrome had dysuria but they did not compare the symptoms with patients with urinary tract infections.[4] Mond *et al*,[5] Gallagher *et al*,[6] and Catell *et al*[7] all noted less dysuria in their patients with the urethral syndrome but attached no importance to the finding. Both Brooks and Maudar[8] and Steensberg *et al*[9] failed to find any difference in symptomatology between the two groups in general practice, as did Marsh,[10] reporting from a hospital clinic.

Sufferers from the urethral syndrome in our study experienced appreciably more psychosomatic illness in their previous history than those with urinary tract infection. Gray and Pingleton, in a review of 20 years of clinical practice dealing with patients with the urethral syndrome, suggested that "the syndrome occurs in those with great nervous tension and severe anxieties."[11] In a study from a urology clinic Mason *et al* showed that patients with the urethral syndrome attending a urology clinic had grossly more psychogenic illness than surgical patients used as controls.[12] Angela Kilmartin, a founder of the now disbanded U & I Club for cystitis sufferers noted that 35% of her 750 respondents had taken tranquillisers because of depression associated with cystitis.[13] In our study the group with the urethral syndrome received more anxiolytics than the group with urinary tract infection, which is all the more notable because we are a low prescribing practice. We plan to try to differentiate which predominates—Gray and Pingleton's theory that the condition occurs in the tense and anxious women or Ms Kilmartin's view that cystitis itself causes tension and anxiety.

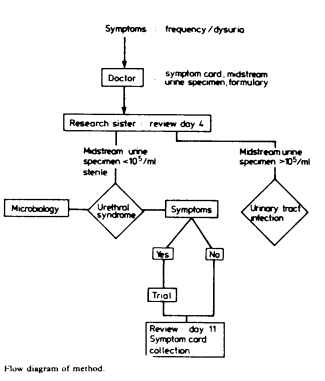
A retrospective study of initial decisions on treatment in urinary infections in a Canadian department of general practice showed their therapeutic accuracy to be 45·8%.[14] The results of our study show an 80% accuracy rate with clinicians using an antibiotic appropriately for urinary tract infection in four out of five cases in advance of receiving the report on the urine specimen. The doctors in the study, however, could not account for chlamydial infection was seldom detected.[4] The role of fastidious organisms is also in dispute.[4 15]

The aims of this study were firstly to see if *C trachomatis* and fastidious organisms were associated with the urethral syndrome in patients presenting to a general practice, and, secondly, to gather information on the natural history of the condition.

Materials and methods

Women over 16 years of age who were not pregnant and presented to the department of general practice at Llanedeyrn with symptoms of frequency or dysuria, or both, were requested to provide a midstream specimen of urine. They were taught to monitor their symptoms on a specially designed symptom card and then requested to return in four days to the research sister for the result of the culturing of the urine specimen, review of symptoms, and collection of symptom cards. Clinicians were permitted to use a formulary of either symptomatic relieving agents or nalidixic acid (which did not affect the expected organisms).

On their return in four days those patients whose urine specimens contained $> 10^5$ conventional pathogens per ml were diagnosed as having urinary tract infection and treated appropriately. Those whose specimens were sterile or showed $< 10^5$ pathogens/ml were entered into the study (figure). A pelvic examination was first performed and any abnormalities noted. Swabs with dry cotton wool were taken of the urethra and cervix for chlamydia and *Neisseria gonorrhoeae*. One swab was transported in medium at 4 C, inoculated the same day on to Cytochalasin B treated McCoy cells; after 72 hours at 35 C the specimen was Giemsa stained and viewed under dark ground microscopy for inclusions. The other swab was plated on to Thayer Martin medium and incubated on the premises at 37 C in 7% carbon dioxide (CO_2) for four days until transported to the laboratory. A standard loop of freshly voided midstream urine was plated on to a cystine-lactose-electrolyte deficient (CLED) medium and also placed in 7% CO_2 at 37 C for two days. Throughout the study there was quality control: known positive specimens of chlamydia were sent regularly through the entire system from practice to laboratory.



Flow diagram of method.

Those patients who were still symptomatic four days after the initial consultation were entered into a double blind randomised controlled trial of doxycycline and placebo for seven days. All patients were provided with new symptom cards and requested to return in seven days for review. A tablet count and symptom check were then carried out and symptom cards collected.

Outcome was measured by comparing self recorded symptoms of frequency, dysuria, and nocturia of days one to four with days eight to 11. The significance of the improvements of the symptoms were estimated by the paired *t* test.

Results

During the 15 month study 146 non-pregnant women over 16 years of age presented with symptoms of frequency and dysuria; 74 had proven urinary tract infection. There were 30 exclusions: 11 presented outside surgery hours, nine received antibiotics in the last month, and 10 had vaginitis or stress incontinence to account for their symptoms. Forty two women were entered into the study but two mislaid their symptom cards and one was allergic to tetracyclines. They fell into two groups (table I), those who said that they got better by the fourth day review ("got better" group) and those who were still symptomatic and entered into the trial ("trial group"). Of the 18 "got better" patients, the duration of symptoms before consultation was less than two weeks and most suffered for seven days or less. Of the 21 in the trial group most suffered for a week or more before consultation. This difference in duration of symptoms was significant ($p < 0{\cdot}05$).

TABLE I—*Symptom duration before consultation in "got better" and "trial" groups of 29 patients with the urethral syndrome*

	Days		
	0-7	8-14	14
"Got better"	11	7	0
Trial	5	10	6

The difference in duration of symptoms was significant: $p < 0{\cdot}05$.

To measure change in the symptom of frequency in each of three groups—"got better," trial active doxycycline, and trial placebo—the daily mean of recorded episodes was taken for days one to four and compared with the mean of days eight to 11 (table II). All three groups of patients improved significantly from days one to four and days eight to 11 and there were no significant differences in improvement between the three groups.

Nocturia was defined as the number of episodes of micturition occurring during normal bedtime hours. To measure this symptom the total number of episodes recorded for days one to four were added and compared with the total recorded for days eight to 11 (table III). All three groups improved from days one to four and days eight to 11 and there were no significant differences between the groups.

To measure dysuria the presence of soreness or pain on passing urine for any 24 hour period was counted as one and the number of days with dysuria during days one to four were compared with the number recorded during days eight to 11 (table IV). All three groups

TABLE II—*Improvement in frequency from days one to four and days eight to 11 in 39 women with the urethral syndrome*

Groups	Days		
	1-4	8-11	Difference
"Got better" (n = 18): Mean (SD)	7·61 (2·51)	6·62 (1·54)	0·99 (1·58) t = 2·64* p < 0·02
Placebo (n = 11): Mean (SD)	12·50 (3·40)	10·25 (4·47)	2·25 (2·40) t = 3·12 p < 0·02
Doxycycline (n = 10): Mean (SD)	9·53 (2·40)	7·05 (1·25)	2·48 (2·29) t = 3·41 p < 0·01

*Student's *t* test.