

Urethral syndrome in women attending a clinic for sexually transmitted diseases

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SUMMARY Of 107 women investigated for frequency of micturition and dysuria, 21 had gonorrhoea, 14 chlamydial urethritis, eight an *Escherichia coli* urinary tract infection, 18 candidosis, 12 trichomoniasis, and four asymptomatic genital herpes. No organisms were isolated from 30 patients. Eighty nine women referred themselves and 18 were referred by the family practitioner.

These findings suggest that *Chlamydia trachomatis* is frequently associated with the urethral syndrome among patients attending sexually transmitted disease clinics.

Introduction

Frequency of micturition and dysuria are common complaints in women. In the United Kingdom its prevalence in women aged 21-65 years is 22%.¹ In the United States lower urinary tract infection accounts for at least five million medical consultations every year.² As many as 30% of these patients have sterile urine.^{3,4} Most studies of the urethral syndrome have been carried out in general practice. More recently *Chlamydia trachomatis* has been found to be an important cause of the urethral syndrome.^{5,6} Chlamydial infection is responsible for many cases of urethral syndrome in the absence of infection with conventional urinary pathogens.⁷ Asymptomatic genital herpes is becoming a common cause of frequency and dysuria among patients attending sexually transmitted disease clinics.⁸

The aim of this study was to determine which organisms were associated with the urethral syndrome and to assess the response to treatment.

Patients and methods

One hundred and seven women who attended the department of genitourinary medicine at the Royal Infirmary, Cardiff, with complaints of frequency of micturition and dysuria were studied. Eighty nine patients attended because they thought they might

have contracted a sexually transmitted disease; 18 were referred by the family practitioner because of recurrent episodes of frequency and dysuria. Patients with ulceration of the vulva or vagina or genital warts were excluded from the study. After careful clinical examination specimens were taken for microbiological investigations.

INVESTIGATIONS

Samples taken with a platinum loop from the urethra and cervix were Gram stained to identify intracellular Gram negative diplococci and other organisms. For culture for *Neisseria gonorrhoeae* similar samples were plated directly on to a culture plate, one half of which consisted of blood agar and the other half modified New York City culture medium. These plates were incubated at 37°C in an atmosphere of 10% CO₂. Material from the endocervix and urethra was taken on cotton wool swabs; one swab was stored in chlamydial transport medium and a second in herpes virus transport medium at 0°C. Vaginal material was examined by culture for trichomonal and candidal infections. At the patient's initial visit cervical cytology was undertaken on all patients. A midstream specimen of urine was obtained for microscopy and for culture on MacConkey agar.

Patients whose urine bacterial count was $\geq 10^5$ were diagnosed as having a urinary tract infection. The leucocyte count in the urine was determined by calculating the mean number of cells in at least 10 microscopic fields ($\times 400$). *Chlamydia trachomatis* was cultured on cytochalasin-B treated McCoy cell monolayers, *Herpesvirus hominis* (HVH) on

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fibroblast monolayer MRC-5 cells, and *Trichomonas vaginalis* and *Candida* spp on commercially available media (Oxoid). In each patient serological tests for syphilis and herpes complement fixation tests were performed. Paired sera were examined for herpes antibodies only if HVH was isolated in culture.

TREATMENT

The patients were treated according to the microbiological diagnosis. Oral metronidazole was given for trichomoniasis and topical clotrimazole for candidosis. Gonococcal infection was treated with ampicillin in a 2 g oral dose with probenecid 1 g orally. Patients with chlamydial infections were treated with oxytetracycline or erythromycin by mouth 250 mg four times a day for two weeks. The symptomatic patients in whom no microbiological cause was found were treated with oxytetracycline or erythromycin for seven days. Compliance with treatment was assessed by counting the tablets at the end of the course. All patients were advised to abstain from any sexual contact until they had attended the clinic for follow up. Microbiological tests of cure were carried out one week after treatment in all patients except those who were treated for chlamydial infection; in the last case the tests were performed two weeks after treatment.

Results

The mean age of the women was 24.2 years (range 15-43 years). Of the 107 patients, 92 were single or divorced and 83 used some form of contraception; 73 had had multiple sexual partners within the last three months.

A microbiological diagnosis was reached in most cases. Fifty eight women had ≥ 5 polymorphonuclear leucocytes per high power field of urine. The most common cause of frequency and dysuria was gonorrhoea. *C trachomatis* was isolated from the urethra of 12 of 25 women (table I). Eight patients had an *Escherichia coli* urinary tract infection. In four patients herpes virus was isolated from the cervix and urethra. Paired sera examined for a rising titre of complement fixing antibody to herpes was confirmed in only two of the infected patients. Organisms were not isolated from specimens collected from 13 patients with pyuria.

TABLE I Isolation of organisms from the cervix and urethra in women ≥ 5 polymorphonuclear leucocytes per microscope field of urine

Microorganism isolated	No of women harbouring organism in:		
	Cervix	Urethra	Cervix and urethra
<i>Neisseria gonorrhoeae</i>	21	19	19
<i>Chlamydia trachomatis</i>	17	12	12
<i>Herpesvirus hominis</i>	4	4	4

Forty nine patients had < 5 pus cells per microscope field in their urine. Of these, 18 harboured *Candida albicans*, 12 *T vaginalis*, and two *C trachomatis* in the urethra; no pathogenic microorganisms were isolated from material from 17 women.

Microbiological tests of cure were carried out at one week and two weeks after treatment. The results are shown in table II.

Of 30 patients who did not have microbial infection of the genitourinary tract, 22 attended the follow up clinic. Nineteen patients had total symptomatic relief. After tetracycline treatment for seven days 19 women were completely free of symptoms.

TABLE II Results of treatment in 107 patients

Diagnosis	No of patients treated	Treatment	No of patients	
			Cured	Defaulted at follow up
Gonorrhoea	16	Ampicillin with probenecid	16	0
Gonorrhoea and chlamydial infection	5	Ampicillin with probenecid and oxytetracycline	5	0
Chlamydial infection	14	Oxytetracycline	14	0
<i>Escherichia coli</i> infection	8	Co-trimoxazole	8	0
Candidosis	18	Clotrimazole pessary and cream	18	0
Trichomoniasis	12	Metronidazole	12	0
Herpes genitalis	4	Hygiene only	*	0
No organism isolated	30	Oxytetracycline	†	8

*Some symptomatic relief

†Relief of symptoms in 19 patients

Discussion

The causes of frequency and dysuria in women attending a sexually transmitted diseases clinic are entirely different from those seen in general practice. Gonorrhoea and chlamydial infections are the major causes of the syndrome in STD clinics and account for more than 30% of cases; *E coli* is the commonest cause in general practice.^{3 4} In general practice, however, routine cultures for *N gonorrhoeae* and *C trachomatis* were not carried out. The availability of these tests has widened the microbiological spectrum of the urethral syndrome. The difference is also increased by self referral and referral by the family practitioner to the STD clinics.

C trachomatis has previously been shown to be an important cause of the urethral syndrome in college girls in the United States. Stam *et al*⁵ suggested that girls with chlamydial infections had changed sexual partners often and used oral contraceptive methods. These findings were consistent with the sexual transmission of *C trachomatis* in the chlamydial urethral syndrome. The present study indicates that chlamydial infection is an important cause of frequency and dysuria in women attending STD clinics in the United Kingdom.

The prevalence of chlamydial infection in women who attend STD clinics is about 20-30%.⁹ Isolation rates are higher in women with consorts who have non-gonococcal urethritis.^{10 11} Chlamydial infection is also commonly associated with pelvic inflammatory disease, Bartholinitis, and neonatal conjunctivitis.⁷ The response to treatment is satisfactory. In the urethral syndrome it is important to investigate for both eubacterial and chlamydial infection.

The relief of symptoms after empirical tetracycline treatment suggests that in some cases the symptoms

may have been due to tetracycline-sensitive organisms such as *Mycoplasma* spp and *Gardnerella vaginalis*, which were not identified in our investigations.¹²

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