PRACTICE OBSERVED

Practice Research

Chlamydia trachomatis and Neisseria gonorrhoeae infections in women attending inner city general practices

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Women with genitourinary symptoms are often seen in general practice.[1-4] In those practices with a high ratio of young, mobile, sexually active patients sexually transmitted diseases are likely to be responsible for a proportion of such symptoms and may go undetected.

Reports of studies of the prevalence of *Neisseria gonorrhoeae* in general practice have concluded that the number of cases is so small that routine screening is of little value.[5] There are no published studies of the prevalence of *Chlamydia trachomatis* in general practice in the United Kingdom. Both organisms are recognised causes of acute salpingitis, with its sequelae of chronic pelvic inflammatory disease, infertility, and risk of ectopic pregnancy, and both cause neonatal conjunctivitis in babies born to infected mothers.[6-15]

As a group of general practitioners providing full services, including family planning and obstetric care in the inner city, we care for women with symptoms and signs of genital infection. Some of these infections are not explained by the microbiological investigations normally available to us, which do not include facilities for the isolation of *C trachomatis*. These factors led us to screen a group of women in three inner city practices to look for cases of infection with *N gonorrhoeae* or *C trachomatis*.

Patients and methods

Eleven doctors working in three practices in east London participated in the study. All women aged 15 to 45 years attending surgery or the practice antenatal clinic and receiving a speculum vaginal examination were selected. Over six weeks 253 patients were recruited and screened for *N gonorrhoeae* and *C trachomatis*.

During the study demographic data and volunteered or elicited information about genitourinary symptoms were recorded on a standard encounter form for all patients in the age group who consulted. Patients who would be receiving a speculum vaginal examination as part of their normal clinical care were asked for informed consent before being screened. The vaginal examination was carried out according to a detailed protocol and findings were entered on the encounter form. Abnormal clinical findings were recorded according to strict criteria developed by the participating practitioners in consultation with a genitourinary physician before data were collected. The χ^2 test was used to assess statistical differences between patient groups.

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SPECIMEN COLLECTION

Screening for *N gonorrhoeae* was carried out by inoculating a Till-U-Test GC (Tilomed Laboratories) slide[13] with endocervical and urethral material. Cotton tipped swabs were used to collect material from the endocervical canal for the isolation of *C trachomatis*. After collection swabs were immediately transferred to vials of transport medium[14] and placed in a liquid nitrogen container at −180°C where they were stored until isolation could be attempted. Cellular sponges measuring 10 mm × 5 mm × 1 mm were used to collect cervical secretion material from the cervical os using a technique described elsewhere.[15] These specimens were taken before swabbing for chlamydial isolation. The saturated sponges were stored in conical plastic vials at +4°C and delivered weekly to the laboratory for the estimation of chlamydial antibody.[16]

LABORATORY TESTS

Till-U-Test GC slides were incubated at 37°C in the surgery and observed at 24 and 48 hours for bacterial colonies. Colonies were tested with oxidase reagent and positive cultures were sent to St Bartholomew's Hospital for definitive identification of *N gonorrhoeae*.

Swabs collected for the isolation of *C trachomatis* were inoculated

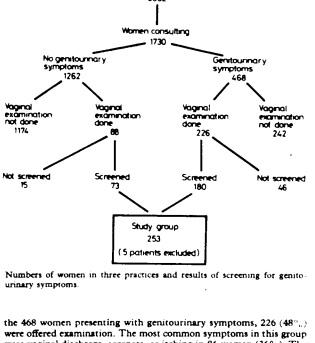
on to McCoy cell monolayers, which were centrifuged, treated with cycloheximide, and after 60 hours' incubation at 35°C examined for inclusions.[17] Cervical secretion fluids were eluted from cellular sponges and chlamydial IgG and IgA antibodies detected using four antigen pools in a modified microimmunofluorescence test.[18]

FOLLOW UP TESTS

All patients with *N gonorrhoeae* or *C trachomatis* or with chlamydial antibody in cervical secretions were recalled, and those who consented were retested before treatment or referral. Patients with chlamydial infection treated in the practices were given erythromycin stearate 500 mg twice a day for 10 days, and contacts were traced and advised to attend a clinic for sexually transmitted diseases.

Results

During the study 6632 women aged 15 to 45 years were registered with the three practices and 1730 consulted the doctor (figure). Of



Numbers of women in three practices and results of screening for genitourinary symptoms

the 468 women presenting with genitourinary symptoms, 226 (48%) were offered examination. The most common symptoms in this group were vaginal discharge, soreness, or itching in 86 women (36%). The 88 asymptomatic women who had a vaginal examination were attending for contraception, antenatal care, or cervical cytology.

Sixty one women who had vaginal examinations were eligible but were not screened. Of these, 15 asymptomatic women attended during menstruation for removal of an intrauterine contraceptive device and 46 symptomatic women had acute discomfort, heavy bleeding, or were in advanced pregnancy. A final total of 253 women were screened, five of whom are not included in the analysis due to loss or contamination of one or more specimens.

At the initial examinations *C trachomatis* was isolated from the cervix of 15 patients and a further nine women had chlamydial antibodies in their cervical secretions. All 24 patients were followed up. Of the nine women with chlamydial antibodies, seven were retested and from four *C trachomatis* was isolated from their cervical swab on follow up. The other two patients declined retesting and were referred to the clinic for sexually transmitted diseases. *C trachomatis* was isolated from a total of 19 of the 248 (8%) women screened.

Chlamydial IgG antibody was detected in the cervical secretions of 18 women, 14 of whom were isolation positive. Of the four women

who were isolation negative for *Chlamydia* with cervical secretion antibody, one also had a proved gonococcal infection.

A total of four patients were infected with *N gonorrhoeae* and in all the organism grew from the cervical swab only. One of these patients also had *C trachomatis* isolated from her cervix, and another had chlamydial antibodies in her cervical secretions.

The mean (SD) age of those women found to have infection by culture of either *N gonorrhoeae* or *C trachomatis* was 25·4 (7·9) years, which compares with a mean (SD) age of 29·6 (6·3) years in the rest of the women. Twenty out of 22 (91%) women with infection were either single or divorced compared with 117 out of 226 (52%) uninfected women.

Vaginal discharge was the most common symptom in the *Chlamydia* isolation positive group of women (14 out of 19), but was present in only 68 out of 163 symptomatic isolation negative women ($p < 0{\cdot}02$). In total 17 out of the 19 women from whom *C trachomatis* was isolated presented with genitourinary symptoms. The table shows that women with proved chlamydial infection were more likely to have an abnormal cervix than those isolation negative women who were either symptomatic ($p < 0{\cdot}01$) or asymptomatic ($p < 0{\cdot}0005$).

Results of cervical examination

Findings	*C trachomatis* isolation positive (n = 19)	Symptomatic *C trachomatis* isolation negative (n = 163)	Asymptomatic *C trachomatis* isolation negative (n = 66)
Reddened cervix	2	26	3
Cervical erosion	7	12	1
Cervical discharge	4	18	1
Cervical bleeding on contact	3	13	3
Total No of patients	12	49	8

Discussion

Of 248 women screened during this study, 19 (8%) had definite evidence of infection with *C trachomatis* (isolation of the organism) and a further four had presumptive evidence of infection (antibody in cervical secretions). This compares with isolation rates from clinics for sexually transmitted diseases of between 12%,[19] and 31%,[19] rates at a Family Planning Association clinic of 3%,[19] and rates at an antenatal clinic of 2%.[20] Four women (2%) had infection with *N gonorrhoeae*. Most of the infected women presented with genitourinary symptoms, although one patient with *C trachomatis* and one with gonorrhoea were pregnant and asymptomatic, a potentially vulnerable situation for the unborn child. It is well known that infections with *C trachomatis* and *N gonorrhoeae* may be asymptomatic and that clinical findings are very variable. Furthermore, it is known that both these organisms can cause pelvic inflammatory disease, which is not uncommon in our practices in London. If all our patients with genitourinary symptoms were referred to clinics for sexually transmitted diseases this would pose intolerable burdens on their services. There also remains a small but worrying group of women who resist this advice and press for treatment in general practice. There is a case for improving the diagnostic facilities, particularly for isolation of *C trachomatis*, to enable interested practitioners to better select those patients who should see genitourinary physicians for expert management and contact tracing.

Although the isolation of the organism is the most specific test for the diagnosis of chlamydial infection, for us the detection of chlamydial antibodies in cervical secretions provided a useful alternative. Storing and transporting such serological specimens was easier and more acceptable in general practice. Some authors have suggested that the diagnostic specificity of chlamydial antibody in cervical secretions is low,[21] while other studies[15 18] elicited high sensitivity and specificity values, predicting a high diagnostic accuracy for this test. In our study there was a highly significant association between chlamydial antibody in cervical secretions and the isolation of *C trachomatis* from the patient ($p < 0{\cdot}0005$). Furthermore, the finding of chlamydial antibody in cervical secretions would have correctly predicted chlamydial

infection in two out of every three women in whom such antibodies were detected (positive accuracy [PV pos] = 0·67).[15]

Our findings suggest that *C trachomatis* and to a lesser extent *N gonorrhoeae* are not uncommon among patients in general practice in the inner city. General practitioners who care for such patients should be alerted to the damaging sequelae such infections may cause, for it is only by adequate diagnosis and prompt treatment that future distress may be avoided.

Conclusions

Two hundred and forty eight women who were attending general practices and who received speculum vaginal examination were tested. *Neisseria gonorrhoeae* was found in only four (2%) of the women, one of whom also had a concomitant chlamydial infection. *Chlamydia trachomatis* was isolated from 19 (8%), and these women were more likely to be single or divorced and to have vaginal discharge or an abnormal cervix. Chlamydial antibodies were detected in the cervical secretions of 18, 14 of whom were also isolation positive. In this study the presence of cervical antibodies, although less specific than isolating the agent, would have correctly predicted chlamydial infection in two out of every three women in whom these antibodies were detected. Serological specimens were easier to handle in general practice.

Owing to the damaging sequelae that may arise from these sexually transmitted infections, we believe that diagnostic facilities available to general practitioners should be improved.

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ONE HUNDRED YEARS AGO The opinion which we recently expressed, that the objections which were urged to what is described as the adulteration of bitter beer by the use of other vegetable bitter principles than that of the hop for flavouring it, are founded on nothing but a quite unreasoning prejudice, have been much canvassed, and have apparently created a somewhat ignorant surprise. Lupulin, the bitter principle of the hop, appears to be regarded with a traditional and superstitious reverence, which is, perhaps, natural to those who are absolutely uninformed and incapable of receiving information on such a subject, or of reasoning upon it. Calomel, quassia, chiretta, calumba root or gentian, are, we are told, pharmacopoeial substances; but we are not told that lupulin is not a pharmacopoeial substance. Water, orange-peel, and alcohol, we may add, are also pharmacopoeial substances, and so is carbonic acid gas, and so are brandy and sherry, but we have not hitherto been accustomed to consider this as an adequate reason for excluding them from the ordinary list of beverages. As a matter of fact, there is no more virtue in lupulin, the bitter principle of the hop, than there is in the bitter principle of chiretta, of calumba root, or of gentian. The one is as harmless as the other; and if the flavour is equally agreeable, and the brewer can produce bitter beer, which is as palatable by using their bitter principles, instead of those of the hop, we can see no valid reason why he should not do so, nor any reason why his doing so should be made the subject of reproach or of regret, except perhaps to the hop-grower. Whether or not bitter beer flavoured with the vegetable bitters in question be as agreeable and as acceptable to the public taste as beer flavoured with hop, is a matter on which we are unable to form an opinion; but the allegation that they are successfully so used, appears to be a presumption that they can be substituted without disadvantage. The notion which is put forward in some quarters that beer so flavoured would be "an infusion of bitters instead of good sound beer" is a mere play upon words. The alcoholic properties of the beer depend of course upon the fermentable basis employed, and the process of melting them; they have nothing whatever to do with the flavouring bitter used. The peculiar value attached to hop-bitter is a mere superstition, and one which has nothing that we know of specially to recommend it. (*British Medical Journal* 1883;i:264-5.)

New Idea

Is your deputising service really necessary?

F KELLERMAN

Much has been written in the lay press about deputising services. The purpose of this short paper is to point out that there is no need for such a service. What we do need is a complete reorganisation of our emergency services, and this should be based not on the principles and the technology of medical practice of the 1920s but on making a much better use of the resources available now in the 1980s. The following is not a blueprint for a complete emergency medical service but only broad guidelines based on facilities existing everywhere. For simplicity my proposals will apply to a theoretical community with a population of 160 000 with 80 general practitioners and one general hospital.

At 11 pm the telephone of every general practitioner participating in the scheme would be switched over to ring at the hospital. At the same time the medical staff of the accident and emergency departments of the hospital would go off duty and two general practitioners would take over the department. The doctors could deal with incoming calls, according to circumstances, either by sending an ambulance and admitting the patient or sending him back home, or by one of the doctors visiting the patient, preferably by ambulance instead of his own car. With other casualties, such as accidents and injuries, the general practitioners could use their discretion whether they should deal with them or call the appropriate hospital staff. At 8 am the telephones would be switched back, the two general practitioners would go home and have the rest of the day off.

The same principles would apply to maternity cases based at the maternity hospital by another two general practitioners, and to weekends and public holidays. Thus every one of the doctors would be on night duty once in 10 nights (once in the general hospital and once in the maternity hospital) and once in 20 weekends, with the added benefit of some relief for the junior hospital staff.

I have no illusions about the tremendous difficulties that this scheme would meet when trying to put the theory into practice, but a feasibility study might be worth while doing. I am confident that if my colleagues would apply their intellectual energies to overcome the difficulties and solve the problems as they arise, instead of concentrating on proving that "it would not work," we could gradually develop a satisfactory alternative to the present outdated system of dealing with "out of hours" emergencies. It may be encouraging to the sceptic that similar schemes already existed many years ago in some countries on the Continent. I am not overoptimistic, but if I could start the ball rolling and at least provoke some discussion, I would feel that I have not wasted your space and my time.

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Diary of Urban Marks: 1880-1949

From Japan we went to Shanghai. This was interesting. The quay front was, as was usual in all these ports, taken by the European traders for offices while the native town is pushed into the background a mile or two from its original foundation. In native Shanghai I watched the ivory carvers. They are simply wonderful.

We then went to Foo-Chow, some miles below Shanghai in China. Foo-Chow is some 20 miles up a wide river and on anchoring the customs officers come on board. At that time all the custom men were English and I discovered that one of them was a Swansea boy called Nice. They invited us to mess with them at dinner and Cable and I accepted. As we were being rowed over, I told Cable that for the night I was teetotal since I could not stand the enormous amount of alcohol which I knew would be thrust on us. At the same time I knew they would respect a teetotaller. I was not wrong and that night I drank 16 bottles of lemonade. During the evening it was arranged that with some of the officers we should visit the Great Wall of China which was only 50 miles distant. The customs people arranged the details. We were to go on horseback. Cable and I therefore left early as we were to start at 5 am. I had been asleep for an hour when I was awakened with violent pains in the belly, combined with sickness. I dosed myself with chlorodyne but at 5 am I was in no fit condition to undertake an arduous journey. I did not go, but Cable did and had a very good time. I have not drunk lemonade since that time.

From Foo-Chow, where we loaded up with tea, we went back to Hong Kong. I saw all there was to see there and must refer you to guide books if you wish to know more about the places I am mentioning.

We again visited Singapore and Penang and then proceeded to Ceylon. Here again I had time to see Mount Lavinia and part of the interior of the country. As was usual at all the ports, traders were allowed on deck and spread their wares out for inspection. One of these asked me if I would like to buy some rubies. I took him to my cabin and he showed me a large ruby which he said I could have if I exchanged my revolver for it. I saw no use for my weapon, seeing that we were on the way home and so I agreed. As it happened Clarke came into the cabin at this very moment and recognised the man. He asked me what was happening and warned me on no account to trade my revolver for anything. It was an offence against the law which was directed against any natives of Ceylon possessing firearms. Clarke chased the man out of the cabin.

From Ceylon to Port Said via the canal and thence through the Mediterranean, where we struck a mighty storm. On Christmas day we were chasing our food all over the table. We had on board 14 000 tons of cargo and the ship was run up aft and came down with a tremendous bang on the fore. Every officer had a headache and I was cleaned out of phenacetin tablets. The storm lasted four days and at Gibraltar we had to anchor to take in coal, being two days behind our schedule. We arrived in London on 2 January instead of New Year's Eve, and as soon as I was able I took leave of the officers and skipper and hastened home to Leicester well content with my experience.

And now I had to begin to think of settling down in practice to my life's work.