Chlamydial genital infection in prostitutes in Iran

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SUMMARY The prevalence of chlamydial genital infection was studied in 177 prostitutes in Iran; 100 in Teheran and 77 in the port of Bandar Abbas. *Chlamydia trachomatis* was isolated in eight (6.9%) of 116 patients with valid cultures. Type-specific antibodies were found against *C trachomatis* serotypes D to K (genital serotypes) in 94.2% and against serotypes A to C (trachoma serotypes) in 2% of the prostitutes. Type-specific IgM at a titre of ≥ 8 , indicating current infection, was found in 29.2%, whereas type-specific IgG at a titre ≥ 64 , suggesting a current or recent infection, was present in 71.5%.

The lower chlamydial isolation rate in these women may have been due to previous treatment with antichlamydial drugs and because of immune responses resulting from repeated reinfection with chlamydiae. The results indicate that in Iran prostitutes are commonly infected with *C trachomatis* and are probably a major reservoir of chlamydial genital infection.

Introduction

We have reported that urethral infection, caused by *Chlamydia trachomatis* serotypes D to K, occurs among the urban population of Iran.¹ Those results indicated that prostitutes may have been a major source of chlamydial genital infection.

We present the results of an investigation of the prevalence of chlamydial genital infection in prostitutes in Iran.

Patients and methods

One hundred and seventy-seven women who attended consecutively special clinics for registered prostitutes either in Teheran or Bandar Abbas (a port in Southern Iran) for their regular weekly examination for sexually transmitted diseases were included in the study.

Specimens for chlamydial isolation were taken from the cervical canal on cottonwool swabs. These were stored in 2SP transport medium with antibiotics² and 3% (v/v) fetal calf serum. Transport of specimens to London and methods of culture in irradiated McCoy cells have been described.¹³

Blood was taken by venepuncture. Sera were separated and stored at -20°C . Transport of sera to

London and methods for detecting type-specific antichlamydial IgG and IgM using a modified micro-immunofluorescence (micro-IF) test are described.¹⁴

Isolates were serotyped using a micro-IF test.⁵

Results

Of the 177 female prostitutes studied, 100 were from Teheran and 77 from Bandar Abbas. Their ages ranged from 15 to 55 years with a mean of 29 years. Each woman had had several episodes of genital infection and had been treated frequently either in the clinic or by self-medication, usually with drugs active against chlamydiae (that is, tetracyclines, erythromycin, and sulphonamides). During specimen collection a discharge was visible in the cervical canal of all women; in 140 (79.1%) this was profuse.

Culture for *C trachomatis* was invalid in 61 (34.5%) women because of gross bacterial and fungal contamination or poor cell monolayers. *C trachomatis* was isolated in eight (6.9%) of the other 116 women.

Type-specific serum antibodies against *C trachomatis* serotypes D to K were found in 145 (94.2%) women and against serotypes A to C in three (2.1%) of the 154 patients tested. Type-specific IgM against serotypes D to K at a titre of ≥ 8 indicating current infection with these serotypes was found in 45 (29.2%) women (table). Type-specific IgG against serotypes D to K at a titre of ≥ 64 indicating current or recent infection⁶ was found in 110 (71%) women (table). IgG against serotypes A to C (trachoma agent) was found in three women, but IgM was not present in their sera.

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TABLE Titres of antibodies against *C trachomatis* serotypes D to K in sera from 154 prostitutes

Type of antibody	Reciprocal antibody titres						Total No (%) positive
	8	16	32	64	128	256	
IgG	NT	13	22	44	35	31	145 (94)
IgM	23	17	4	1	0	0	45 (29)

NT = not tested

Type-specific antibodies against *C trachomatis* lymphogranuloma venereum (LGV) agents or *Chlamydia psittaci* agents were not detected.

Four cervical isolates were serotyped. These were identified as types E, F, H, and I.

Discussion

In the present study 94% of the prostitutes showed serological evidence of infection with *C trachomatis* serotypes D to K. In these women IgM antibody against these serotypes at a titre of ≥ 8 indicating current infection was found in 29%; *C trachomatis* was isolated from only 7% of women.

The rate of 34% of invalid cultures in this study is much higher than that of 6% reported in our laboratory using cervical specimens from women in London.⁷ This difference may be due to a higher rate of bacterial and fungal colonisation of the cervix in the prostitutes or because of large amounts of discharge collected in the specimens, which can cause cell toxicity.

The low chlamydial isolation rates reported here may have been due to the effects of storage and transportation of specimens, frequent treatment of the patients, or repeated reinfection of the cervix. In studies of trachoma in Iran, using the same methods of storage and transportation of clinical specimens, we obtained a very high isolation rate of 68% in children with trachoma.⁸⁹ It is therefore probable that the method of storage and transportation had little or no effect on chlamydial isolation rates.

The women included in this study had been treated frequently, probably at sub-optimal levels, with drugs active against *C trachomatis*. Studies of chlamydial ocular infection¹⁰¹¹ have shown that systemic or topical treatment with antichlamydial drugs at sub-optimal doses can reduce shedding of chlamydial agents and the intensity of the inflammatory responses.

In prostitutes repeated chlamydial infection of the cervix may be common. It has been shown that the chlamydial isolation rate in men who had had more than one episode of urethritis was one-quarter of the rate in those who were infected for the first time (12%

compared with 55·6%).¹² Similar findings have been reported in guinea-pig chlamydial conjunctivitis used as a model for human ocular chlamydial infections.¹³¹⁴ It is therefore probable that lower isolation rates obtained in these women are partly caused by immune responses resulting from repeated chlamydial infections of the cervix.

High titres of type-specific IgG (≥ 256) were found in 31 of 145 (21·4%) seropositive women. These high titres of antibody may suggest that these women had an ascending chlamydial genital infection such as pelvic inflammatory disease (PID). Studies in our laboratory have shown that in women with non-complicated cervical infection the serum IgG titres are usually between 64 and 128,⁶ whereas in those with PID or Curtis-Fitz-Hugh syndrome the IgG titre is considerably higher.¹⁵⁻¹⁷

The *C trachomatis* serotypes E, F, H, and I isolated in Teheran are commonly isolated from the genital tract of patients in Europe and the United States of America.⁶¹⁸ In this group of prostitutes, however, we found no evidence of genital infection caused by *C trachomatis* serotypes A to C.

The results of this investigation indicate that in Iran prostitutes are commonly infected with *C trachomatis* and are probably a major reservoir of chlamydial genital infection despite regular medical supervision.

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