

ENDOCERVICAL CHLAMYDIAL INFECTION IN WOMEN WITH GONORRHOEA

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ABSTRACT

Eighty six women attending Middle Road Hospital with endocervical gonococcal infection were evaluated. *Chlamydia trachomatis* was isolated in 27% of them. Women co-infected with *C. trachomatis* were similar to those with gonococcal infection alone in terms of demography, type of sexual contact, previous sexually transmitted disease, genitourinary symptoms, and clinical signs.

Keywords: Gonorrhoea, *Chlamydia trachomatis*, women

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INTRODUCTION

Endocervical chlamydial infection in women is often asymptomatic or causes only non-specific symptoms. Useful clinical markers of infection such as mucopurulent cervicitis (MPC) and hypertrophic cervical erosions occur in 37 – 67% (1,2) and 19% (1) of chlamydia-positive women, respectively. Epidemiological markers of infection such as a history of contact with nongonococcal urethritis (NGU) is useful because 32 – 42% (3 – 6) of these women harbour chlamydiae in their cervixes. Likewise, gonococcal infection has also been proposed as a marker of chlamydial infection since 25 – 63% of these women are chlamydia-positive (5, 7-10). A previous study conducted in this institution showed that 39% of women contacts of NGU had endocervical chlamydial infection (11). However, a study to determine the incidence of endocervical chlamydial infection in women with endocervical gonorrhoea has not been undertaken before. This study was therefore designed with this aim in mind and also to provide data that could be used in the formulation of a chlamydial control program for Singapore.

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MATERIALS AND METHOD

From January 1985 to September 1987, endocervical cultures for *Chlamydia trachomatis* were taken from two groups of women attending Middle Road Hospital, Singapore. The first were contacts of confirmed cases of male patients with gonococcal urethritis and the second were those whose endocervical Gram-stained smears showed Gram-negative intracellular diplococci and subsequent culture was positive for *Neisseria gonorrhoeae*. The isolation of *C. trachomatis* was performed on cycloheximide treated McCoy cell monolayers. Specimens were also taken from the endocervix for direct inoculation onto modified Thayer Martin medium for the culture of *Neisseria gonorrhoeae*. Vaginal specimens were collected for Gram-stained microscopy for yeasts, wet-film microscopy for motile trichomonads and for the culture of both organisms in Trichosel broth (BBL, US), supplemented with 8% horse serum. The methods of culture for these organisms have been described previously (11). Urethral specimens were taken for Gram-stained microscopy alone. The Venereal Disease Reference Laboratory (VDRL) test was performed in all the patients.

A history was taken with special reference to genitourinary symptoms and a careful clinical assessment was made for cervicitis and pelvic inflammatory disease (PID). Cervicitis was defined clinically as cervical friability (as judged by bleeding on initial swabbing) and/or mucopurulent exudate from the os. Cervical erosions were not considered to indicate a cervicitis unless also accompanied by friability and a mucopurulent exudate. Pelvic inflammatory disease (PID) was diagnosed clinically if there was a history of bilateral lower abdominal pain, cervicitis and cervical or adnexal tenderness.

The relationship between some demographic, epidemiologic, and clinical characteristics was tested using 2 x 2 contingency tables comparing those with and without a characteristic against those with and without chlamydial infection. The chi square test with Yates' correction and the Fisher's exact probability test, where appropriate.

RESULTS

Ninety-four women were enrolled into the study. Forty-five were contacts of male patients with gonorrhoea and *N. gonorrhoeae* was isolated from 37 (82%) of

these. The remaining 49 women were women whose endocervical smears and cultures were positive for *N. gonorrhoeae*. Therefore, there were altogether 86 women in whom *N. gonorrhoea* was isolated. These 86 women formed the basis for this study. Penicillinase producing strains of *N. gonorrhoeae* (PPNG) was isolated from 30 (35%) of these 86 patients. The demographic and epidemiological characteristics of these 86 patients are shown in Table 1.

C. trachomatis was isolated from 23 (27%) patients, *candida spp* from 7 (8%) and *Trichomonas vaginalis* from 3 (3%) patients. None of the patients gave positive VDRL results.

Table I
DEMOGRAPHIC AND CLINICAL CHARACTERISTICS OF 86 PATIENTS WITH ENDOCERVICAL GONORRHOEA

Characteristic	Value
Mean age in years	28.0 + 9.03
Race: Chinese	81%
Malay	14%
Indian	5%
Married	72%
Occupation: Housewife	47%
Skilled/semiskilled	28%
Unskilled	16%
Student	4%
Unemployed	4%
Sexual contacts: Husband	71%
Regular partner	28%
Casual partner	1%
Past STD	14%

The mean age of chlamydia-positive cases was 27.9 years compared with 28.0 years for chlamydia-negative cases ($p = 0.94$). *C. trachomatis* was isolated from 17 (24%) of 70 Chinese women, 6 (50%) of 12 Malay women and none of 4 Indian women. Although Malay women appeared to have a higher relative risk of chlamydial infection, the difference was not statistically significant. Cervicitis was detected in 17 (77%) of 22 chlamydia-positive women and 42 (68%) of 62 chlamydia-negative women ($\chi^2 = 0.32$; $p = 0.57$). In two patients the appearance of the cervix was not recorded. Table II summarises the relationship between isolation of *C. trachomatis* and demographic, epidemiological and clinical characteristics. No statistically significant association was found.

DISCUSSION

The isolation rate of *C. trachomatis* of 27% from 86 women with endocervical gonococcal infection is in the lower range of the 25-63% isolation rates reported in studies conducted in western countries (5,7-10). This is also lower than the isolation rate of *C. trachomatis* we reported in a previous study of women contacts of NGU (11). This suggests that endocervical gonococcal infection is a good, but less strong, predictor of chlamydial infection compared to a history of contact with NGU. The incidence of double infection with *N. gonorrhoeae* and *C. trachomatis* is rather high. With such a high incidence the cost of treatment with or without screening will certainly be less than the cost of treating the complications that arise. However, whether treatment of women with gonorrhoea with anti-chlamydial therapy is more cost effective than screening for chlamydia infection and treating only the chlamydia-positive cases has to be formally evaluated. In this regard, it is appropriate to point out that in the US, chlamydiae have been isolated from 25 – 50% of women with gonorrhoea (7,8). Based on this, the Centres for Disease Control (CDC), Atlanta, recently recommended that patients with uncomplicated endocervical, urethral or rectal gonorrhoea should be treated simultaneously with anti-chlamydial drugs (13). Simultaneous treatment of women with endocervical gonococcal infection in our institution could be justified on a similar

Table II
THE RELATIONSHIP BETWEEN ISOLATION OF C. TRACHOMATIS AND DEMOGRAPHIC, EPIDEMIOLOGICAL AND CLINICAL CHARACTERISTICS IN WOMEN WITH GONORRHOEA

Variable	Chlamydia		P-value
	No. Positive	No. Negative	
Race:			
Chinese	17	53	0.44
Malay	6	6	0.11
Indian	0	4	0.59
Married	18	44	0.96
Past STD	4	8	0.31
Symptomatic	15	50	0.29
Cervicitis	17	42	0.57
PID*	0	1	1.00

* Only one patient with gonorrhoea had PID

basis. Untreated women face the risk of developing complications such as PID, ectopic pregnancy and infertility, and may transmit infection to their newborn. The importance of treatment is further underscored by the fact that 72% of the women in this study were married and were of childbearing age (mean age of chlamydia-positive women was 27.9 years).

Two studies conducted in this institution in 1983 and 1985 showed that *C. Trachomatis* could be recovered from 19% (12) and 26% (14) of male patients with gonococcal urethritis, respectively. Both studies, however, involved the isolation of *C. trachomatis* before and after treatment of the gonococcal urethritis, which almost doubled the isolation rates. The 27% recovery rate of *C. trachomatis* in this present study could actually be an underestimate.

In this study we also attempted to analyse whether there was any difference in certain demographic, epidemiological and clinical characteristics between women with gonorrhoea who also had chlamydial infection and those without chlamydial infection. There was none which means that these characteristics cannot be used as markers of chlamydial infection in this population of women.

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