Chlamydial screening of pregnant women in a sexually transmitted diseases clinic

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SUMMARY Fifty-three consecutive pregnant women seen over six months were screened for chlamydial infection, syphilis, gonorrhoea, trichomoniasis, and candidosis. *Chlamydia trachomatis* was isolated in 20 (37.7%) patients, of whom six were sexual partners of known cases of non-gonococcal urethritis (NGU) (two had associated gonorrhoea or candidosis) and six had gonorrhoea (three had associated trichomoniasis and candidosis). If treatment is given to contacts of NGU 14 patients with other presenting conditions would not have been treated unless chlamydial cultures had been performed. This may lead to potentially serious complications of chlamydial infection in both mothers and neonates.

Introduction

Chlamydia trachomatis has been shown to be a potentially serious pathogen. In women sexually transmitted infection can lead to salpingitis.¹ Furthermore, infection in pregnant women may lead to premature labour or stillbirth, neonatal death, and postpartum pelvic inflammation.²⁻⁴ In neonates infection is acquired during passage through the infected birth canal and can cause conjunctivitis with possible pannus formation and conjunctival scarring³⁻¹⁰ as well as pneumonitis.^{11 12} The clinical criteria for the diagnosis of chlamydial genital infection in women are unsatisfactory and without culture many infected women would remain unrecognised and untreated.¹³⁻¹⁷ The purpose of this study was to assess the prevalence of chlamydial infection in pregnant women attending a clinic for sexually transmitted diseases (STD).

Patients and methods

STUDY POPULATION

Fifty-three pregnant women who attended consecutively the Alexandra Clinic, St Giles' Hospital, London, from June to December 1981 were screened for chlamydial infection, syphilis, gonorrhoea, trichomoniasis, and candidosis.

CHLAMYDIAL ISOLATION

Material for the culture of *C trachomatis* was taken from the endocervix with a cotton swab (Exogen Ltd). Swabs were broken into bijoux bottles containing 3 ml transport medium. The transport medium consisted of Eagle's minimal essential medium with 0.13% sodium bicarbonate, 10% fetal calf serum, 0.5% glucose, and additional amino acids, vitamins, and glutamine. It contained gentamicin (10 µg/ml) and amphotericin B (2.5 µg/ml). Specimens were kept at 4°C for a maximum of 18 hours before transport to the laboratory. On receipt in the laboratory specimens were stored at 4°C if inoculated on day of receipt or stored in liquid nitrogen if inoculation was to occur subsequently.

Isolation was performed in McCoy cells grown on 13-mm coverslips in culture tubes, each coverslip being seeded with 5×10^4 cells. The McCoy cells were seeded in growth medium (Eagle's minimal essential medium with 10% fetal calf serum, 0.11% bicarbonate, 10 µg/ml gentamicin, and additional amino acids, vitamins, and glutamine) containing 25 µg/ml idoxuridine and were incubated for three days before use. This method is based on that described by Reeve *et al.*¹⁹ For isolation the growth medium was removed, replaced with 1 ml of the specimen, and centrifuged at $3000 \times g$ for one hour. After further incubation for two hours at 35°C the supernatant was removed and replaced with fresh growth medium containing idoxuridine.

Tubes were incubated for a further 2-3 days before the coverslips were fixed with methanol and stained with iodine. *C trachomatis* was considered to be present if characteristic intracytoplasmic inclusions were seen.

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Results

The mean age of the 53 patients was 23.2 years (range 17-37 years.) Data with respect to race, marital state, parity, stage of pregnancy, and presence of symptoms in patients in whom *C trachomatis* had been isolated is given in table I and the presenting diagnoses in table II. The overall chlamydial isolation rate was 20/53 (37.7%). The rate appeared to be higher in negroes, multipara, and in women in the second or third trimesters of their pregnancies; however, the differences were not significant (by the χ^2 test with Yates's correction, $P > 0.05$).

TABLE I Distribution of patients with positive endocervical chlamydial culture results according to race, marital state, parity, stage of pregnancy, and presence of symptoms

	Total No of patients	No positive for Chlamydia (%)
Race		
Caucasians	30	10 (33)
Negroes (West Indians)	17	8 (47)
Afro-Asians	6	2 (33)
Marital state		
Single	34	13 (38)
Married	19	7 (37)
Parity		
Primigravida	36	12 (33)
Multipara	17	8 (47)
Stage of pregnancy		
First trimester	17	4 (24)
Second trimester	22	9 (41)
Third trimester	14	7 (50)
Presence of symptoms		
Asymptomatic	19	6 (32)
Symptomatic	34	14 (41)

TABLE II Distribution of patients with positive endocervical chlamydial culture results according to presenting diagnoses at first visit

Presenting diagnoses at first visit	Total No of patients	No positive for Chlamydia
NGU contact	6	4
NGU contact + gonorrhoea	1	1
NGU contact + candidosis	1	1
NGU contact + trichomoniasis	1	0
Gonorrhoea	6	3
Gonorrhoea + trichomoniasis	5	2
Gonorrhoea + trichomoniasis + candidosis	3	1
Latent treponemal disease	5	1
Latent treponemal disease + candidosis	4	3
Latent treponemal disease + trichomoniasis	1	1
Candidosis	8	1
Trichomoniasis	2	1
Trichomoniasis + candidosis	1	0
Genital wart	2	1
Genital wart + candidosis	1	0
Urinary tract infection	1	0
No infection	5	0

The clinical findings in pregnant women with either positive or negative chlamydial culture results were unhelpful in this study. All 20 *Chlamydia*-positive patients and *Chlamydia*-negative NGU contacts were treated with erythromycin stearate 500 mg twice daily for two weeks. A chlamydial culture was repeated at the end of treatment in the 20 positive cases and 17 of their contacts were traced and treated. A further chlamydial culture was performed four weeks before the expected date of delivery in all patients.

Discussion

Since all contacts of NGU should be treated,¹⁸ chlamydial culture in this group will be of little practical importance. The isolation rate excluding this group, however, is still high (14/44, 31.8%). This is in contrast to the isolation rate of 0-16% in pregnant women in non-STD clinics.^{9 20-24} In surveys carried out in STD clinics the isolation rates are 10-30% in unselected women,^{13-17 25-27} 30-40% in women whose contacts have NGU,^{13-17 25 26} and 2-17% in women whose contacts' histories are unknown.^{13 15 25 26}

In some American studies most infected patients were black and the higher prevalence in the black population is thought to reflect their lower socio-economic status.^{10 21} This would also apply to our patients who come from poor areas with 90% of the population belonging to social classes III, IV, and V and 10% of the population from overseas, mainly the West Indies.

The absence or presence of symptoms did not help in predicting chlamydial infection, as about one-third of *Chlamydia*-positive women had no symptoms. Furthermore, in symptomatic women most complained of a vaginal discharge, which could be physiological.

Martin *et al*² estimated that there was about a 10-fold increase in the relative risk of stillbirth and neonatal death after 20 weeks' gestation in *Chlamydia*-positive pregnant women. In our study one *Chlamydia*-positive patient who presented with genital warts had a mid-trimester abortion before treatment could begin. American studies show that in infants born to mothers with chlamydial infection of the cervix 60-70% subsequently acquire the infection,^{10 21 22} 20-50% develop inclusion conjunctivitis,^{10 22 23} and 20% develop pneumonitis.²¹

Our results show a disturbingly high prevalence of chlamydial infection in pregnant women attending an STD clinic. In view of the high attack rate of chlamydial infection in neonates and the possible risk of stillbirth, premature labour, neonatal death, and postpartum pelvic inflammation pregnant women

attending STD clinics should be screened for chlamydial infection. In an area in which most pregnant patients belong to the lower social classes a chlamydial culture facility is essential.

Most physicians would offer treatment to contacts of NGU, and it has been proposed that patients with gonorrhoea should also be treated for concomitant chlamydial infection.^{18 28 29} This policy is not universally accepted, and in pregnant women the controversy is greater as drug treatment should be kept to a minimum. If a chlamydial culture service is available a rational approach can be made. One of our patients continued to have a positive chlamydial culture result despite two weeks' treatment with erythromycin. She denied having sexual intercourse during treatment. In view of possible persisting infection a repeat culture at the end of treatment is recommended. Alternatively, a higher dose of erythromycin may have to be considered, as absorption of erythromycin is known to be erratic and may be aggravated by the poor gastrointestinal motility during pregnancy. Four failures in 17 patients treated with erythromycin 500 mg twice daily for 15 days was reported by Lassus *et al.*³⁰ As another patient had a positive chlamydial culture result only on the repeat test four weeks before the expected date of delivery, a final culture at that time should be performed for all patients who are at risk of acquiring a further infection.

Thus, a chlamydial culture service should be available to all STD clinics. Certain groups of patients are particularly at risk from infection, for example, those with gonorrhoea. Where facilities are limited, it is recommended that pregnant women, particularly those from the lower socioeconomic groups, should be screened routinely.

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