PREVALENCE OF CHLAMYDIA TRACHOMATIS IN WOMEN SEEKING TERMINATION OF PREGNANCY

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ABSTRACT

Fifty consecutive unmarried women seeking termination of pregnancy in Toa Payoh Hospital were analysed to determine the prevalence of Chlamydia trachomatis infection as compared to gonococcal infection. Cases harbouring chlamydial infection were followed up to exclude postabortal pelvic infection. Incidence of positive cultures were also compared among the various ethnic groups in the population. Results from the data analysed showed that chlamydial infection was significantly more prevalent than gonorrhoea in our local women seeking therapeutic abortion. However, further research to define the exact size of the problem is indicated.

Keywords : Unmarried women, Chlamydia trachomatis, prevalence, abortion.

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INTRODUCTION

Pelvic inflammatory disease (PID) is a major complication after therapeutic abortion. One episode of PID may result in tubal dysfunction while recurrent infections may impair tubal patency rapidly leading to infertility[1].

It is presently estimated that 15% of women with PID fail to respond to initial antimicrobial treatment while 20% have at least one recurrence and as much as 15% are rendered infertile by the disease. Among those who conceive, about 8% will suffer from ectopic pregnancy[2].

Gonococcus is still a cause of PID. With the implementation of excellent programmes for the control of gonorrhoea since its post-World War II epidemic, a steady decline in the global incidence of gonorrhoea despite increasing sexual permissiveness, is achieved. Epidemics were controlled, the incidence of gonorrhoea declined but PID still remained a common disease. But why is this so?

Recently, new emphasis has been put on the age-old microbe, Chlamydia trachomatis. In western industrialised countries, it is now regarded as the most common sexually transmitted pathogen. In fact, World Health Organisation experts reported that currently there are at least 3 to 5 million women suffering from chlamydial infection every year in the United States alone. Unmarried sexually active women are thought to have a high risk of harbouring cervical chlamydia.

The aim of our study therefore was to find out the prevalence of Chlamydia trachomatis infection as compared to gonococcal infection in Singapore women seeking termination of pregnancy, and to follow those harbouring chlamydia to exclude postabortal pelvic infection.

MATERIALS AND METHODS

Fifty consecutive cases of unmarried women seeking termination of pregnancy in Toa Payoh Hospital were included for the study. Their ages ranged from 15 to 28 years with a mean of 21.5 years. Eighty-eight per cent of the patients were below the age of 25 years.

Table I shows the breakdown into the various major ethnic groups.

Table I
Breakdown of patients according to Ethnic group

Ethnic Group	No. of Patients
Chinese	32 (64%)
Malay	9 (18%)
Indian	7 (14%)
Others	2 (4%)
Total	50 (100%)

All were first trimester abortions. Only one patient was on oral contraception. The rest of the patients did not practise any form of contraception. Abortion was carried out by dilatation and vacuum aspiration in all patients.

Diagnosis of PID was made on the clinical grounds of fever or lower abdominal pain in the presence of two or more of the following features, namely, purulent vaginal flow, tenderness on cervical excitation and tenderness or mass in any or all of the vaginal fornices. Sterile cotton wool swabs were taken both from the cervix and the rectum for Neisseria gonorrhoea as well as Chlamydia trachomatis.

For Neisseria gonorrhoea, the swabs were inoculated directly onto a modified Thayer-Martin medium contained in a plastic box prior to the abortion and a carbon dioxide tablet immediately added to provide an atmosphere of carbon dioxide and sent to the laboratory.

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After incubation at 36°C for 48 hours, the plates were studied. Gonococci were identified by their colonial morphology, oxidase reaction and gram-stained smear. The colonies were then tested for penicillinase production by paper acido-metric method[3]. All the stains were confirmed by the carbohydrate utilisation test.

For Chlamydia trachomatis, a swab was taken with "calgiswab" (Inolex, Illinois, USA) from the lower part of the cervix. It was then inoculated to 1 ml of 0.2 molar of sucrose-phosphate buffer containing 5% foetal calf serum, 125µg/ml of vancomycin, 50 µg/ml of streptomycin and 25 IU/ml of nystatin. The transport medium was maintained at 4°C until it reached the laboratory where it was kept at -70°C until it was processed. Chlamydiae were cultured on a cell monolayer consisting of cycloheimide-treated McCoy cells[4]. After incubation for 48 and 72 hours, coverslips were stained with Giemsa stain, and the presence of fluorescence inclusions was detected under darkgroup microscopy.

RESULTS

Of the 50 patients surveyed, Chlamydia trachomatis was isolated from 7 patients(14%), whereas none had positive cultures for Neisseria gonorrhoea as shown in Table II. This was highly significant ($p<0.001$).

Table II
Incidence of gonococcus and chlamydia in the population studied.

Organism	No. of positive cultures
N. gonorrhoea	0
C. trachomatis	7 (14%)
Total	7

Total No. of patients studied = 50.

Among the ethnic groups, five patients or 71.4% of the chlamydia-positive patients were Chinese, while one was a Malay (14.3%) and the other was a Filipino, as indicated in Table III.

Table III
Incidence of positive cultures among the various races in the population studied.

	N. gonorrhoea	C. trachomatis
Chinese	0	5 (71.4%)
Malays	0	1 (14.3%)
Indians	0	0
Filipino	0	1 (14.3%)
Total	0	7 (100%)

Follow-Up

All patients were called up for follow-up six weeks after the abortion. Patients with positive cultures were sent for as soon as the results were known, which usually took about two weeks. Twenty-one of the patients or 42% defaulted follow-up (Table IV). Only three patients positive for chlamydia returned for follow-up. One of them developed postabortal pelvic inflammatory disease.

Table IV
Follow-up attendance after abortion

No. who Came for review	No. who Defaulted	Total
29 (58%)	21 (42%)	50 (100%)

DISCUSSION

From the results analysed, chlamydial infection was found to be more significant than gonococcal infection in our local women coming for therapeutic abortion. A low incidence of gonorrhoea in women seeking abortions was also reported in the western countries[5,6].

Awareness of the problem therefore is important in reducing morbidity associated with chlamydial infection and preventing the spread of the disease since women harbouring chlamydia were often asymptomatic. Oral contraceptive users, unmarried mothers and sexual partners of men with non-gonococcal urethritis are considered to be at a high risk of harbouring chlamydia. In Singapore, the incidence of non-gonococcal urethritis in men is as much as 20% and there is evidence that this disorder is on the increase[7].

Of the three chlamydia-positive patients who came for follow-up, one developed PID after the abortion (33%). This indicates that patients harbouring chlamydia trachomatis in the cervix at termination of pregnancy are at high risk of developing postabortal pelvic inflammatory disease. An alarming observation to note was the high percentage of patients who defaulted follow-up, both in the chlamydia-positive as well as the total population studied in general. This gives us an impression that, had all women who came for therapeutic abortion been adequately screened and if required treated for chlamydial infection, how many then need not present to our Infertility Clinic, years from now.

Thus, routine screening for Chlamydia trachomatis in the cervix before therapeutic abortion is a subject for thought. A larger longitudinal study to determine the prevalence rate is initially required.

Chlamydia isolation procedure is however, expensive. Cheaper laboratory methods for the diagnosis of chlamydial infection such as demonstration of inclusions in the exfoliated cervical cells[8] and serological tests (complement fixation and immunofluorescence tests) are not sufficiently sensitive[9]. One would naturally wonder whether such an undertaking would justify the cost involved.To resolve this dilemma, one needs to know the diseases and morbidity associated with chlamydial infection and the cost incurred in treating them. Of the better known diseases caused by chlamydia are lymphogranuloma venereum, inclusion conjunctivitis and endemic trachoma, a leading preventable cause of blindness in many developing countries. It is also responsible for non-gonococcal urethritis and epididymitis in males, whereas it may cause cervicitis, puerperal endometritis, salpingitis and bartholinitis in women. Chlamydial pelvic infection runs a milder clinical course than that caused by gonococci. But, paradoxically, more severe inflammatory changes could be noted at the time of laparoscopy[10].

This also explains why higher levels of antibody titre against Chlamydia trachomatis were noted by some workers in patients with abnormal hysterosalpingograms[11] and in those undergoing tubal corrective surgery[12] for infertility due to tubal obstruction with no active inflammation than in those with normal hysterosalpingograms and in control subjects.

The total cost includes the cost of investigations and treatment of such conditions (direct cost) as well as cost incurred with loss of productivity during hospitalisation and convalescence (indirect cost). In the United States, Curran had worked out that in 1979, direct and indirect costs of PID and PID associated diseases had exceeded a staggering 1.25 billion US dollars[13]. Children delivered of infected mothers also run a 30 to 50% risk of inclusion conjunctivitis of the newborn and a 10 to 20% risk of neonatal pneumonia[14-17]. With reference to the cost-benefit analysis developed by Schachter and Grossman, it is observed that at above the 6% cervical chlamydial infection rate, the cost of treating the disease in infants alone would exceed the cost of screening and treating pregnant women to prevent perinatal exposure[18].

In the presence of such unfavourable circumstances, it makes sense therefore to treat all cases of PID as for chlamydial infection once gonococcal infection is excluded. A course of tetracycline 250 to 500 mg four times a day for 7 to 14 days is usually adequate for chlamydial infection. If tetracycline is contraindicated, erythromycin in similar dosage can be given. Two grammes of sulfisoxazole daily is also effective. Bowie demonstrated equal efficacies with tetracycline, erythromycin and sulfisoxazole regimes[19].

We conclude that chlamydial problem does exist in Singapore. Other recent studies done on local population have also drawn a similar conclusion[20,21]. However, further research in this field is indicated to gauge accurately the exact size of the problem.

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