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Evidence of chlamydia infection in a Belfast antenatal population

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SUMMARY

Chlamydia trachomatis *is an important cause of postpartum endometritis and neonatal conjunctivitis. However, the prevalence of chlamydial genital infection varies considerably from one population group to another. A study was thus conducted to determine the incidence of* C trachomatis *infection of the cervix in an unselected group of women attending a Belfast antenatal clinic. One hundred and six patients were screened for evidence of current cervical infection with* C trachomatis *or serological evidence of past infection.* C trachomatis *was identified in 2·9%, and there was evidence of past infection in 18·9%. No significant risk factors were identified from gynaecological, contraceptive or sexual histories.* C trachomatis *infection was treated with erythromycin and there were no perinatal complications ascribed to chlamydia.*

INTRODUCTION

Chlamydia trachomatis is a common sexually transmitted pathogen which may have important implications in pregnancy. It has been proposed as a cause of premature rupture of the membranes,[1,2] intrauterine growth retardation and preterm delivery.[3] Following delivery it may cause endometritis in the mother,[4] and conjunctivitis and pneumonitis in the neonate.[5]

As with other sexually transmitted diseases, the incidence of genital chlamydial infection varies significantly from one geographical area to another, and between population subgroups within a given area. The reported incidence of *C trachomatis* infection of the cervix in antenatal patients ranges from 2·3% in an unselected group of Dutch women[6] to 27% in Baltimore adolescents.[7] Relatively few antenatal studies have been performed in the British Isles, and none had previously been undertaken in Northern Ireland.

The aims of this study were thus to determine the incidence of current *C trachomatis* infection of the cervix and the prevalence of past *C trachomatis* infection in a Belfast antenatal population, and to see if either was associated with adverse pregnancy outcome or postnatal and neonatal morbidity. We also looked

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for a correlation between aspects of sexual history and evidence of chlamydial infection to see if there were any indentifiable risk factors.

PATIENTS AND METHODS

The patients studied were 106 women attending for their antenatal booking visit at Jubilee Maternity Hospital, Belfast, between March and July 1989. A detailed history was taken, including age, parity, number of spontaneous or therapeutic abortions, previous contraceptive usage, history of previous sexually transmitted disease or abnormal cervical cytology, age of first coitus, and number of sexual partners since first coitus. In addition to routine examination, a speculum examination was performed and a dacron-tipped swab was rotated in the endocervix. The swab was then rolled over the centre well of a MicroTrak slide (Syva, UK) which was fixed in acetone. The slides were sent to the regional virology laboratory where the direct fluorescent antibody test was performed. This involves overlaying each slide with fluorescein-labelled monoclonal antibody prior to fluorescent microscopy ($\times 40$ objective). The presence of 5 or more chlamydia elementary bodies was considered as a positive result.

Ten millilitres of blood was also taken from each patient and forwarded to the regional virology laboratory. The serum was stored at $-20°C$ prior to being forwarded in batches to the Institute of Ophthalmology in London, where micro-immuno-fluorescence was performed to determine IgG and IgM titres to the D – K serovars of *C trachomatis.*

Verbal consent was obtained for taking the additional samples required for the study. Those in whom the MicroTrak slide was positive were treated with a two-week course of erythromycin 250 mg qid, and their partners were treated concurrently.

RESULTS

The mean age of the patients was 26 years; 56 were nulliparous and 50 were parous, with a range of parity from 0 – 7. A history of previous spontaneous abortion was given by 13·2%, and 2·8% had previously undergone termination of pregnancy. With regard to previous contraceptive usage, 62·3% had used the oral contraceptive pill and 2·9% an intrauterine contraceptive device (IUCD); 27·4% had used barrier methods and 25·5% had never used any contraception. Only 3 patients gave a history of previous sexually transmitted disease, and none gave a history of abnormal cervical cytology.

The average age at first coitus was 19 years, with a range from 14 – 29 years. The distribution of total number of sexual partners is shown in Table I.

TABLE I

Lifetime number of sexual partners in 106 patients

No of partners	*No of patients*	*Percent*
1	47	44·3
2 – 5	51	48·1
6 – 10	6	5·7
> 10	2	1·9

Of the MicroTrak slides submitted, all but two were suitable for fluorescent microscopy. Chlamydia elementary bodies were identified in only three cases, representing an incidence of cervical infection of 2·9%. By contrast, 18·9% of the patients had positive serology, suggesting that they had been infected with *C trachomatis* in the past (Table II). Positive serology was considered to be an IgG or IgM titre to *C trachomatis* D – K of $\geq$ 1/16.

TABLE II

Results of tests for C trachomatis *antigen and antibody*

		No of tests	*Positive result*	
			Number	*Percent*
MicroTrak		104	3	2·9
Serology	IgM	106	2	1·9
	IgG	106	19	17·9
	IgM or IgG	106	20*	18·9

*One of the two patients with a positive IgM titre had a negative IgG titre.

There was no correlation between positive identification of chlamydia, or positive serology, and expected risk factors such as young age, previous termination of pregnancy or IUCD use, history of sexually transmitted disease, age at first coitus or lifetime number of sexual partners.

All 106 pregnancies resulted in the birth of a live infant and there was only one case of preterm labour. Five of the neonates developed conjunctivitis prior to discharge from hospital. *Staphylococcus aureus* was isolated in three cases, and cultures were negative in the other two. MicroTrak slides were negative in all five.

Eight patients developed postpartum endometritis, but there was no correlation between this and evidence of chlamydial infection either in the past or during the pregnancy.

DISCUSSION

The incidence of current *C trachomatis* infection of the cervix in this study was 2·9%, which is low in comparison with most other studies in the world literature. It was notably lower than the 7% infection rate reported in a similar study in Liverpool,[8] but comparable to that of 2·5% in a study in Cardiff.[9] A strong bias towards infection in the younger age groups has been noted in other studies.[10, 11] This did not hold true in the present study; the three patients in whom infection was identified were aged 21, 22 and 35 years. However, the lack of correlation with demographic factors and aspects of sexual history was not surprising with such a low detection rate. This highlights the difficulties involved in trying to make screening more selective in low prevalence areas.

It was perhaps more surprising that there was no correlation between expected risk factors and serological evidence of past infection. The relative infrequency of previous termination of pregnancy, IUCD use and previous sexually transmitted disease may have influenced this, as may the relatively high average age at first coitus and generally low number of sexual partners. These, we feel, are features

which may be particular to Northern Ireland due to generally conservative attitudes, and also because the 1967 Abortion Act does not apply here.

In this study there were few complications of pregnancy and a low incidence of postnatal and neonatal morbidity. This may have been influenced by antenatal treatment of the three infected women. However, other workers who performed studies in which infected mothers were not treated antenatally have also shown no adverse effect on pregnancy outcome.[11-13] In view of this, and the possibility of reinfection, it has been suggested that antenatal screening should be performed between 34 and 38 weeks.[14] This should be effective in preventing postnatal and neonatal complications. However, the neonatal complications are generally mild and respond promptly to erythromycin. Thus, in such a low prevalence area as Northern Ireland, and in the absence of identifiable risk factors, the value of routine antenatal screening for *C trachomatis* is questionable.

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