Role of Chlamydial infection in ectopic pregnancy

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ABSTRACT

Introduction: The link between *Chlamydia trachomatis* (*C. trachomatis*) and ectopic pregnancy is mainly based on early sero-epidemiological case-control studies. Recent studies have shown divergent results concerning the risk of ectopic pregnancy following *C. trachomatis* infection. There has been no study done in Brunei to establish a correlation between the two. The purpose of this study was to determine whether chlamydial infection was more prevalent in young women with ectopic pregnancy attending RIPAS Hospital, Brunei Darussalam. **Materials and Methods:** This was a prospective study. All ectopic pregnancies encountered in RIPAS Hospital (January 2010 to December 2011) were included in the study. For comparison, 100 normal pregnancy cases were included. Endocervical swabs were taken and analysed with rapid immunoassay using Clearview Chlamydia MF®. Results were analysed using *Fisher's exact test* on Graphpad software®. **Results:** During the study period, a total of 123 ectopic pregnancies were encountered. Majority of patients with ectopic and normal pregnancies were in the 25-30 and 31-36 year age groups. There were no significant differences observed between the two group in the age groups (p=0.468 for trend) and their nationalities (p=0.572 for trend). Among patients with ectopic pregnancies, 6.5% (n=8) tested positive for Chlamydia infections compared to 5% (n=5) of normal pregnancies (p>0.05). **Conclusion:** There was no statistically significant difference in the incidence of Chlamydial infections between ectopic and normal pregnancies in our study.

Keywords: Ectopic pregnancy, *Chlamydia trachomatis*, pelvic inflammatory disease

INTRODUCTION

Genital infection with *Chlamydia trachomatis* (*C. trachomatis*) is the commonest sexually transmitted disease (STD) among young, sexually active people. [1] Infections are most often asymptomatic but have potential long-term consequences for female reproductive health. The link between *C. trachomatis* and ectopic pregnancy is mainly based on early sero-epidemiological case-control studies. [2] Recent studies have shown divergent results concerning the risk of ectopic pregnancy following *C. trachomatis* infection. Some studies have shown a two-fold increase in the rate of ectopic pregnancies. [3] However, a Swedish study showed that women with prior infections were not at elevated risk. [4] A Danish

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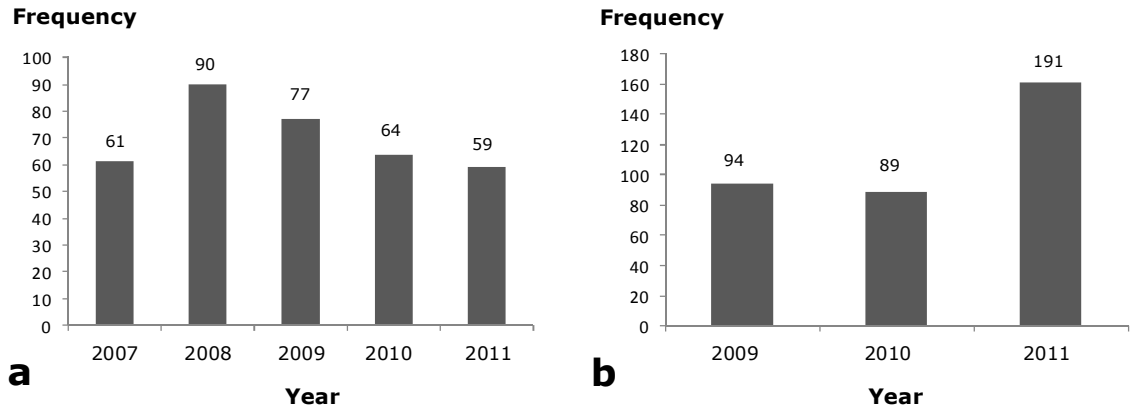

Figs. 1: a) The total number of ectopic pregnancies encountered between 2007 and 2011, and b) the total number of women positive for chlamydia infection between 2009 and 2011.

study [5] showed that women with prior infection actually had lower risk than women with negative test results only. In Brunei Darussalam, there were 250 female cases of Chlamydial infections notified in 2010-11. There have also been 123 cases of ectopic pregnancies in 2010-11. The number of ectopic cases in Brunei Darussalam has been steady from 2007 to 2011 (Figure 1a). However, the number of females testing positive for Chlamydia has risen from 2010 to 2011 (Figure 1b).

To date, there has been no study done in Brunei to establish a correlation between the two. The purpose of this study was to determine whether chlamydial infection was more prevalent in young women attending RIPAS Hospital, Brunei Darussalam with ectopic pregnancy compared to normal pregnancies.

MATERIALS AND METHODS

All ectopic pregnancy cases encountered in RIPAS Hospital, the only tertiary referral centre in Brunei Darussalam between January 2010 and December 2011 were included in the study. Patients who had taken antibiotics prior to screening or patients who refused screening were excluded from the study. Endocervical swabs were taken to rule out Chlamydial infection from the rest of the ectopic pregnancy cases and ectopic pregnancy proforma was completed. Swabs were sent on the same day to the Department of Pathology and were analysed by rapid immunoassay using Clearview Chlamydia MF®.

For comparison, swabs were also taken from 100 random normal early pregnancies during the study period. The results were analysed statistically using Graphpad software. A *p* value of less than 0.05 was taken as significant.

RESULTS

During the study period, there were 123 ectopic pregnancy cases in RIPAS Hospital. Five patients were excluded from the study as they had either taken antibiotics or refused screening.

Majority of those with ectopic pregnancies were in the age group of 26-35 years. There were no significant difference between the two groups in the age groups and nationalities (Table 1).

Table 1: Demographic of subjects (ectopic pregnancy) and controls (normal pregnancy).

	Ectopic pregnancies	Normal pregnancies	P value
Age groups			
≤20	4 (3.3)	6 (6)	0.468
21-25	21 (17.1)	20 (20)	for trend
26-30	36 (29.3)	30 (30)	
31-35	37 (30.1)	32 (32)	
>35	25 (20.3)	12 (12)	
Nationalities			
Bruneian	94 (77)	84 (84)	0.572
Filipinos	5 (4)	3 (3)	for trend
Indonesian	10 (8)	4 (4)	
Malaysians	4 (3)	5 (5)	
Others	10 (8)	4 (4)	

Presented in parenthesis is percentages

Only eight of the patients with ectopic pregnancies tested positive for Chlamydia (6.8%). Among the 100 controls with normal pregnancies, five tested positive for Chlamydia (5%) (Table 2). There was no statistical difference between the two groups.

DISCUSSION

C. trachomatis is an obligate intracellular Gram negative pathogen. It is associated with numerous disease states in both men and women. [6] Both sexes can display urethritis, proctitis, trachoma, and infertility. The bacterium can cause prostatitis and epididymitis in men. In women, cervicitis, pelvic inflammatory disease (PID), ectopic pregnancy, and acute or chronic pelvic pain are frequent complications. *C. trachomatis* is also an important neonatal pathogen, where it can lead to infections of the eye (trachoma). Currently, trachoma is the world's leading cause of preventable blindness of infectious origin. [7] Chlamydia of serovars D-K are associated with urethritis, PID and ectopic pregnancy.

Table 2: Correlation with Chlamydia infection.

	Chlamydia positive	Chlamydia negative	Total
Ectopic pregnancy	8 (6.8)	110 (93.2)	118
Normal pregnancy	5 (5)	95 (95)	100
Total	13 (6)	205 (94)	218

Presented in parentheses are percentages

Women with chlamydial infection in the lower genital tract may develop ascending infection that causes acute salpingitis with or without endometritis. Symptoms tend to be subacute and usually develop during menstruation, or in the first two weeks of menstrual cycle. [8] Symptoms range from none or minimal to severe abdominal pain with high fever, dyspareunia, prolonged menstruation, and intermenstrual bleeding. Twenty percent of women who develop PID may become infertile, 18% experiences chronic pelvic pain, and nine percent complicated by tubal pregnancy when they conceive. [8]

The most sensitive method to detect Chlamydia is polymerase chain reaction (PCR) test which is a nucleic acid amplification test. [9] In our study, we used Clearview Chlamydia MF which uses the principle of enzyme-linked immunosorbent assay (ELISA). This is a test for direct qualitative detection of *C. trachomatis* antigen with good sensitivity (87%) and specificity (98.8%). Other advantages of Clearview Chlamydia MF® include; longer shelf life, no need for expensive equipment or training and on the spot testing can be done in both men and women using urine in men and endocervical sample in women. The results are usually available within 30 minutes. Direct fluorescent antibody test and Chlamydia culture are other available tests, but they are more expensive and take longer for the

results to become available. [9]

The link between Chlamydia and ectopic pregnancies has shown varying results in different studies. [2-5] In our study we could not establish a correlation.

All Chlamydia cases were treated with either Azithromycin (1 gm orally as a single dose) or Doxycycline (100 mgs orally BD for 7 days) based on recommended guidelines. [10] Notification was done and patients were referred to Department of Genito-urinary Medicine for partner tracing. Repeat swabs were done at follow-up. Because reinfection is a common problem, it is recommended that women with chlamydial infection should be rescreened three to four months after antibiotic completion. [10] Screening is also recommended for all sexually active women aged 24 years and younger, and for older women who are at increased risk. [11]

Although there was no statistically significant difference in the incidence of Chlamydial infections between ectopic and normal pregnancies in our study, caution should be exercised in interpretation of our results due to the small numbers.

Prevention messages should be tailored to patient development and understanding of sexual issues and these messages should be delivered nonjudgmentally. [12] Counselling and behavioural interventions have been shown to reduce the likelihood of STIs and reduce risky sexual behaviour. [13] Significant attentions should be therefore paid to sexual education, screening of high-risk groups, as well as to early diagnosis and treatment.

In conclusion, our study showed that ectopic pregnancy is not associated with Chlamydia infection. Despite the lack of correlations, the incidences of both conditions are increasing and actions nonetheless are required to address this.

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