Research Article

Chlamydia Trachomatis Infection and Spontaneous Abortion

Infeksi Chlamydia Trachomatis dan Abortus Spontan

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Abstract

Objective: To determine the correlation between spontaneous abortion and *Chlamydia trachomatis* infection.

Methods: A cross-sectional study was conducted in women who experienced spontaneous abortion. Normal pregnancies with gestational age ≥37 weeks as control. Detection of C. trachomatis in the product of conception or placenta from curettage using the PCR method.

Results: Positive C. trachomatis was found 3 cases in the abortion group and 4 cases in control. In the abortion group, C. trachomatis found in 1 case with vaginal discharge history and 2 cases without this history. C. trachomatis also found in 3 cases without a history of abortion. This bacteria was not found in patients with an abortion history. In the control group, 2 cases of positive C. trachomatis were found in pregnant women with or without a history of vaginal discharge and abortion, respectively. There were no significant differences regarding the positive of C. trachomatis between the two study groups regarding history of vaginal discharge and abortion.

Conclusions: Spontaneous abortion does not correlate with C. trachomatis infection.

Keywords: chlamydia trachomatis, infection, spontaneous abortion.

Abstrak

Tujuan: *Untuk mengetahui hubungan antara abortus spontan dan infeksi Chlamydia trachomatis.*

Metode: *Penelitian potong lintang dilakukan pada perempuan yang mengalami abortus spontan. Kehamilan normal dengan usia kehamilan ≥37 minggu sebagai kontrol. Deteksi C. trachomatis pada produk konsepsi atau plasenta dari kuretase menggunakan metode PCR.*

Hasil: *C. trachomatis positif ditemukan 3 kasus pada kelompok aborsi dan 4 kasus dalam kontrol. Pada kelompok abortus spontan, C. trachomatis ditemukan pada 1 kasus dengan riwayat keputihan dan 2 kasus tanpa riwayat keputihan. C. trachomatis juga ditemukan pada 3 kasus tanpa riwayat abortus. Bakteri ini tidak ditemukan pada pasien dengan riwayat abortus. Pada kelompok kontrol, 2 kasus positif C. trachomatis masing-masing ditemukan pada perempuan hamil dengan atau tanpa riwayat keputihan dan abortus. Tidak ada perbedaan signifikan C. trachomatis positif antara kedua kelompok penelitian berdasarkan riwayat keputihan dan abortus.*

Kesimpulan: *Abortus spontan tidak berkorelasi dengan infeksi C. trachomatis.*

Kata kunci: *abortus spontan, chlamydia trachomatis, infeksi.*

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INTRODUCTION

Chlamydia trachomatis is the most common cause of sexually transmitted infections. The prevalence of this bacteria in women aged 15-49 years based on the region of 5.1 million (2.6%) in Africa, 5 million (1.1%) in Southeast Asia, and 20.5 million (4.3%) in the West Pacific.[1] This bacterial infection in pregnant women is asymptomatic; thereby, increasing the risk of adverse pregnancy outcomes. Infection during pregnancy is a risk factor for abortion (termination of spontaneous pregnancy before a gestational age of 24 weeks), fetal death at gestational age ≥28 weeks and preterm birth through direct infection at fetal, placental damage and severe maternal disease.[2]

A high prevalence of C. trachomatis infection in spontaneous abortion or recurrent abortion has been reported.[3-5] C. trachomatis persistent infection is determined by serum IgA levels

against the main membrane outer protein of this bacterium.[6] The correlation between abortion and chlamydial infection is demonstrated through anti-chlamydia antibodies IgG and IgA and detection of chlamydial antigens/DNA from the product of conception and placental.[7-9] However, the inability to detect IgM or to isolate C. trachomatis from seropositive patients indicated that Chlamydia species are not directly related to abortion.[4] A small meta-analysis from 4 studies shows an association between C. trachomatis infection and abortion.[10] This study aims to determine the correlation between spontaneous abortion and C. trachomatis infection.

METHODS

A cross-sectional study was conducted on women who experienced spontaneous abortion in several hospitals in Makassar. A normal pregnancy with gestational age ≥37 weeks as control. Detection of C. trachomatis in the product of conception or placenta from curettage using the PCR method. A p-value <.05 were considered statistically significant. The study approved by the Medical Research Ethics Committee of Universitas Hasanuddin /Dr. Wahidin Sudirohusodo General Hospital.

RESULTS

Table 1. Patients characteristics

Characteristics	Spontaneous abortion (n=42)		Control (n=42)		*P-value*
	n	%	n	%	
Age (yo)					
<20	5	11.9	7	16.7	0.802
20-35	31	73.8	30	71.4	
>35	6	14.3	5	11.9	
Education (years)					
<9	6	14.3	5	11.9	1.000
≥9	36	85.7	37	88.1	
Occupation					
Working	22	52.4	15	35.7	0.187
Not working	20	47.1	27	64.3	

Table 2. PCR Results on C. Trachomatis Infection

Study groups	PCR +		PCR -		*P-value*
	n	%	n	%	
Spontaneous abortion (N=42)	3	7.1	39	92.9	0.697
Control (N=42)	4	9.5	38	90.5	

Table 3. C. Trachomatis Infection Based on Vaginal Discharge and Abortion History

History	Spontaneous abortion (n%)		*P-value*	Control (n%)		*P-value*
	PCR (+)	PCR (-)		PCR (+)	PCR (-)	
Vaginal discharge						
Positive	1(11.1)	8(88.9)	0.525	2(20)	8(80)	0.236
Negative	2(6.1)	31(93.9)		2(6.2)	30(93.8)	
Abortion						
Yes	0 (0)	11(100)	0.554	2(13.3)	13(86.7)	0.608
No	3(9.7)	28(90.3)		2(7.4)	25(92.6)	

Positive C. trachomatis was found in 3 cases in the abortion group and 4 cases in control (Table 2). There was no significant difference between the two study groups (p>.05). Further findings in the abortion group, C. trachomatis found in 1 case with vaginal discharge history and 2 cases without this history. C. trachomatis also found in 3 cases without a history of abortion. Conversely, this bacteria was not found in patients with abortion history. There were no significant differences (p<.05) between the two histories in the abortion group. In the control group, 2 cases of positive C. trachomatis were found in pregnant women with or without a history of vaginal discharge and

abortion, respectively. There were no significant differences (all p>.05) regarding the positive of C. trachomatis between the two study groups based on a history of vaginal discharge and abortion (Table 3).

DISCUSSION

The present study found C. trachomatis infection detected in spontaneous abortion patients with or without vaginal discharge. These findings indicated that C. trachomatis infection has no correlation with vaginal discharge. Our findings that vaginal discharge was not correlated with C. trachomatis infection.[11] C. trachomatis is an intracellular bacterium with the ability to change from the form of replication that protects the host cell lead to the elimination of microbes more difficult. Infection caused by this bacteria often without clinical symptoms (asymptomatic); therefore, it is difficult to assess the spread of this infection.

In the present study, positive C. trachomatis was found both in spontaneous abortion and control groups, but the difference was not significant. Women with positive chlamydial serological tests are at risk for abortion and C. trachomatis DNA was present in the conception and placental products of these women compared to controls.9 Therefore, not all pregnant women who are detected to have C. trachomatis infection will experience an abortion. Therefore, the pregnancy can reach term accompanying by preventive management.

Vaginal discharge can be used to determine vaginal infections by C.trachomatis using vaginal discharge flowcharts with a sensitivity 91.68%, specificity 99.97% and positive predictive value (PPV) 99.93%.[12] Vaginal discharge is more commonly found as asymptomatic urogenital infection in 50% of patients.[11] In addition, vaginal discharge can be used as a symptomatic diagnosis of vaginal infections including C. trachomatis infection.[13]

Another finding of our study is abortion history has no statistically significant relationship with the incidence of C. trachomatis infection. However, the Kashanian study reported that spontaneous abortion history in the first pregnancy had a higher risk of having an abortion in the second pregnancy compared to women who had the first pregnancy with a live newborn.[14]

The limitation of this study is that women with positive C. trachomatis cannot be distinguished whether the infection is acute or chronic. The descriptive method with a small sample proportion is also limited to our study when compared with comparative analytic studies with a larger sample size. The present study variables do not represent the factors that influence chlamydial infection as one of the sexually transmitted diseases.

CONCLUSION

Spontaneous abortion does not correlate with Chlamydia trachomatis infection.

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