



***Mycoplasma genitalia* and *Ureaplasma urealyticum* infection proportion in pregnant women with vaginitis**

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ABSTRACT

Vaginosis, or vaginal inflammation, can result in discharge, itching, and pain. An infection or a change in the balance of vaginal bacteria is frequently the cause. This condition, which can harm the unborn child if untreated, can be brought on by pregnancy. This investigation aims to determine whether the sexually transmitted diseases bacteria *Ureaplasma urealyticum* and *Mycoplasma genitalia* are present. 15 of the 100 pregnant women who had antenatal care and had vaginal swabs obtained had vaginitis. The Multiplex PCR was then examined. The data were analysed using a descriptive statistical method after data collection. This research did not uncover any *Mycoplasma genitalia*, but 8 out of 15 vaginal swabs from moms did contain *Ureaplasma urealyticum*. Along with *Ureaplasma urealyticum*, the mother's swab they also revealed the bacteria that causes STIs. Diagnosing and treating mycoplasma and ureaplasma as soon as feasible is essential. Treatable genital infections, which are familiar worldwide, pose a significant threat to the health of expectant mothers and newborns.

Keywords: *Mycoplasma genitalia*; *Ureaplasma urealyticum*; infection; pregnant; vaginitis

1. INTRODUCTION

Sexually transmitted illnesses are widespread throughout the world, disproportionately impact women, and place a significant burden on public health. The number of new instances of syphilis, *Neisseria gonorrhoeae* (NG), *Chlamydia trachomatis* (CT), and *Trichomonas vaginalis* (TV) infections worldwide in 2012 was 6 million. According to a recent systematic analysis, pregnant women in low- and middle-income countries had a high prevalence of treatable STIs.

Sexually transmitted infections (STIs) are a significant problem in Indonesia, where STIs are high among sexually active individuals. According to the Ministry of Health, the incidence of STIs has been increasing in recent years, with a 37% increase between 2014 and 2018.

Some of the most common STIs in Indonesia include chlamydia, gonorrhea, syphilis, and HIV/AIDS. Factors contributing to this high prevalence of STIs include limited sex education, cultural norms that discourage talking about sexual health, and inadequate access to healthcare and contraception.

Sexually transmitted infections (STIs) are a common cause of vaginitis. In some cases, STIs can cause inflammation and irritation of the vaginal tissues and result in vaginitis. Vaginitis is a condition in which the vagina becomes inflamed or infected, leading to discomfort, itching, and sometimes pain. There are several different types of vaginitis, including bacterial vaginosis, yeast infections, and trichomoniasis. Some of the most common STIs that cause vaginitis include *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and *Trichomonas vaginalis*. It is important to note that not all cases of vaginitis are caused by STIs. Other factors, such as bacterial imbalances in the vagina, hormonal changes, and irritants such as douches or perfumed products, can also cause vaginitis. Vaginitis can be a particularly concerning condition during pregnancy as it can affect both the health of the mother and the developing fetus. Some types of vaginitis, such as bacterial vaginosis and yeast infections, are relatively common during pregnancy due to changes in vaginal pH and hormone levels.

Untreated vaginitis during pregnancy can lead to complications such as premature birth, low birth weight, and even miscarriage in some cases. Pregnant women experiencing symptoms of vaginitis should seek medical attention promptly to receive an accurate diagnosis and appropriate treatment.

Treatment for vaginitis during pregnancy typically involves topical or oral medications considered safe for use. Expectant mothers must follow their healthcare provider's recommendations closely and attend all scheduled prenatal appointments to help ensure their health and that of their developing baby. The government has started a triple elimination screening to ensure that moms are not found to have illnesses that can lead to sexually transmitted infections to safeguard the safety and security of mothers and babies. While other bacteria like *Mycoplasma* and *Ureaplasma* can potentially cause STIs, this examination can only identify the presence of HIV, Hepatitis, and Syphilis.

Research to ascertain the percentage of bacteria, such as Mycoplasma and Ureaplasma, that cause sexually transmitted illnesses in pregnant women is required. This is because pregnant women can become transmitters to their offspring, especially those who have vaginal inflammation.

2. METHODS

To determine if pregnant women had Mycoplasma genitalia and Ureaplasma urealyticum, a descriptive-observative method using a cross-sectional technique was carried out in May 2023 after obtaining ethical approval from the Ethics Commission. Mothers included in the study were asked for informed consent and an explanation of the procedures to be performed. After that, a vaginal swab will be taken. 100 Pregnant ladies who visited Tajuddin Chalid Hospital for antenatal care being examined and 15 pregnant women diagnosed with vaginitis were included in this research. A vaginal swab is collected and examined at the microbiology laboratory at Hasanuddin University Hospital in Makassar by using PCR.

The primer for PCR used

Microorganism	Gen Target	Primer	Size (bp)
<i>Chlamydia trachomatis</i>	Orf8	f5'-CTAGGCGTTTGTACTCCGTCA r5'-TCCTCAGGAGTTTATGCACT	200
<i>Neisseria gonorrhoea</i>	16s RNA	f5'-ACTGCGTTCTGAACTGGGTG r5'-GGCGGTCAATTCACGCG	281
<i>Ureaplasma urealyticum</i>	ureA-B	f5'-GAAACGACGTCCATAAGCAACT r5'-GCAATCTGCTCGTGAAGTATTAC	423
<i>Mycoplasma genitalium</i>	mpga	f5'-AGTTGATGAAACCTTAACCCCTTG r5'-CATTACCAGTTAAACCAAAGCCT	346

Data is presented in tabular form to facilitate tabulation so that data can be analysed according to research objectives. The data obtained were then analysed using SPSS version 20.0.

3. RESULTS AND DISCUSSION

All pregnant women with vaginitis included, and the respondent characteristics are shown below:

Table 1. Respondent Characteristics

Characteristics	Number	Percent (%)
Age (in years)		
< 20	1	6,7
20-30	14	93,3
Parity		
Primipara	10	66,7
Multipara	5	33,3
Gestational Age (in week)		
0-12	4	26,7
> 12-24	7	46,7
>24-36	3	20,0
>36	1	6,7
Marriage		
1x		86,7
>1x	13	13,3
History of Abortus	2	
Yes		6,7
No		93,3
Fluor Albus	1	
Physiological	14	53,3
Patological		40
Fluor Albus before pregnancy	8	6,7
Clean and healthy lifestyle Skoring	6	
Good		6,7
Enough	1	40
Not enough		53,3
	1	
	6	
	8	

Table 1 shows that pregnant women with vaginitis are a group of up to 14 pregnant women between the ages of 20 and 30 (93.3%), the majority of whom are primiparas (66.7%). Most of the mothers who were checked were between 12 and 24 weeks along in their pregnancy. Most of the moms who received prenatal care examinations were 13 (86.7%) and had a history of only one marriage; only 2 (13.3%) had been married more than once.

One of the mothers had previously had an abortion. Regarding the vaginal discharge the mother had, 6 moms (or 40%) were found to have pathological discharge, and 1 had a history of significant vaginal discharge before becoming pregnant. Mothers were also given a clean and healthy living score, showing that 8 (53.3%) of the 15 mothers had a low score.

Figure 1 displays the outcomes of a vaginal swab test utilising multiplex PCR to identify the presence of Mycoplasma genitalia and Ureaplasma urealyticum. The examination findings revealed no Mycoplasma genitalia, although eight samples did

contain *Ureaplasma urealyticum*. DNA from the bacteria *Chlamydia trachomatis* and *Neisseria gonorrhoea* was also found in these eight samples.

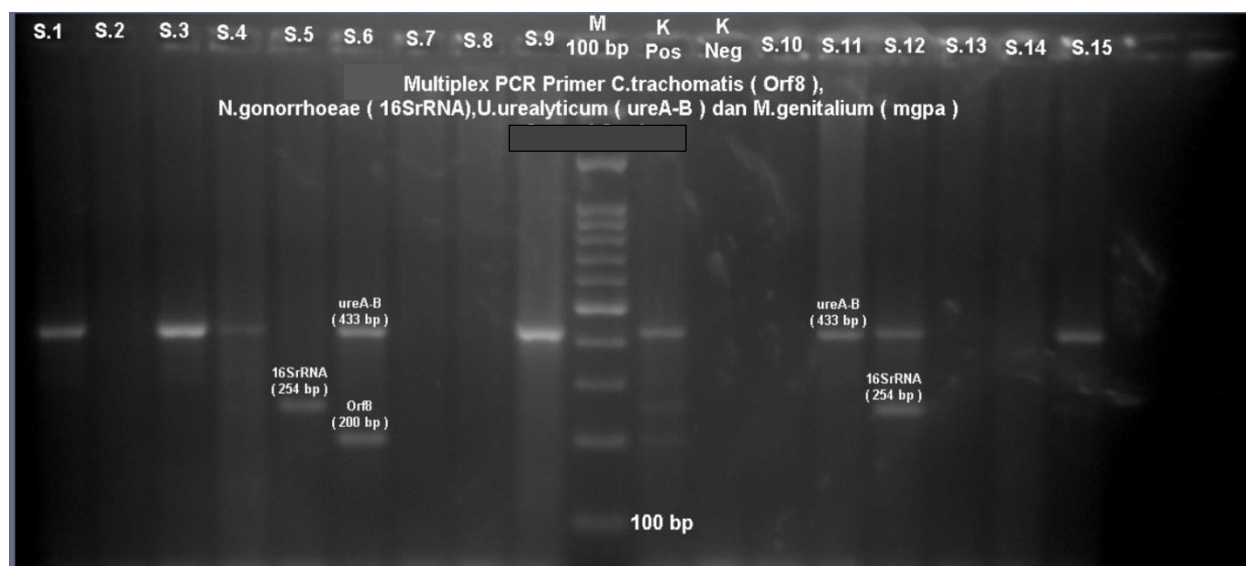


Fig.1 Multiplex PCR Result for Vaginal Swab Specimen

Table 2. Characteristics of Respondents with *Ureaplasma urealyticum* findings

Characteristics	Positive	Negative
Age (in years)		
< 20	1	0
20-30	7	7
Parity		
Primipara	5	5
Multipara	3	2
Gestational Age (in week)		
0-12	2	2
> 12-24	4	3
>24-36	2	1
>36	0	1
Marriage		
1x	7	6
>1x	1	1
History of Abortus		
Yes	1	0
No	7	7
Fluor Albus		
Physiological	2	6
Patological	5	1
Fluor Albus before pregnancy	1	0
Clean and healthy lifestyle Skoring		
Good	0	1
Enough	2	4
Poor	6	2

In 15 pregnant women diagnosed with vaginitis, there were eight samples with positive Ureaplasma (Table 2). The majority of these positive cases were found in mothers with pathological fluor albus complaints with poor clean and healthy living scores.

The parasitic Mycoplasma and Ureaplasma species are the smallest known cell-wall-free intra and extracellular bacteria of the Mollicutes class. Their lack of a cell wall, minimal genome, and restricted ability for biosynthesis accounts for their parasitic or saprophytic lifestyle, sensitivity to environmental influences, resistance to lactam antibiotics, and high demands on environmental conditions. Mycoplasma and ureaplasma prevalence rates are not well defined and vary from study to study. The sensitivity of the identification method, the condition of the group (fertile/infertile), and variances in geographic locations can all contribute to the variety of the prevalence of mycoplasma urinary tract infections in different reports. These microbes can bring on numerous, frequently chronic illnesses in people. As parasites or commensals, they get vital metabolites from their host, including fatty acids, amino acids, cholesterol, and precursors to nucleic acids. Ureaplasma are identified and distinguished from mycoplasma species by their distinctive urea lysis. The human body is home to sixteen of the more than 200 mycoplasma species known to exist in the animal and plant kingdoms. Ureaplasma is commensal, but it might be pathogenic when the infectious dose (bacterial load) is 10⁴ organisms per ml. It is widely recognized that this burden indicates an infection that needs to be treated. Several gynecological or obstetric diseases, including nongonococcal urethritis, pelvic inflammatory disease, premature birth or late abortion, and infertility, can be linked. Ureaplasma infections are passed from the mother to the fetus, either in the uterus or during labour. According to research, the frequency of Ureaplasma transmission ranges from 18% to 88%. The prevention of STIs during pregnancy can be accomplished in a number of ways. Here are a few efficient strategies:

1. Complete abstinence from sexual activity or limited sexual activity - Complete abstinence from sexual activity is the best strategy to prevent STIs during pregnancy. If pregnancy does decide to engage in sexual activity, keep it to monogamous relationships with partners who have undergone testing and are known to be free of infection.
2. Using condoms correctly can help prevent the spread of most STIs during intercourse.
3. Get tested - Both spouses must get tested for STIs before getting pregnant or at the first prenatal appointment. Any infections that need to be treated will be found through testing.
4. Regular prenatal care - Pregnancy-related sexually transmitted infections (STIs) can be detected and treated with regular prenatal care.
5. Avoid risky activities - Refraining from risky behaviours like sharing a partner or having sex without protection will help stop the spread of STIs.

These actions can aid in STI prevention during pregnancy and protect the mother's and unborn child's health. Understanding the frequency and genotypes of STI infections in this population is crucial. Such studies would have a direct therapeutic significance for

enhancing the control of infections by screening and treatment programs in addition to their value for providing background data for public health budget allocation and policy creation.

As a conclusion, this research provides information regarding the potential for sexually transmitted infections experienced by pregnant women with vaginitis. It can also be a recommendation for STI screening for pregnant women to prevent potential transmission to the baby. The number of samples in this study is still limited. Thus, it is anticipated that additional evidence supporting this argument will be added by expanding both the number of samples and the amount of time.

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