DETECTION OF TRICHOMONAS VAGNALIS AMONG WOMEN WITH STERILE PYURIA USING CONVENTIONAL PCR TECHNIQUE

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ABSTRACT

Background: *Trichomonas vaginalis* is a flagellated protozoan and the most common cause of sexually transmitted disease (STD) worldwide, often presenting asymptomatically. *T. vaginalis* is also recognized as a significant cause of sterile pyuria, characterized by the presence of pus cells in urine without bacterial growth. The main aim of the current study is to detect *T. vaginalis* in women with sterile pyuria using conventional PCR technique.

Methods: A cross-sectional study was conducted from November 2024 to February 2025 at Duhok Maternity Hospital and the Central Public Health Laboratory. The study included 150 clean-catch midstream urine samples categorized into three groups: pregnant women, non-pregnant women, and healthy individuals. Urine samples with no growth or non-significant growth, alongside more than 10 pus cells per high power field were considered sterile pyuria. DNA extraction was performed directly from 100 sterile pyuria samples and tested for T. vaginalis by PCR technique using species specific primers.

Results: T. vaginalis was detected in 57.3% of all the participants with the highest prevalence noted in pregnant women (62%), followed by non-pregnant women (58%) and the control groups (52%). Detection rates varied by ages with the highest rate (68.8%) found in non-pregnant women aged 37–46. No significant association was found between pregnancy status and the prevalence of T. vaginalis ($p = 0.596$).

Conclusion: The results of this study indicate that T. vaginalis is the main infectious causes of sterile pyuria particularly among pregnant women and is highly prevalent as an asymptomatic infection in the area. PCR technique should be used to detect this infection early, avoid missed diagnoses, and reduce unnecessary antibiotic use.

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Keywords: *Trichomonas vagnalis*, Sterile pyuria, Conventional PCR

Trichomonas vagnalis Is a flagellated anaerobic parasite first identified in women's vaginal secretions by Alfred François Donné in 1836. It causes a mild sexually transmitted infection (STI) known as trichomoniasis[1]. This microorganism has a straightforward life cycle, consisting solely of a trophozoite stage that infects the human genital tract, with no cystic stage or intermediate host required. Humans are the only known hosts, and transmission primarily occurs through sexual contact[2]. Infection is due to trophozoites that colonize the urogenital tract in both males and females[3,4].

Trichomoniasis is recognized as the most common non-viral STI and ranks third among the leading causes of vaginitis worldwide[3,5,6].

In 2016, the World Health Organization (WHO) estimated 156 million new cases globally each year[7]. The infection is asymptomatic in 10–50% of women. When symptoms do occur, they may include pruritus, dysuria, vaginitis, vulvar erythema, and purulent vaginal discharge. Additionally, T. vaginalis raises vaginal pH (normally 3.8–4.4), creating a more favorable environment for its persistence. In severe cases, trichomoniasis can lead to

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pelvic inflammatory disease, endometritis, infertility, cervical neoplasia, and an increased risk of acquiring human immunodeficiency virus (HIV)[8,9,10,11]. The clinical presentation of trichomoniasis can vary significantly, ranging from asymptomatic carriage to pronounced symptoms such as vaginal and vulvar rash, burning, itching, and vaginal inflammation. Vaginal discharge, often a hallmark symptom, can be diffuse, malodorous, or yellow-green, with or without vulvar irritation. However, approximately 70–85% of infected individuals experience minimal or no symptoms. In rare instances, trichomoniasis has been associated with tubal infertility as well as the development of prostate and cervical cancer[12]. A distinctive clinical sign is the "strawberry cervix," which is characterized by pinpoint hemorrhagic lesions on the exocervix[13]. Sterile pyuria presents a challenge for many clinicians, as laboratory results often show the presence of pyuria without significant bacterial growth. This can lead some laboratories to treat any non-significant growth as clinically important and proceed with antimicrobial sensitivity testing an approach that may contribute to the growing problem of antibiotic resistance. Therefore, the current study was conducted to detect *Trichomonas vaginalis* among women with sterile pyuria using a conventional PCR technique.

METHODOLOGY

Study design and sample collection

A cross-sectional study was conducted at both Duhok Maternity Hospital and the Central Public Health Laboratory in Duhok City, from November 2024 to February 2025. The study included 150 clean-catch midstream urine samples, which were divided into three groups: pregnant women, non-pregnant women, and healthy individuals. Routine urinalysis and culture were performed on all urine samples. Samples with significant bacterial growth were excluded from the study. Only urine samples showing sterile pyuria defined as more than six pus cells per high-power field[14] and no significant bacterial growth were included. Initially, all urine samples were cultured on MacConkey agar and blood agar, then screened for pus cells by direct microscopic examination. Both nitrite and leukocyte esterase were checked by dipstick strip (Artron, Canada). Mueller-Hinton agar was also used to detect residual drugs effects. Samples with pus cells more than 10 per high power field and showed no bacterial growth after 24 hours of incubation and without residual drug effects were diagnosed as sterile pyuria. In total, 100 urine samples with sterile pyuria and 50 samples from health women without sterile pyuria were included in the study. The study was conducted following the acquisition of the official approval letter from the Ethics Committee of the Duhok General Health Directorate, reference number 30102024-9-63

Inclusion and Exclusion Criteria

Urine samples containing more than 10 pus cells per high-power field demonstrated no bacterial growth non-significant growth after 24 hours of incubation and without residual drug effect after 24 hours of incubation were included.

Urine samples with bacterial growth within 24 hours of incubation or with residual antibiotic effect were excluded.

Urine Culture, Dipstick analysis and Microscopic Examination

All urine samples were immediately cultured on the surfaces of blood agar and MacConkey agar (Schaulua, Spain) and incubated at 37 °C for 24 hours.

After culturing, the urine samples were tested using dipstick strips (Artron, Canada). to check for nitrite, and Leukocytes esterase. The strip was dipped in urine, then removed and placed on a flat surface. The color changes were compared with a chart to read the results. For microscopic examination, 10 mL of urine was spun in a centrifuge at 3,000 rpm for 5 minutes. The liquid was poured off, and the

remaining sediment was mixed and placed on a slide. The slide was examined under a microscope to look for pus cells and RBC.

DNA Extraction, PCR and Gel Electrophoresis

DNA was extracted from urine samples using the Genomic DNA Extraction Kit (Addprep, South Korea), following the manufacturer's instructions. PCR was performed using specific primers: forward(F-ATCGTAAAGAGCTTCGTTATCAATG) and reverse (R-GCATGTTGTGCCGGACATAACCAT), targeting an amplicon size of 89 bp to detect Trichomonas vaginalis, as described by[15]. The PCR was performed in a total reaction volume of 20 µL. The master mix tube contained 10 µL of the Hot Start Master Mix (Addprep, South Korea), with both reverse and forward primers at a concentration of 1 µL each. Additionally, 3 µL of DNA template was included, along with 5 µL of distilled water. All reactions were carried out using a conventional PCR machine (Bio-Rad, California, USA). The thermal cycling conditions consisted of an initial denaturation at 95°C for 5 minutes, followed by 35 cycles of denaturation at 95°C for 30 seconds, annealing at 55–65°C for 30 seconds, and extension at 72°C for 30 seconds, with a final extension step at 72°C for 5 minutes. Following amplification, the PCR products were stored at –20°C until further analysis.

To enhance the interpretation of band size, a 2% agarose gel was prepared by dissolving 2 g of agarose in 100 mL of 5× TBE buffer. The mixture was heated and then cooled to 50–55°C before adding 10 µL of Safe Dye (AddPrep, South Korea). The gel was poured into a casting tray and allowed to solidify. It was then placed in a Cleaver Scientific electrophoresis tank (UK), with the wells positioned near the cathode and covered with 5× TBE running buffer. The designated DNA samples were loaded by pipetting 8 µL of each into the wells, along with 8 µL of a 100 bp DNA ladder for size reference. Electrophoresis was conducted at 90 V for 90 minutes, after which the bands were visualised under a UV transilluminator (240–366 nm) and photographed.

Statistical Analysis

All demographic and laboratory data were entered into Microsoft® Excel® 2016 for Windows 10 Pro. Data analysis was conducted using IBM SPSS Statistics, version 27. Descriptive statistics were provided for demographic variables and responses to the study questionnaire. The Pearson chi-square test was used to assess the association between study groups (control, pregnant, and non-pregnant) and Trichomonas vaginalis infection across all age groups. The p-value less than 0.05 considered significant.

RESULTS

The demographic characteristics of the 150 participants were categorised into three groups: control, pregnant, and non-pregnant, with each group comprising 50 women. The average age was lowest in the pregnant group (27.6 ± 5.25 years) and highest in the non-pregnant group (35.94 ± 10.02 years), with the control group falling in between (31.12 ± 8.21 years). Approximately 38–40% of women in each group had received an education, while 60–62% were non-educated. Urban residence was most prevalent in the control group (60%), followed by the non-pregnant (52%) and pregnant groups (50%). None of the women in the control group reported using medication, whereas 76% of pregnant women and 62% of non-pregnant women had a history of medication use, as shown in Table 1.

Table (1) Demographic characteristics of study participants (n=150)

Categories	Samples (n=150)	Age (Mean ±std.)	Education Level n (%)		Residence n (%)		Medication history n (%)	
			Educated	Non-educated	Urban	Rural	Yes	No
Control (n=50)	50	31.12±8.21	20 (40%)	30 (60%)	30 (60%)	20 (40%)	0 (0%)	50 (100%)
Pregnant (n=50)	50	27.60±5.25	19 (38%)	31 (62%)	25 (50%)	25 (50%)	38 (76%)	12 (24%)
Non-pregnant (n=50)	50	35.94±10.02	20 (40%)	30 (60%)	26 (52%)	24 (48%)	31 (62%)	19 (38%)

Urine culture results showed a higher proportion of pregnant women (76%) exhibited non-significant growth compared to the non-pregnant (68%) and control (56%) groups. Conversely, no growth was observed in 44% of the control group, 32% of the non-pregnant group, and only 22% of the pregnant group. In the pregnant group, a highly significant association was found between no growth and non-significant growth in urine culture results (p = 0.001), with 76% showing non-significant growth and only 22% showing no growth. This indicates that non-significant growth was much more common in pregnant women. In the non-pregnant group, a significant difference was also observed (p = 0.011), where 68% showed non-significant growth and 32% showed no growth. In the control group, although non-significant growth (56%) was slightly more frequent than no growth (44%), the difference was not statistically significant (p = 0.396). However, the overall association between participant category (control, pregnant, non-pregnant) and culture results (no growth vs. non-significant growth) was not statistically significant, with a p-value of 0.063. The Pregnant group tends to have more non-significant growth (78%) compared to Control (56%) and non-pregnant (68%), as shown in Table 2.

Table (2) Frequency and percentage distribution of urine culture results by category and age group (n = 150)

Categories	Mean Age (±SD)	No growth n (%)	Non-significant growth n (%)	P-value
Control (n=50)	31.12 ± 8.21	22 (44%)	28 (56%)	0.396
Pregnant (n=50)	27.60 ± 5.25	11 (22%)	39 (76%)	0.001
Non-pregnant (n=50)	35.94 ± 10.02	16 (32%)	34 (68%)	0.011
(n=150)		49 (32.7%)	101 (67.3%)	**0.063**

Nitrite results were consistently negative in both the control (100%) and pregnant (100%) groups, with one positive case (2%) identified in the non-pregnant group. No significant association was observed between the three categories and nitrite presence in urine (p =0.365). Specifically, within the non-pregnant group, a highly significant difference was found between negative (98%) and positive (2%) nitrite results (p = 0.001). Regrading leukocyte esterase, the control group showed no positivity (0%). In contrast, 44% of pregnant women and 24% of non-pregnant women tested positive for leukocytes. A highly significant association was observed in the non-pregnant group between positive (24%) and negative (76%) leukocyte esterase results (p = 0.001). In the pregnant group, the difference between negative (56%) and positive. (44%) results was not statistically significant (p = 0.39). Overall,

when comparing all three groups (control, pregnant, and non-pregnant), a highly significant association was identified between leukocyte status and the categories (p = 0.001), indicating a strong association between leukocyte esterase activity and participant category as shown in Table 3.

Table (3) Urine analysis parameters by age groups and participant categories (n = 150).

Categories	Mean Age (±SD)	Nitrites n (%)		p-value	Leukocytes esterase n (%)		p-value
		Negative	Positive		Negative	Positive	
Control (n=50)	31.12 ± 8.21	50 (100%)	0 (0%)		50 (100%)	0(0%)	
Pregnant (n=50)	27.60 ± 5.25	50 (100%)	0 (0%)		28 (56%)	22 (44%)	0.39
Non-pregnant (n=50)	35.94 ± 10.02	49 (98%)	1 (2%)	0.001	38 (76%	12 (24%)	0.001
(n=150)				0.365			0.001

Microscopic examination revealed consistently normal pus cell counts (0–5) in the control group, while abnormal counts (>10) were common among pregnant and non-pregnant women. Red blood cell (RBC) counts were normal (0–5) in all control participants. Among pregnant women, 76% had normal RBC counts, while 24% exhibited abnormal levels (>10). In non-pregnant women, 64% had normal RBC counts, and 36% had abnormal levels. A statistically significant association was found in the non-pregnant group, with 64% having normal and 36% having abnormal RBC counts (p = 0.048). The pregnant group showed a highly significant difference (p = 0.001) between 76% normal and 24% abnormal RBC counts. Overall, when comparing all three groups (control, pregnant, and non-pregnant), a highly significant association was observed between pus cell and RBC counts and participant category (p = 0.001). This indicates a greater prevalence of abnormal pus cell and RBC counts in pregnant and non-pregnant women compared to controls, as shown in Table 4.

Table (4) Frequency and Percentage Distribution of Pus Cells and Red Blood Cells (RBC) in Urine by Category and Age Group (n = 150).

Categories	Mean Age (±SD)	Pus cells (%)		p-value	RBC cells (%)		p-value
		Normal (0-5)	Abnormal (>10)		Normal (0-5)	Abnormal (>10)	
Control (n=50)	31.12 ± 8.21	50(100%)	0 (0%)		50(100%)	0(0%)	
Pregnant (n=50)	27.60 ± 5.25	0 (0%)	50(100%)		38 (76%)	12 (24%)	0.001
Non-pregnant (n=50)	35.94 ± 10.02	0 (0%)	50(100%)		32 (64%)	18 (36%)	0.048
(n=150)				0.001			0.001

The overall detection rate of *Trichomonas vaginalis* was 57.3% (86 out of 150) using the PCR technique with species-specific primers, as shown in Figure 1 and 2. The highest positivity rate was observed in pregnant women (62.0%), followed by non-pregnant women (58.0%) and the control group (52.0%). Among the age groups, the highest detection rate was 60% for both the control group and pregnant women aged 27-36 years, while non-pregnant women aged 37-46 years had the highest rate at 68.8%. No significant association was found between *T. vaginalis* and the age groups of the control group, pregnant women, and non-pregnant women with sterile pyuria, as illustrated in Table 5

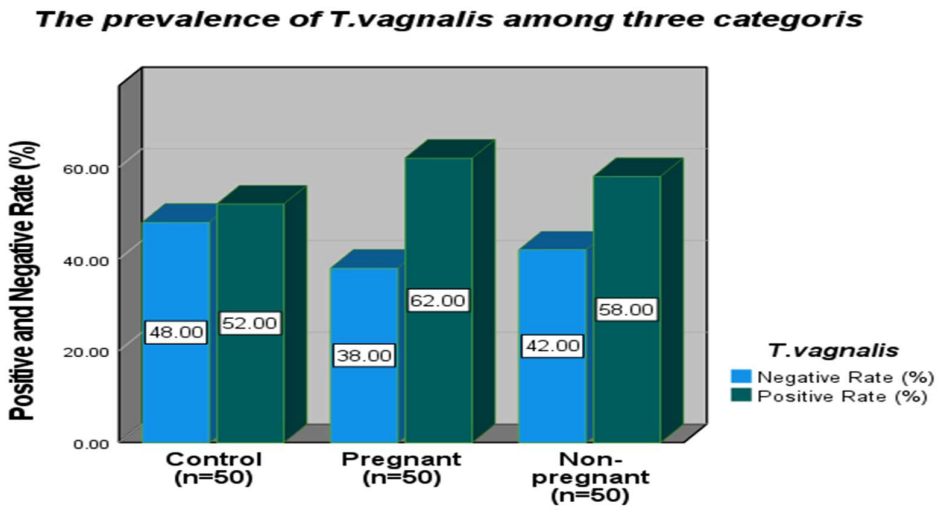

Figure (1) Prevalence of T. vagnalis among three Categories (control, pregnant, non-pregnant)

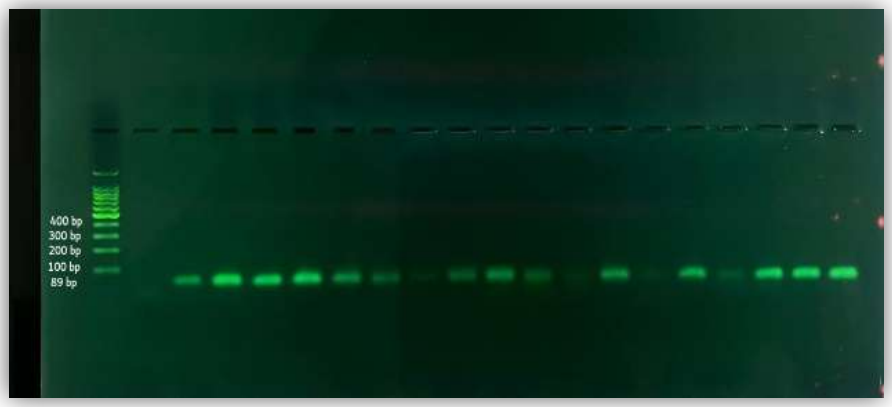

Figure (2): Agarose gel electrophoresis showing PCR amplification products used for the detection of Trichomonas vaginalis in urine samples.

Table (5) Prevalence of Trichomonas vagnalis in control, pregnant, and non-Pregnant women using conventional PCR (n=150)

Categories	Age groups	(n=150)	T.vignalis				P-value
			Negative	(%)	Positive	(%)	
Control	17-26	15	8	(53.3%)	7	(46.7%)	
(n=50)	27-36	25	10	(40%)	15	(60%)	0.91
	37-46	5	3	(60%)	2	(40%)	
	47-56	5	3	(60%)	2	(40%)	
Pregnant	17-26	20	8	(40%)	12	(60%)	
(n=50)	27-36	28	10	(35.7%)	18	(64.3%)	0.89
	37-46	2	1	(50%)	1	(50%)	
	47-56	0	0	0	0	0	
Non-pregnant	17-26	10	5	(50%)	5	(50%)	
(n=50)	27-36	14	5	(35.7%)	9	(64.3%)	0.51
	37-46	16	5	(31.3%)	11	(68.8%)	
	47-56	10	6	(60%)	4	(40%)	
(n=150)							0.596

DISCUSSION:

T. vaginalis plays a significant role in sterile pyuria, especially in sexually active women. Sterile pyuria is the presence of white blood cells in urine without bacterial growth on standard cultures. *T. vaginalis*, a common sexually transmitted protozoan parasite, can cause urethritis and inflammation in the urogenital tract, leading to leukocytes in urine despite negative bacterial cultures. This occurs because *T. vaginalis* infections often do not grow in routine urine cultures, resulting in sterile pyuria. Recognizing T. vaginalis as a cause is important to avoid misdiagnosis and unnecessary antibiotic treatment for bacterial urinary tract infections.

In the current study *T. vaginalis* was identified in high percentages among women with and without sterile pyuria in which 62% pregnant women, 58% in non-pregnant women, and 52% in the control group were positive. These findings support previous research by Kissinger[5] who highlighted the burden of trichomoniasis among reproductive-age women and its potential association with sterile pyuria. The results are consistent with studies conducted in Maysan (75.2%)[16], Tikrit (62%)[17], and Al-Kufa (53.3%)[18], all indicating a high burden of *T. vaginalis* among Iraqi women. In contrast, significantly lower prevalence rates were reported in Al-Anbar (38.1%)[19], Duhok (5.4%)[20], Sulaymaniyah (1.66%)[21], and Erbil (2.73%)[22], highlighting marked regional differences. Moderate prevalence was observed in Kirkuk (28.1%)[23], Al-Muthanna (32%)[24], & Al-Najaf (27.9%)[25], while the lowest rates were found in Basrah (1.6%)[26] and Mosul (3.3%)[27].

Differences between our results and other results in infection rates may be due to variations in population size, study duration, diagnostic techniques, sample handling, and regional factors.

This study indicates that sterile pyuria is prevalent among both pregnant and non-pregnant women. A significant portion of participants, 76% of pregnant women and 68% of non-pregnant women, exhibited non-significant bacterial growth in their urine cultures despite having white blood cells (leukocytes). In comparison, only 56% of the control group displayed non-significant growth, with a larger proportion showing completely clear cultures. These findings are consistent with other studies conducted in Iraq: 82.9% in Basra[28], 35% in Baghdad[29], 43.6% in Karbala[30], 56.37% in Al-Diwaniyah[31], and 44.5% in Zakho[32]. Similar results were reported in other countries, such as 52% in Palestine[33] and 61.7% in Turkey[34]. These results highlight that sterile pyuria is common, especially among women. It is important to investigate other causes when urine cultures show no growth.

The detection of nitrites in urine serves as an indirect indicator of urinary tract infections (UTIs) caused by nitrate-reducing bacteria, particularly those in the Enterobacteriaceae family, such as *Escherichia coli*, *Klebsiella*, and *Proteus* species. These bacteria can enzymatically convert nitrates, which are typically present in urine, into nitrites during metabolism. Therefore, a positive nitrite test in urine generally indicates the presence of these bacteria. However, it is important to note that not all bacteria responsible for UTIs can reduce nitrates, which may limit the sensitivity of the nitrite test for detecting infections caused by bacteria lacking this enzyme.

Nitrites were absent in all groups. A study conducted at West China[35] similarly reported negative nitrite tests in all patients with sterile pyuria. Leukocyte esterase was found in 44% of pregnant women and 24% of non-pregnant women in the current study, consistent with findings from previous studies in other countries. For instance, in Thailand reported positive leukocyte esterase in 36.26% of cases with

negative urine cultures[36]. A study in Pakistan found a 36.26% positivity rate for leukocyte esterase among culture-negative samples[37]. In Iran, reported that the leukocyte esterase test was positive in 24.5% of cases[38].

These results suggest the potential presence of hard-to-detect or fastidious organisms that standard urine culture methods may not identify, supporting the diagnosis of sterile pyuria. Notably, many women exhibited more than 10 pus cells per high-power field, yet their cultures revealed no bacterial growth, strongly indicating sterile pyuria. Additionally, some women showed increased red and white blood cells on microscopic examination compared to the control group. These findings imply that standard urine tests may overlook certain infections, highlighting the need for advanced methods like PCR to accurately identify the underlying causes of pyuria in women with negative cultures.

CONCLUSION:

This study revealed that *Trichomonas vaginalis* is a common cause of sterile pyuria, particularly among pregnant women, followed by non-pregnant women and the control group. The findings indicate that *T. vaginalis* is often overlooked in cases of urine culture-negative pyuria. Incorporating molecular diagnostic methods, such as PCR, in the evaluation of sterile pyuria could enhance detection rates, facilitate more accurate and effective treatment, and help reduce the overuse of antibiotics. Non-significant growth was observed at high percentages among cases of sterile pyuria. Additionally, both the nitrate reduction test and leukocyte esterase are unreliable for diagnosing sterile pyuria.

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دۆزینەوەی Trichomonas vaginalis لە ژنانێکدا کە تووشی پیۆریای بێکێشەی باکتریایی (Sterile Pyuria)بوون، بە بەکارهێنانی تەکنیکیPCR ی ئاسایی.

پێشەکی و ئارمانج: *Trichomonas vaginalis* پرۆتوزۆێکی فلاجێلاتە و زۆرترین هۆکاری نەخۆشییەکانی سێکسوە (STD) لە جیهانەوەی، کە زۆربەی کات بە شێوازی بێ ئیشارە دەرنەخات. هەروەها *T. vaginalis*وەک هۆکاری گرنگی پوی بێ باکتریا ناسراوە، کە خەڵکە پوی هەیە لە مەی بەداخەوە بەدون گەیشتن بە باکتریا. ئامانجی سەرەکی ئەم توێژینەوەیە دۆزینەوەی *T. vaginalis*لە ژنانەی پویان بێ باکتریا هەیە بە بەکارهێنانی ڕێگەی *conventional PCR.*

ڕێکخستن: ئەم توێژینەوەی بەشی ناوەندی لە نۆیەمی ٢٠٢٤ تا دوای کانوونی دووەمی ٢٠٢٥ لە نەخۆشخانەی مایەندەری دهوک و لابراتواری تەندروستی گشتی بەردەوام بوو. ١٥٠ نمونەی مێژوویی بە ڕێگەی پاک و ناوەندی دیاری کرا بۆ سێ گروپ: ژنان حامەڵ، ژنان نەحامەڵ و کەسانی تەندروست. ئەو نمونانەی کە بەکتریا لەوانەیە نەگەشەن یان کەمە بە شێوەیەکی نیشانەدار، و بەردەوامیان بێت بە زیاتر لە ١٠ خانە پوی لە هەر خانەی میکروسکوپی بەرز، وەک پوی بێ باکتریا دەنووسرێن DNA .لە ١٠٠ نمونەی پوی بێ باکتریا بەردەست وەرگیرا و بە ڕێگەی PCRبە بەکارهێنانی پرایمەری تایبەتی جۆرەکان تاقی کرا.

ئەنجام: *Trichomonas vaginalis* لە ٥٧.٣٪ ی هەموو بەشداریەکان دۆزرایەوە، بەرزترین بەشداربوون لە ژنان حامەڵ بوو بە ٦٢٪، دوای ئەوە ژنان نەحامەڵ بە ٥٨٪ و گروپی تەندروست بە ٥٢٪. نرخەکانی دۆزینەوە جیاواز بوو بە تەمەنی بەشداریەکان، بەرزترین نرخ (٦٨.٨٪) لە ژنان نەحامەڵی ٣٧–٤٦ ساڵە دۆزرایەوە. هیچ پەیوەندیەکی گرنگ نێوان بارودۆخی حامێتی و بەشداری *T. vaginalis* نەدۆزرایەوە.(p = 0.596)

کۆتایی: ئەنجامەکانی ئەم توێژینەوەیە پێشنیار دەکەن کە *T. vaginalis*سەرچاوەی سەرەکیی پوی بێ باکتریا بە تایبەتی لە ژنان حامەڵ وەک نەخۆشییەکی بێ ئیشارە زۆر بەرزە لە ناوچەکە. پێویستە ڕێگەی *PCR* بەکار ببرێت بۆ دۆزینەوەی ئەم نەخۆشییە زودەوە، هەڵە دۆزینەوەکان بپارێزیت، و بەکارهێنانی دەرمان بێ پێویست کەم بکات

الكشف عن المشعرة المهبلية (Trichomonas vaginalis) لدى النساء المصابات بالبيلة القيحية العقيمة باستخدام تقنية تفاعل البوليميراز المتسلسل التقليدية.(PCR)

الخلاصة

الخلفية والأهداف: *Trichomonas vagnalis* هو طفيلي بروتوزوا مزود بأسواط، وهو السبب الأكثر شيوعا للأمراض المنقولة جنسيا (STD) عالميا، وغالبا ما يكون بدون أعراض. يعرف تريكوموناس فاجيناليس أيضا كسبب رئيسي للبول الصديدي العقيم، الذي يتميز بوجود خلايا صديد في البول دون نمو بكتيري. الهدف الرئيسي من هذه الدراسة هو الكشف عن تريكوموناس فاجيناليس لدى النساء المصابات بالبول الصديدي العقيم باستخدام تقنية *PCR* التقليدية.

الطريقة: أجريت دراسة مستعرضة في مستشفى الولادة في دهوك والمختبر المركزي للصحة العامة من نوفمبر 2024 حتى فبراير 2025. شملت الدراسة 150 عينة بول وسط مجمع نظيف مقسمة إلى ثلاث مجموعات: النساء الحوامل، النساء غير الحوامل، والأشخاص الأصحاء. اعتبرت عينات البول التي لا يظهر فيها نمو بكتيري أو نمو غير مهم مع وجود أكثر من 10 خلايا صديد في الحقل عالي القدرة بولا صديديا عقيما. تم استخلاص الحمض النووي مباشرة من 100 عينة بول صديدي عقيم وفحصها للكشف عن تريكوموناس فاجيناليس باستخدام تقنية *PCR* مع بادئات خاصة بالنوع.

النتائج: تم الكشف عن تريكوموناس فاجيناليس في 57.3% من جميع المشاركين، حيث كانت أعلى نسبة انتشار بين النساء الحوامل (62%) تلتها النساء غير الحوامل (58%) ثم المجموعة الضابطة (52%). تفاوتت معدلات الكشف حسب العمر، حيث كانت أعلى نسبة (68.8%) بين النساء غير الحوامل في الفئة العمرية 37-46 سنة. لم يُلاحظ ارتباط معنوي بين حالة الحمل وانتشار تريكوموناس فاجيناليس.(p = 0.596)

الاستنتاج: تشير نتائج هذه الدراسة إلى أن تريكوموناس فاجيناليس هو السبب الرئيسي للبول الصديدي العقيم خصوصًا بين النساء الحوامل، ويعد عدوى شائعة بدون أعراض في المنطقة. ينبغي استخدام تقنية *PCR* للكشف المبكر عن هذه العدوى لتجنب التشخيص الخاطئ وتقليل الاستخدام غير الضروري للمضادات الحيوية.