Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Medical Sciences

Vaginal Infection and their Relationship to Urinary Tract Infection in Adult Women

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DOI: https://doi.org/10.36347/sjams.2025.v13i07.003 | **Received:** 18.05.2025 | **Accepted:** 28.06.2025 | **Published:** 02.07.2025

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Abstract | **Original Research Article**

An inflammation of the vagina called vaginitis can cause pain, itching, and discharge. The cause is typically an infection or an imbalance in the vaginal bacterial balance. Other causes of vaginitis include certain skin conditions and decreased estrogen levels following menopause. One of the most prevalent forms of vaginitis is bacterial vaginosis. This happens when the natural equilibrium is upset by an overabundance of the germs that are naturally present in your vagina. as well as fungal infection. Usually, a naturally occurring fungus known as Candida albicans is the source of these. Urinary tract infections may occur with vaginitis. 64% of those involved in this study had a urinary tract infection correlated with vaginitis. The type of vaginitis in adult women was identified through investigation. 56% of the specimens were vaginal fungal infections, 22% were bacterial infections, and the remaining percentage were a combination of bacterial and fungal infections. This is where the challenge in treating such instances resides.

Keywords: Vaginitis, Urinary tract infection, Fungal vaginitis, Bacterial vaginitis, Vaginal infection.

INTRODUCTION

Vaginitis is a frequent gynecological condition that is prone to recurrence and can be caused by a variety of microorganisms, external causes, and hormone levels [1]. Vaginal infections are a significant source of morbidity for women, despite not being linked to high death rates. Their symptoms are detrimental to one's quality of life, sexual relationships, and self-esteem. They have been linked to varying degrees of anxiety and depression [2]. Remember that the vaginal micro-flora is a complex habitat made up of different microbiological species in varied relative proportions and quantities [3].

These microbes, sometimes in concert, are the cause of the three most common illnesses associated with vaginal infections: trichomoniasis (between 5 and 20%), bacterial vaginosis (40–50%), and vulvovaginal candidiasis (20–35%),The prevalence of Bacterial Vaginosis (Vaginal pH rises as a result of bacterial vaginosis, a polymicrobial change in the vaginal flora) and its comparison to other vaginitis-causing diseases are mostly determined by the sexual activity and demographic features of the women under study, as well as by how often they seek medical attention and which diagnostic criteria are applied to each condition [4,5]. A greater understanding of the role of the vaginal microbiota (VMB) in UTI may result in better interventions to prevent and treat these infections. The VMB is important in the pathogenesis of UTIs; changes in the VMB are linked to risks for UTIs, and effects on the VMB associated with UTI treatment can affect the effectiveness of this therapy, The vagina is an important anatomical location in the pathophysiology of urinary tract infections (UTIs) in women. Interventions may reduce the incidence of UTIs at this site, which also serves as a possible reservoir for bacterial infection [6,7], because The risk of UTI is increased by alterations in the VMB that lead to the loss of typically protective Lactobacillus species [8,9].

METHODS

In this study, specimens and data were obtained from adult female patients diagnosed by their doctors with Vaginitis (vaginal infection). Fifty instances were collected and examined. To determine whether bacteria or fungi were the source of the infection, vaginal swabs were obtained in each patient under the observation of a specialist doctor. The patients' vaginal swabs are cultured on two different media: nutrient agar medium for bacterial growth and Sabroaud dextrose agar medium for fungal growth [10]. Additionally, note whether or not these patients have urinary tract infections. Following the manufacturer's recommendations, this medium was produced, autoclave sterilized for 20 minutes at 121 °C

and 1 atmosphere of pressure, cooled to 45 °C, and then transferred into Petri dishes [11].

RESULTS & DISCUSSION

As indicated in Table 1, it was found that 64 % of the women had both vaginal and urinary tract infections after 50 specimens from women with vaginal infections were collected and special tests were performed to determine whether they also had urinary tract infections. This indicates that Vaginitis and urinary tract infections are significantly related. Prior research by Harmanli *et al*. in 2000 and Lamichhane *et al*. in 2014 [12,13] also found that pregnant women with bacterial vaginosis are much more likely to get a UTI.

Table 1: Relationship between vaginal infection with urinary tract infection in women

Total vaginal infected women	Positive to UTI		Negative to UTI	
	Number	Percentage	Number	Percentage
50	32	64	18	36
X^2	7.84			
P value	0.005*			

* Significant association at P<0.05

We looked at the pathogen type for this type of infection in Table No. 2, and we discovered that 56% of the infections were fungal infections, meaning that the cause was a fungus identified by tests and doctors, 22% were bacterial infections, and the remaining 22% were a combination of bacterial and fungal infections. The patients' compromised immunity played the most part in these illnesses. Additionally, Bradford& Ravel, J. in 2017 [14]. mentioned that 20% of the fungi that live in the vagina of healthy women can create a fungal infection without any symptoms. This is where the risk of infection with inflammation, like Candida, rests.

Table 2: type of vaginal infection

Type of vaginal infection	Positive sample number	Percentage
Fungal infection	28	56
Bacterial infection	11	22
Mixed infection	11	22
Total	50	100
X^2	17.34	
P value	<0.0001*	

* Significant association at P<0.05

Table 3: age interval with type of vaginal infection

Age interval	Total No.	Bacterial infection	Fungal infection	Mixed infection
19-31	33	7(21.21)	18(54.54)	8(24.24)
32-44	11	2(18.18)	6(54.54)	3(27.27)
45-56	6	2(33.33)	4(66.66)	0(0)
Total	50	11(22)	28(56)	11(22)
X^2		2.10		
P value		0.710*		

* No significant association at P<0.05

The youngest age groups were most affected when the age factor and its impact on vaginitis incidence were studied; this may have been because of sexual activity during these categories .Table No. 3

Table 4: Relationship between type of vaginal infection with urinary tract infection in women

Type of vaginal infection	Total No.	Positive to UTI		Negative to UTI	
		Number	Percentage	Number	Percentage
Fungal infection	28	16	57.14	12	42.85
Bacterial infection	11	10	90.9	1	9.09
Mixed infection	11	7	63.63	4	36.36
Total	50	33	66	17	
X^2		4.04			
P value		0.132*			

* No significant association at P<0.05

The types of vaginitis and their correlation with UTIs have been studied in the table above (Table No. 4). This indicates that urinary tract infections accompany 57% of fungal vaginosis, 90 percent of bacterial vaginosis, and 63% of mixed fungal-bacterial infections. That is, if an infection is brought on by fungi. It was more frequently associated with an infection of the urinary tract. However, this does not imply that there is a restricted correlation between fungal infections and urinary tract infections explained this (Cauci, S. 2004) [15]. As previously mentioned, the fungus that causes the infection, which is initially a symbiosis, is present in the vagina. However, because of certain treatments or the use of certain washes for sensitive areas, their numbers may have increased more than usual due to circumstances that may have caused the infection. There has been a notable impact from this fungal illness. Alternatively put, there is a setting in which a urinary tract infection could happen, as found (Boahen *et al* 2022 ; Hani *et al*,2015 [16,17]. Additionally, Stapleton in 2016[7] clarified that one of the main anatomical site for urinary tract infections is the vagina

CONCLUSION

The pathophysiology of UTI is significantly influenced by the vaginal microbiome (VMB); changes in the VMB are linked to an increased risk of UTI, and the impact of UTI treatment on the VMB may impact the effectiveness of the treatment. Therefore, enhanced treatments to prevent and cure UTIs may result from a greater knowledge of the role of the VMB in these infections. Understanding the variables that impact the vaginal microbiota is therefore essential to comprehending the pathophysiology of UTIs and creating preventative measures. The majority of bacterial or fungal vaginosis is caused by microbes that live in the vagina, but many women get fungal or bacterial infections from these organisms for a variety of reasons, such as weak immunity, the presence of other germs, or an increase in their numbers brought on by the use of certain medications and washes.

Acknowledgments:

We would like to express our gratitude to the Women's and Children's Hospital in Diwaniyah Governorate, Iraq, and the College of Science at Al-Qadisiyah University for granting us permission to conduct our study there. I also want to express my gratitude to everyone who helped us in any way.

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