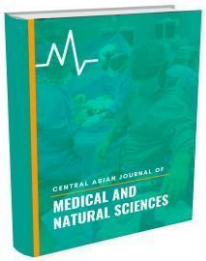

CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES
https://cajmns.centralasianstudies.org/index.php/CAJMNS
Volume: 05 Issue: 03 | July 2024 ISSN: 2660-4159

.

Article

Gynecological Infections and Age-Related Bacterial Trends

Zainab Khairullah Aouda

Department of Basic Medical Sciences, College of Nursing, University of Thi-Qar, Nasiriyah, Iraq
* Correspondence: zainab-kha@utq.edu.iq

Abstract: Gynecological infections pose significant health risks, with bacterial pathogens such as Escherichia coli commonly implicated. However, there remains a gap in understanding the prevalence of parasitic and fungal causes, particularly in specific age groups. This study aimed to fill this gap by examining gynecological infections in a random sample of patients aged 15 to ≥45 years in Thi-Qar province. Fifty infected individuals were sampled, with urine examination conducted using urinalysis and light microscopy. Results indicated a high prevalence of bacterial infections, especially among the 15-29 age group, with E. coli being the most frequently isolated bacterium. Notably, parasitic infections were absent across all age groups. The findings underscore the importance of considering age-specific trends in gynecological infections and highlight the need for targeted interventions to address bacterial pathogens. Additionally, the higher infection rates observed among married women suggest the potential role of marital status as a risk factor.

Keywords: : Infections, UTI, Gynecological Infections, Iraq

1. Introduction

Among the most prevalent illnesses in children and women around the world is urinary tract infection (UTI). Serious sickness and long-term problems might result from a failure to appropriately detect and treat it [1]. Uncommon Tract Infections (UTIs) continue to be a major contributor to medical expenses and morbidity, particularly in women but also in youngsters. Girls and women are more prone to UTIs than boys and men, except for very young infants [2]. Nearly one-third of women will have experienced a urinary tract infection (UTI) that required treatment by the time they are 24 years old, and half of all women will experience at least one UTI during their lifetime [3]. Women constitute a high incidence of UTI [4]. There are several organs and structures that work together to form the urinary system. The lower urinary system, which includes the urethra and bladder, is the most common site of infection [5]. A urinary tract infection (UTI) is more common in women than in men. It can be unpleasant and painful if the infection is confined to the bladder [6]. Bacterial infections in the urinary tract, more specifically UTI, usually start in the bladder after bacteria enter the system via the urethra. In most cases, the urinary system's built-in defenses against bacteria aren't enough [7]. In such a case, the bacteria might settle in and eventually cause a severe infection of the urinary system. A significant health concern linked to gynecologic difficulties is the prevalence of vaginal infections caused by bacteria, yeast, trichomonas bacteria, and gonococcal bacteria [8]. More than 150 million people are affected by catheter-associated urinary tract infections (CAUTIs) every year, making it the most common infectious disease [9]. As a common cause of hospitalization, complicated UTIs place a significant strain on healthcare systems [10]. A large percentage of HAUTIs, or hospital-acquired urinary infections, are UTIs that

Citation: Zainab Khairullah Aouda. Gynecological Infections and Age-Related Bacterial Trends. Central Asian Journal of Medical and Natural Science 2024, 5(3), 279-284.

Received: 22th March 2024
Revised: 22th April 2024
Accepted: 28th April 2024
Published: 10th May 2024

are associated with catheters (10). The significance of community-onset HAUTIs has grown in the past few years [11]. Antibiotics are the standard treatment for symptomatic UTIs, but they have the potential to modify the vaginal and gastrointestinal microbiota in the long run and perhaps foster the growth of MDR bacteria [12]. Pathogens that are resistant to many drugs may be more likely to colonize spaces that are no longer occupied by the normal microbiota [13].

2. Materials and Methods

Sample Collection

In a random sample of 50 women, that age ranging from 15 to 60, gynecological infections were identified. The ladies were either married or not. The current investigation spanned the months of December (2023) through March (2024). In most cases, the process begins with collecting a urine sample, which is then placed in a container and sent to the laboratory for analysis.

Urine examination

A urinalysis (UA), often referred to as routine and microscopy, is a collection of tests conducted on urine.

Urine test strips can be used to perform a portion of a urinalysis, with the test results being interpreted based on observed color changes. Another technique involves the use of light microscopy to examine urine samples.

Microscopic Urinalysis

1. A small portion of thoroughly mixed urine (about 10-15 ml) is placed in a test tube and subjected to centrifugation at a very low speed (around 2-3,000 rpm) for a duration of 5-10 minutes. This process results in the formation of a reasonably cohesive solid mass at the bottom of the tube.
2. The liquid portion is poured off and a volume of 0.2 to 0.5 ml remains in the tube. To re-suspend the sediment, flip the bottom of the tube multiple times in the remaining supernatant. A little amount of sediment that has been mixed with a liquid is placed onto a glass slide and covered with a thin piece of glass.

Examination

Initially, the silt is observed using low magnification to detect most crystals, casts, squamous cells, and other sizable entities. The observed quantities of casts are typically recorded as the quantity of each type discovered per low power field (LPF). Example: There are 5-10 hyaline casts per low power field (LPF). Subsequently, a high-power inspection is conducted to discern the presence of crystals, cells, and microorganisms. The several categories of cells are typically characterized by the quantity of each category observed per average high-power field (HPF). Example: 1-5 white blood cells per high power field. The components observed in the sample include red blood cells, white blood cells, epithelial cells, casts, crystals, parasites, bacteria, and yeast.

3. Results

The results showed a significant different among the infection types according to age groups. Bacterial infection was recorded a high infection in the 21 samples, the age group 30 – 44 years showed an increase significant (57.14%) compared with age groups, whereas 45≤ age group showed a decrease significant (Table 1).

Table 1. The pathogenic infections according age groups.

Infection Age group	Bacteria	Fungal	Parasitic	Total	%
15-29	3	2	1	6	28.57
30-44	7	4	1	12	57.14
≥45	2	1	0	3	14.29
Total	12	7	2	21	100
%	57.14	33.33	9.5	100	

In the below table, there is a significant different among the infection types according to age groups. Bacterial infection recorded high infections in both single and double infection cases as average (61.5%,50%) consecutively, (30-44) age groups showed an increase significant as average (46%,75%) in both single and double infection consecutively compared with other age groups (Table 2).

Table 2. Type of infections according age groups

Infection Age group	Single				
	Bacteria	Fungal	Parasitic	Total	%
15-29	2	1	1	4	30.7
30-44	4	2	0	6	46.0
≥45	2	1	0	3	23.0
Total	4	1	1	13	92.0
%	61.5	30.7	7.6	92.0	-
Double					
15-29	1	1	0	2	25
30-44	3	2	1	6	75
≥45	0	0	0	0	
Total	4	3	1	8	0
%	50.0	37.5	42.5	0	100

Table 3. Cells of infections according age groups

Age group	Epithelial cell					
	Few	+	++	+++	++++	full
15-29	2	1	2	1	-	1
30-44	3	2	-	3	-	1
≥45	4	3	1	2	-	-
Pus cell						
15-29	(3-4)	-	3	-	-	1
30-44	-	2	-	4	-	-
≥45	(3-5) (2-5)	2	1	-	-	1
R.B.C cell						
15-29	(2-4)	1	-	-	-	1
30-44	(2-5) (4-6)	-	1	-	-	1
≥45	(0-1)	1	1	-	-	-

In the current study, the result, showed that the age group (30-44) was recorded a high inflammation, whereas the age group (15–29) was low inflammation with UTI pus cell, recorded an increase significant compared with other age groups (table 3).

The result showed that the age group (45≥) increase inflammation with Amorphous and compared with other groups, whereas the age group (15-29) showed increase inflammation with uric acid, whereas all age group showed approximate inflammation with calcium oxalate (table 4).

Table 4. Cast of infections according age groups

Cast Age group	Amorphous				
	Few	+	++	+++	full
15-29	4	1	2	3	2
30-44	2	3	3	4	1
≥45	6	2	3	3	1
Uric acid					
15-29	1	2	3	-	-
30-44	1	1	-	1	-
≥45	2	-	2	-	-
Calcium oxalate					
15-29	1	-	1	-	-
30-44	1	-	-	2	-
≥45	2	-	-	1	-

In the result showed that the infection in married women more than non-married which is 44%, whereas the age group (15-29) showed increase in infection 70% table (5).

Table 5. Marital status of infections according age groups

marital status Age group	Married	Non-Married	Total	%
15-29	22	15	35	70.00
30-44	5	5	10	20.00
≥45	2	3	5	10.00
Total	30	20	50	100

4. Discussion

Among the most prevalent bacterial infections contracted in both the general population and healthcare facilities, urinary tract infections (UTIs) rank high. Urinary tract infections (UTIs) are rare in healthy individuals but can repeat in those with certain types of abnormalities. Toxins and binders produced by uro-pathogens allow them to proliferate and invade the urinary tract. These microorganisms are spread from person to person through direct touch and, most likely, contaminated food or drink.

Results from the study corroborate those from an earlier study conducted in Uganda in which bacterial infections were prevalent, particularly among those aged 15–29 as recorded by Odoki et al [13], and to study of Gebretensaie et al in Ethiopia by [14].

Most of the microorganisms found were Escherichia coli, and this was especially true in the investigations that included female patients. There are several possible causes for this, such as an unbalanced population of good and bad bacteria in a woman's vagina,

the vagina's closeness to the anus, and the short urethra. Although there is no evidence of parasite infections across all age groups, trichomonas is a sexually transmitted illness that can cause vaginitis in women and is most common in those between the ages of 15 and 29 and these results agreed with a results of by Lo [15].

The trichomonas infection rate is quite low. The social and cultural conservatism of the community, which disagrees with research conducted by and supports traditional gender roles, may be to blame for this [16], There the incidence was elevated. Vulvovaginal candidiasis (VVC) is the second most prevalent vaginal infection among women of reproductive age [17]. The findings from many studies suggest that the occurrence of vulvovaginal candidiasis differs among countries, contingent upon the specific country, area, and population [18]. The result of this study agreed to study done by Willems et al [19], was showed Candida, a strain of yeast, naturally resides in the vagina. However, a hormonal imbalance can result in an excessive growth of the Candida fungus, leading to a vaginal yeast infection. Several factors can contribute to hormonal imbalance in the body and raise the likelihood of vaginal candidiasis. These include conditions like diabetes, the use of broad-spectrum antibiotics and hormone replacement therapy (HRT), urinary infections, pregnancy, and a history of recurrent episodes of VVC. These factors increase the susceptibility to human vaginal candidiasis [20].

5. Conclusion

The study concluded the relationship between parasitic, bacterial and fungal infection in different age groups The highest infections were bacterial within (30-44) age groups .Bacterial infection recorded high infections in both single and double infection cases. Some age groups increase inflammation with Amorphous and compared with other groups, whereas Some age groups showed increase inflammation with uric acid, whereas all age group showed approximate inflammation with calcium oxalate. In the result showed that the infection in married women more than non-married .

REFERENCES

[1]. T. E. Cooper, C. Teng, M. Howell, A. Teixeira-Pinto, A. Jaure, and G. Wong, "D-mannose for preventing and treating urinary tract infections," The Cochrane Database of Systematic Reviews, vol. 8, no. 8, p. CD013608, Aug. 2022, doi: 10.1002/14651858.CD013608.pub2.

[2]. A. K. C. Leung, A. H. C. Wong, A. A. M. Leung, and K. L. Hon, "Urinary Tract Infection in Children," Recent Patents on Inflammation & Allergy Drug Discovery, vol. 13, no. 1, pp. 2–18, 2019, doi: 10.2174/1872213X13666181228154940.

[3]. A. Ellahi et al., "Strategies for the removal of short-term indwelling urethral catheters in adults," The Cochrane Database of Systematic Reviews, vol. 6, no. 6, p. CD004011, Jun. 2021, doi: 10.1002/14651858.CD004011.pub4.

[4]. V. P. O'Brien, T. J. Hannan, H. V. Nielsen, and S. J. Hultgren, "Drug and Vaccine Development for the Treatment and Prevention of Urinary Tract Infections," Microbiology Spectrum, vol. 4, no. 1, Jan. 2016, doi: 10.1128/microbiolspec.UTI-0013-2012.

[5]. K. Dickson, J. Zhou, and C. Lehmann, "Lower Urinary Tract Inflammation and Infection: Key Microbiological and Immunological Aspects," Journal of Clinical Medicine, vol. 13, no. 2, p. 315, 2024, doi: 10.3390/jcm13020315.

[6]. K. Czajkowski, M. Broś-Konopielko, and J. Teliga-Czajkowska, "Urinary tract infection in women," Przeglad Menopauzalny = Menopause Review, vol. 20, no. 1, pp. 40–47, 2021, doi: 10.5114/pm.2021.105382.

[7]. A. M. Holdcroft, D. J. Ireland, and M. S. Payne, "The Vaginal Microbiome in Health and Disease—What Role Do Common Intimate Hygiene Practices Play?," Microorganisms, vol. 11, no. 2, p. 298, 2023, doi: 10.3390/microorganisms11020298.

[8]. G. T. Werneburg, "Catheter-Associated Urinary Tract Infections: Current Challenges and Future Prospects," Research and Reports in Urology, vol. 14, pp. 109–133, 2022, doi: 10.2147/RRU.S273663.

[9]. R. Öztürk and A. Murt, "Epidemiology of urological infections: a global burden," World Journal of Urology, vol. 38, no. 11, pp. 2669–2679, 2020, doi: 10.1007/s00345-019-03071-4.

[10]. J. Medina-Polo, K. G. Naber, and T. E. B. Johansen, "Healthcare-associated urinary tract infections in urology," GMS Infectious Diseases, vol. 9, p. Doc05, 2021, doi: 10.3205/id000074.

[11]. A. L. Flores-Mireles, J. N. Walker, M. Caparon, and S. J. Hultgren, "Urinary tract infections: epidemiology, mechanisms of infection and treatment options," Nature Reviews Microbiology, vol. 13, no. 5, pp. 269–284, May 2015, doi: 10.1038/nrmicro3432.

[12]. M. Odoki et al., "Prevalence of bacterial urinary tract infections and associated factors among patients attending hospitals in Bushenyi district, Uganda," International Journal of Microbiology, vol. 2020, Article ID 3226950, 2019, doi: 10.1155/2020/3226950.

[13]. Y. Gebretensaie et al., "Prevalence of Bacterial Urinary Tract Infection, Associated Risk Factors, and Antimicrobial Resistance Pattern in Addis Ababa, Ethiopia: A Cross-Sectional Study," Infection and Drug Resistance, vol. 16, pp. 3041–3050, 2023, doi: 10.2147/IDR.S402279.

[14]. D. S. Lo et al., "Community-acquired urinary tract infection: age and gender-dependent etiology," Jornal Brasileiro de Nefrologia, vol. 35, no. 2, pp. 93–98, Jun. 2013, doi: 10.5935/0101-2800.20130016.

[15]. C. L. Ambrozio et al., "Trichomonas vaginalis PREVALENCE AND RISK FACTORS FOR WOMEN IN SOUTHERN BRAZIL," Revista do Instituto de Medicina Tropical de Sao Paulo, vol. 58, p. 61, 2016, doi: 10.1590/S1678-9946201658061.

[16]. C. L. Ambrozio et al., "Trichomonas vaginalis PREVALENCE AND RISK FACTORS FOR WOMEN IN SOUTHERN BRAZIL," Revista do Instituto de Medicina Tropical de Sao Paulo, vol. 58, p. 61, 2016, doi: 10.1590/S1678-9946201658061.

[17]. D. N. Anh et al., "Prevalence, species distribution and antifungal susceptibility of Candida albicans causing vaginal discharge among symptomatic non-pregnant women of reproductive age at a tertiary care hospital, Vietnam," BMC Infectious Diseases, vol. 21, no. 1, p. 523, Jun. 2021, doi: 10.1186/s12879-021-06192-7.

[18]. A. L. Flores-Mireles, J. N. Walker, M. Caparon, and S. J. Hultgren, "Urinary tract infections: epidemiology, mechanisms of infection and treatment options," Nature Reviews Microbiology, vol. 13, no. 5, pp. 269–284, May 2015, doi: 10.1038/nrmicro3432.

[19]. H. M. E. Willems, S. S. Ahmed, J. Liu, ZXu, and B. M. Peters, "Vulvovaginal Candidiasis: A Current Understanding and Burning Questions," Journal of Fungi (Basel, Switzerland), vol. 6, no. 1, p. 27, 2020, doi: 10.3390/jof6010027.

[20]. S. A. Gharehbolagh et al., "Distribution, antifungal susceptibility pattern and intra-Candida albicans species complex prevalence of Candida africana: A systematic review and meta-analysis," PLoS One, vol. 15, no. 8, p. e0237046, Aug. 2020, doi: 10.1371/journal.pone.0237046.