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PREVALENCE OF URINARY TRACT INFECTION AMONG OUT PATIENTS A JOS HOSPITAL PLATEAU STATE NIGERIA.

Favour Obioma BARNABAS[1], Eno Chongs MANTU[1], Suzana Joseph NDUKE[1], Matina Imaobong EKPO[2], Ajang Jacob ABOK[1], Uchejeso Mark OBETA[3*]

[1]Department of Medical Microbiology, Federal College of Medical Laboratory Science &Technology. P.M.B. 2253, Jos, Plateau State Nigeria.

[2]Department of Chemical Pathology, Federal College of Medical Laboratory Science &Technology. P.M.B. 2253, Jos, Plateau State Nigeria.

[3]Department of Laboratory Management, Federal College of Medical Laboratory Science &Technology. P.M.B. 2253, Jos, Plateau State Nigeria.

Email: uchejesoobeta@gmail.com

ABSTRACT

Infection of the urinary tract(called UTI) is caused by microbes thatinvade and inhabit the urinary system (urethra, bladder, ureters, andkidney). Because the urine is an excellent culture medium for the UTI pathogens,these pathogens ascend into the urinary system causing UTI varying from boils, cystitis, and prostitis which may even lead to sepsis if left untreated. This research was conducted to assess the preponderance of UTI among out-patients who attendedthe Plateau Specialist Hospital, Jos. We observed that of the 80 samples examined, 15 tested positive for UTI,suggesting a prevalence of 18.75%. According to age group, it was discovered that age group between 41 above has the highest prevalence of urinary tract infection with 12.5%. Based on gender, the female has the highest prevalence rate of 10(15.0%), though more in number than the males. the female were 60 out of 80 while the male were 20 in number. There was no positive sample obtained in children sample.It was discovered that Escherichia coli has the highest prevalence rate at 6(7.5%), followed by Staphylococcus aureus 4 (5.0%). The isolation of urinary tract pathogens from these patients though with a lower prevalence stresses the urgent need for public enlightenment campaigns by the appropriate authorities to educate the patients as well as the masses on the etiological agents, the possible risk factors, routes of transmission and health implication of urinary tract infection and ways of preventing the bacteria, as well as early diagnosis and treatment of infected ones.

Keywords: UTI epidemiology, urinary tract infections, Out-patients, Jos

INTRODUCTION

Urinary tract infection (UTI) is a disease or infection caused by bacterial invasion of one or more of the structures in urinary system.Inmost cases, UTI is caused by bacteria originating from the gastrointestinal tract (GIT), that migrate to the bladder, the urethra and may reach the kidneys and eventually contaminate urinary tract with faucal Flora (1, 2). UTI may be classified based on severity and sites of infection into Uncomplicated UTI,Acute uncomplicated cystitis,Acute uncomplicated Pyelonephritis,Asymptomatic bacteriuria, and Recurrent uncomplicated UTI (3, 4). Unfortunately, such bacteria found in urinary tracts are gaining resistance day in day out towards most antibiotics used in the treatment (5, 6).

Symptoms of UTImayvary from totally asymptomatic to severe infections, and can only be detected or diagnosed during routine investigation (7, 8). The symptoms may vary according to patient's age and gender, infection site and severity,and may range from dysuria, urinary frequency, haematuria, urinary incontinence, foul smelling cloudy urine, suprapubic pain, urgency, nausea, acute confused state, andvomiting especially in aged patients (1, 9, 10).

Bacteria including Uropathogenic Escherichia coli uncomplicated and complicated *Enterococcus spp*. and *Staphylococcus saprophyticus* are commonly responsible for urinary tract infection, but viruses and fungi (yeast) may be implicated also (11, 12).

Urine culture may show significant bacterial growth during asymptomatic bacterial infection without the patient exhibiting symptoms of UTI. This may be observed in both the gravid and non-pregnant women. Pregnancy favours the progression from asymptomatic or apparent bacteriuria to symptomatic state, possibly leading to pyelonephritis and severe obstetrical manifestationlike low-birth-weight, premature delivery, and increased foetal death rate (13-16). Pregnant women are predisposed to most opportunistic infections including UTI. And this is associated with the dilation of the urethra due to hormonal action. This means that, bacteria may have a free passage into the urinary tract and up to the kidney (17).

It had been proven that some pathogens of the urinary tract have the unique capacity to enter and attach to the epithlium of the lower urinary tract. Of particular interest is the *Escherichia coli*that is capable ofbinding to peculiar receptors in the uroepithelium. This is probably why some women are more predisposed torecurrent bacteriuria and the reason forUTIbeing more prevalent in women as well as upper UTIs like accute pyelonephritis (18, 19).

A number of conditions are associated with high prevalence of non-symptomatic bacteriuria in patients, like lowly socio-economic status, diabetes mellitus, sickle cell traits, and grand multiparty. Each of them accounts forabout twofold rise in the prevalence of bacteriuria. Other factors such as use of condoms with spermicidal jelly during sexual intercourse also lead tohigher incidences of UTI.

The aim of this study wasto determine the prevalence of UTI among the out-patients

attending the Plateau Specialist Hospital, Jos with specific objectives to identify the organisms involved, and ascertain the age brackets that are more prone to UTI.

MATERIALS AND METHODS

This study was done at Plateau Specialist Hospital, Jos Nigeria after the approval by Federal College of Medical Laboratory Science and Technology Academic Board. The study was carried out between May and June 2022 with sample size of 80 samples comprising of 20 female adult, 20 female children, 20 male adult, and 20 male children randomly selected from laboratory confirmed urinary tract infections. 10% of the population of samples was adopted for sample size.

The consented patients/ guardians were given universal sterile container and were all educated on how to collect clear catch midstream urine. This was done in order to prevent contamination from the external genital and each sample was labeled properly and was transported to the appropriate bench for culturing.

The samples were processed by Macroscopic examination for colour and appearance of urine samples before culture processes, Gram staining and biochemical.

The Preparation of Blood Agar, and Chocolate Agar in line with Ochei & Kolhatka (20) and followed by Culturing and incubation of samples.

Culture plates were examined macroscopically for colonial characteristics of the organisms. The colonies were examined macroscopically the following day. The morphological appearances of the organisms were which include: color, shapes, size, edge pigmentation, consistency, were checked with fermentation of lactose and mannitol on the media noted.

Other procedures included Preparation of Smear for Gram Staining, followed by biochemical tests (Oxidase Test,Catalase Test, Indole Test, Coagulase Test, Urease Test, Motility Test, and Citrate utilization Test) to identify and differentiate various bacteria species that might be present.

All data obtained from this research were analyzed statistically using percentage prevalence.

RESULTS

Out of 80 samples examined, 15 were positive for urinary tract infection was noted in 15 out of 80 samples which shows prevalence of 18.75%. Table 1 presents the prevalence among age groups with the ages 41 and above showing highest prevalence (12.50%). Table 2 relates the prevalence according to gender with female gender having the higher prevalence (15%). The table 3 presents the prevalence of various bacteria isolated during the study which indicated that*Escherichia coli* had prevalence of 7.5% followed by*Staphylococcus aureus* (5%) as isolated.

Table 1

PREVALENCE OF URINARY TRACT INFECTIONS IN DIFFERENT AGE BRACKETS

AGE (Years)	Number Examined	Number Positive	Prevalence (%)
20 and below	5	1	1.25
21- 30	10	1	1.25
31-40	25	3	3.75
41 and Above	40	10	12.50
Total	**80**	**15**	**18.75**

Table 2

PREVALENCE OF URINARY TRACT INFECTIONS IN DIFFERENT GENDERS

Gender	Number Examined	Number Positive	Prevalence (%)
MALE	20	3	3.75
FEMALE	60	12	15.00
Total	**80**	**15**	**18.75**

Table 3

BACTERIA ISOLATED

Bacteria	Number Examined	Number Positive	Prevalence (%)
Escherichia coli	20	6	7.50
Klebseilla species	10	1	1.25
Proteus species	15	1	2.50
Pseudomonas species	10	2	2.50
Staphylococcus aureus	20	4	5.00
Total	**80**	**15**	**18.75**

DISCUSSION

Urinary tract infections continues to affect many and equally diagnosed among several patients in various hospital settings from Primary to Tertiary Healthcare institutions. The prevalence differs across the globe but with higher burden in low income countries especially Africa.

Results of a preliminary evaluation of UTIs in this study showed the total bacterial count in males (3.75%) and females (15.0%), and

18.5% asthe general prevalence of UTI in the study population(Table 2). Though this study was in Jos, it relates with Oladeinde etal (21) on the work carried out in Okada where the prevalence among the females is higher than that of males.

Table 3 revealed that Escherichia coli was the organism isolated on culture, being present in 7.50% followed by Staphylococcus aureus with 5.00%. This work is in agreement with Oladeinde and colleagues (21), though with lesser percentage prevalence. Most of the nosocomial infections were caused by *E.coli* and *S.aureus*among outpatients attending the hospital with urinary tract infection symptoms. This was with agreement with the earlier work (22) which stated that E. coli and S. aureus were among the commonest cause of hospital acquired urinary tract infections. *E. coli* and *S. aureus* infections have more prevalence. Could this be associated with water and food consumption possibly infected by *S. aureus*and *E. coli*? The work of Barnabas etal. (23) and Coleman etal (24) showed that consumption of infected water are sources of S. aureus and other UTI bacteria while Graham et al (1) has shown that both bacteria E. coli and S. aureus are water borne UTI.

This study showed that the prevalence of these bacteria is higher in female adult urinary tract, may be because of the short Urinary tract making it easily reached by bacteria (25). The shortness of the female urethra renders it vulnerable to ascending infection.

The implication of this incident is that acute urinary tract is common among adult female. There is high incidence recorded at the stage from 40-above, which agrees withMedina & Castillo-Pino (6) that UTI prevalence increased with age. This result also agrees with the previous work (26).

This study however, may be limited by number of patients presenting UTI during the study.

CONCLUSION

Urinary tract infection (UTI) was more prevalent in adult female patients than their male counterparts. The pathogen implicated in most cases of the UTI was *E.coli*. Some of the bacterial isolates were normal Flora (Escherichia coli) in the intestine that become pathogenic when introduced into genitalia, it is advocated that proper care should be taken to avoid contamination. This study show that Urinary tract infection is mostly associated with female patient than male patients. It is recommended that females should be educated on need for proper hygiene, washing their panties every day especially when on menses, using clean and sterile menstrual tampoons and sanitary towels.

The age group with the highest are those between 40 and above. It is therefore recommended that all patient that fall into this group should be enlighten on safe way to prevent reinfection and spread of infection from one individual to another. It will be of great value to embark on the public enlightenment campaign on the need for laboratory investigation before treatment and also the dangers of blind treatment without laboratory diagnosis. Law should be propagated to guard against any form of treatment before collection of samples from patients.

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need for laboratory investigation before treatment and also the dangers of blind treatment without laboratory diagnosis. The hospital management should intensify efforts to implement the cleanliness of the environment. Also, regular hand hygiene with soap and water or hand sanitizer that contain at least 60% alcohol is one of the most important step to avoid the spread of bacteria.

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