

Research Article

Prevalence of Asymptomatic Bacteriuria among Pregnant Women Attending Antenatal Clinic at Federal Medical Centre Nguru Yobe State

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Abstract: Microbial colonization of the urine and tissue invasion of any structure of urinary tract is referred to as urinary tract infections (UTIs). Pregnancy enhances the progression of infections from asymptomatic to symptomatic which could lead to adverse obstetric outcomes such as premature birth, low birth weight, still birth and pyelonephritis. This study was undertaken to determine the prevalence of asymptomatic bacteriuria among pregnant women attending antenatal clinic at Federal Medical Centre Nguru (FMC), Yobe State. A total of three hundred patients agreed to participate in the research and their sample of urine were collected in separate containers. Out of the three hundred urine samples processed, 130 (43.3%) showed a significant bacteriuria growth, the most common isolate was *Escherichia coli* (36.9%), followed by *Staphylococcus spp.* (22.3%), *Klebsiella spp.* (20.0%), *Proteus spp.* (6.2%), *Pseudomonas spp.* (3.1%) and *Streptococcus fecalis* (11.5%). To prevent asymptomatic bacteriuria complication, all pregnant women should be screened at the first antenatal visit, and proper treatment must be considered as an essential part of antenatal care in FMC Nguru

Keywords: Prevalence, Asymptomatic bacteriuria, pregnancy, significant bacteriuria

INTRODUCTION

Urinary tract is the second most common site of bacteria multiplication [6], which is responsible for most illness and contributes significantly to the cost of providing health care to citizenry. Urine in the bladder is normally sterile, but the presence of bacteria in urine is called bacteriuria [4]. Christensen showed that infection of urinary tract are the commonest complications of the pregnant state, this is mainly due to anatomical and physiological change that persist for long time into the postpartum period during pregnancy coupled with the decreased level of immunity[4]. Asymptomatic bacteriuria can be defined as confirmed positive culture of organism containing more than 10^5 colonies per ml of midstream urine (MSU) of a patient who have no symptoms attributed to urinary tract infections [2]. On the other hand symptomatic bacteriuria is the confirmed positive culture of an organism containing more than 10^5 colonies per ml of midstream urine (MSU) of a patient with clear signs and symptoms attributed to urinary tract infection [2]. Urinary tract infection (UTI) may manifest as asymptomatic bacteriuria (ASB) or symptomatic bacteriuria (SB). The prevalence of asymptomatic UTI has been previously reported to be 2 to 13% in pregnant women while symptomatic UTI occurs in 1–18% during pregnancy [8]. UTI during pregnancy may cause complications such as pyelonephritis, hypertensive disease of pregnancy, anaemia, chronic renal failure, premature delivery and foetal mortality. The incidence of these complications can be decreased by treating

promptly asymptomatic bacteriuria (ASB) during pregnancy [3]. However, during one or more antenatal clinic (ANC) visits most clinics perform routine urinalysis of midstream urine specimen. Thus, excluding culture and antimicrobial susceptibility testing that are needed for surveillance purposes to guide the clinicians on the proper management and prevent empirical treatment of pregnant women with asymptomatic bacteriuria (ASB).

MATERIALS AND METHODS

Collection of specimen

This study was conducted in Nguru Local Government and samples were collected from pregnant women attending antenatal clinic at Federal Medical Centre Nguru from May, 2012 to November, 2012. The samples were processed at Department of Microbiology Federal Medical Centre Nguru, Yobe State.

Exclusion criteria

A questionnaire was distributed to the participants to access the biodata of the participants and exclude women with:

- Known congenital anomalies of urinary tract
- Sign and symptoms of UTI
- Pyrexia
- History of antibiotic drugs two weeks before collection of the sample.

Transportation of the specimen

One sample of urine was collected in a sterile wide mouth 100ml capacity container with a cover. Midstream urine, 30ml – 50ml was requested for from the pregnant women during their first antenatal visit, at least 4 hours stay of urine in bladder was ensured before collection. After collecting and labeling the specimen, it was immediately transported and processed in the laboratory on the same day, in case of any delay, specimen was refrigerated at 4°C. [4]

Culture of midstream urine samples

The entire urine specimens were properly labeled and the semi quantitative standard wire loop method was employed for the culture. A calibrated wire loop having a diameter of 5mm to deliver 0.002ml of urine was used.

The urine samples were mixed thoroughly before inoculated on Cystein lactose electrolyte deficient agar (CLED), and Blood Agar plate using the sterile calibrated wire loop, holding the loop upright to avoid more than required volume. All the plates were incubated at 37°C for 1 – 24 hours aerobically[4].

Test for identification of isolates

After significant bacteria had been established through the colony count, the isolates were then differentiated through standard Gram's staining method to gram-negative and gram-positive bacteria. Further identification was carried out through Biochemical characterization on each of the isolates. Motility test was carried on gram's negative bacilli using hanging drop method from drop of overnight broth culture of the test organism.

RESULTS

Out of the three hundred (300) samples collected from the participants, 130 show significant growths while 170 show no any significant growth, Table 1; showing a percentage (%) prevalence of 43.3%. Table 2; show the (%) characterization of isolate from the positive culture, where gram negative bacilli are 84 (66.2%) and gram positive cocci are 44 (33.8%). Table 3; show the frequency of the isolate from the positive culture, where *E. coli* is 48 (36.9%); *Staphylococcus Spp*, 29 (22.3%); *Klebsiella Spp*, 26 (20.0%); *Proteus Spp*, 8 (6.2%) *Pseudomonas Spp*, 4 (3.1%); and *Streptococcal fecalis*, 15 (11.5%).

Table 1: Significant growth of the culture

	Frequency	Percent	Valid percent	Cumulative percent
Significant growth	130	43.3	43.3	43.3
No significant growth	170	56.7	56.7	100.0
Total	300	100.0	100.0	

Table 2: Characterization of isolate from the positive sample

	Frequency	Percent	Valid percent	Cumulative percent
Gram negative bacilli	84	66.2	66.2	66.2
Gram positive cocci	44	33.8	33.8	100.0
Total	130	100.0	100.0	

Table 3: Frequency of the Bacteria Isolated in the Significant Culture

Isolatates	Frequency	Percent	Valid percent	Cumulative percent
<i>Escherichia coli</i>	48	16.0	36.9	36.9
<i>Staphylococcus spp</i>	29	9.7	22.3	59.2
<i>Klebsiella spp</i>	26	8.7	20.0	79.2
<i>Proteus spp</i>	8	2.7	6.2	85.4
<i>Pseudomonas spp</i>	4	1.3	3.1	88.5
<i>streptococcus fecalis</i>	15	5.0	11.5	100.0
Total	130	43.3	100.0	
Missing System	170	56.7		
Total	300	100.0		

DISCUSSION

Proper investigation and prompt treatment are needed to prevent serious life threatening condition and morbidity among pregnant women due to bacteriuria. Out of the three hundred samples (300) collected from the participant 130 show significant growth while 170 show no any significant growth, given a (%) prevalence of 43.3%. the small number of the specimen could be explained by the facts that the samples were randomly collected from patients that agreed to participate in the study during their first antenatal clinics. The 43.3% obtained in this study is higher when compared with other previous studies, this observation may be attributed to differences in socioeconomic status and level of health care development[10]. The isolates were subjected to gram staining technique for screening, 86 (66.2%) were found to be Gram negative bacilli and 44 (33.8%) were Gram positive cocci. This finding agreed with the work of Van Norstrand et-al [11] and Aziz Marjan [1]. The most prevalent organism isolated in this study is *Escherichia coli* (36.9%), followed by *Staphylococci spp* (22.3%), *Klebsiella spp* (20.0%), *Proteus spp* (6.2%); *Pseudomonas spp* (3.1%) and *Streptococcus fecals* is (11.5%). In comparism with previous studies is consistent with the previous findings [7]. This shows that the etiologic Pattern of Urinary Tract Infections (UTIs) with respect to bacteria pathogens is apparently similar worldwide'. However, Raza et-al [9], state that the Gram negative aerobic bacteria colonize the uro-epithelial mucosa with adhesion, Pilli, and fimbriae.

In conclusion *Escherichia coli* were found to be the most common cause of asymptomatic bacteriuria among pregnant women. It is recommended that screening pregnant women for bacteriuria and proper treatment should be considered as an essential part of antenatal care in FMC Nguru.

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