

Incidence of Asymptomatic Bacteriuria in Ante-Natal Patients Attending General Hospital Minna-Niger State

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Abstract: To evaluate the occurrence of asymptomatic bacteriuria among healthy pregnant women attending ante-natal clinic of General Hospital Minna. To test for sensitivity to commonly used treatments. Two hundred mid-stream urine samples were collected in a sterile universal bottle. The cultured plates were examined. The morphological and biochemical characteristics were determined. The bacteria isolates recovered from urine samples includes *E. coli* 32 (51.6%), *Klebsiella* sp 19 (30.6%), *S. aureus* 3(4.8%) and *P. aeruginosa* 8(12.9%). Gentamicin and Impenem were the most sensitive antibiotics. Infections caused by isolated bacteria can be successfully treated with Gentamicin, Amoxycillin and Impenem antibiotics. The study recommend periodic testing for asymptomatic bacteriuria, for pregnant women.

Key words: Incidence % Asymptomatic % Bacteriuria

INTRODUCTION

Bacteriuria, either asymptomatic or symptomatic, is common in pregnancy [1-3]. If left untreated, asymptomatic bacteriuria will lead to acute pyelonephritis in 20-30% of cases. This may result in low birth weights infants, premature delivery and occasionally, still birth [4], so it is a serious threat for the mother and the unborn child [5].

Bacteriuria is associated with a 50% increase in the risk of premature delivery [6], pre-eclampsia [7], hypertension, anaemia [8] and post partum endometritis [9]. It is well documented that effective treatment of asymptomatic bacteriuria significantly reduces the incidence of pyelonephritis, premature deliveries and low birth weight infants [4,9].

The association of asymptomatic bacteriuria with other complications of pregnancy including still birth, intrauterine growth retardation and preterm labour in the absence of acute pyelonephritis has been more controversial [10]. In a meta-analysis of 19 studies, Romero *et al.* [14] reported that women with asymptomatic bacteriuria had 54% higher risk of a preterm infant and twice the risk of a preterm infant compared with non-bacteriuric women [15].

When selecting drugs to use in pregnancy, it is essential to ensure that they are safe for both the pregnant women and the fetus [12]. In this study, we wanted to evaluate the occurrence of asymptomatic bacteriuria among healthy pregnant women attending ante-natal clinic of General Hospital Minna. To test for sensitivity to commonly used treatments.

MATERIALS AND METHODS

Specimen Collection: Two hundred mid-stream urine samples were collected in a sterile universal bottle containing 0.5 g of boric acid crystals (boric acid crystals stops the multiplication of bacteria that may be present in the urine sample) from selected asymptomatic pregnant women attending ante-natal clinic of General Hospital Minna. On each container was ascribed name, date, number and age group. The use of catheterization was avoided, this is because it carries a definite risk of causing infection either through faulty aseptic techniques or by contamination with bacteria residing in the urethra [16].

Bacterial Isolates: Sixty two bacterial isolates were obtained from urine cultures; 32 *Escherichia coli*, 19 *Klebsiella* species, 3 *Staphylococcus aureus* and

8 *Pseudomonas aeruginosa*. The staphylococcal isolates were identified on the basis of plasma coagulase tests and the ability to ferment mannitol. Eosin methylene blue was used to confirm *E. coli* *Klebsiella* species and *P. aeruginosa* were confirmed by their growth on macConkey medium and cysteine lactose electrolyte deficient (CLED) medium, Gram stained morphology a spot oxidase test and the ability to ferment carbohydrates were performed.

Antimicrobial Susceptibility: Susceptibility to antibiotics was determined by the disk diffusion method on Mueller-Hinton plates. Seven antibiotics were chosen for the use in research, especially human medicine. They include the following groups: Penicillins (Amoxicillin), Aminoglycosides (Gentamicin), Quinolones (Ciprofloxacin) and the miscellaneous (Nitrofurantoin, Imipenem, Co-trimoxazole and Nalidixic acid).

RESULTS AND DISCUSSION

From the 200 samples of mid-stream urine collected from asymptomatic pregnant women. One hundred and thirty-eight samples had no growth. Sixty two samples were positive for *E. coli* 32 (51.6%), *Klebsiella* sp 19 (30.6%), *S. aureus* 3(4.8%) and *P. aeruginosa* 8(12.9%) Table 1. The high incidence of *E. coli* in this study agrees with the work of other investigators [13-15]. They observed that *E. coli* is the most frequent pathogen being reported in >80% of urinary tract infections (UTI) and women are more prone to UTI because the distance between the gastro intestinal opening and the urethra is short in women.

Klebsiella sp and *P. aeruginosa* are members of the Enterobacteriaceae which are commonly found in the gut, they may have been introduced into the urinary orifice due to low personal hygiene such as improper cleaning of the perineum which is close to the urinary orifice. Isolation of *S. aureus* is in line with the work of Brumfitt *et al.* [14] they showed that members of the family Micrococcaceae were significant urinary tract pathogens. In a similar investigation Andriole [16] observed that Gram positive organisms have recently received more attention as causing bacteriuria and UTIs.

From the result of sensitivity in Table 2. all the isolates were highly sensitive to Amoxicillin, Gentamicin and Imipenem. Sensitivity to Gentamicin and Imipenem may be attributed to their good activity both Gram negative rods, positive organisms and anaerobes [18] and their route of administration (intramuscular/ intravenous)

Table 1: Bacterial Isolates

Isolates	Frequency
<i>E. coli</i>	32 (57.6)
<i>Klebsiella</i> spp	19 (30.6)
<i>P. aeruginosa</i>	8 (12.9)
<i>S. aureus</i>	3 (4.8)
Total	62 (100)

Numbers in Parentheses Indicate Percentage of Occurrence

Table 2: Susceptibility Pattern of Bacteria Isolates

Antibiotics	Isolates			
	<i>E. coli</i>	<i>Klebsiella</i> spp	<i>P. aeruginosa</i>	<i>S. aureus</i>
Nitrofurantoin	+++	+++	+	++
Ciprofloxacin	-	-	-	-
Amoxicillin	+++	+++	+++	+++
Gentamicin	+++	+++	+++	+++
Nalidixic acid	-	-	-	-
Imipenem	+++	+++	+++	+++
Co-trimoxazole	-	-	-	-

KEY:

- +++ = Highly Sensitive
- ++ = Moderately Sensitive
- + = Less Sensitive
- = Resistant

limits there abuse *E. coli* and *Klebsiella* species are highly sensitive to nitrofurantoin. *P. aeruginosa* and *S. aureus* are less and moderately sensitive to nitrofurantoin, respectively. All the isolates were resistant to Ciprofloxacin and Co-trimoxazole. Resistant to Ciprofloxacin and Co-trimoxazole is in line with the report of Winstanley *et al.* [17] they observed high level of trimethoprim-resistant in *E. coli* Table 2.

CONCLUSION

Identification and treatment of asymptomatic bacteriuria will lead to a 10 fold decrease in the occurrence of acute pyelonephritis later in pregnancy in women with asymptomatic bacteriuria. Treatment of asymptomatic bacteriuria will also decrease pre-term delivery and low birth weight. A single screening test using a culture method 12-16 weeks of pregnancy will identify 80% of women with asymptomatic bacteriuria of pregnancy. Screening for and treatment of asymptomatic bacteriuria is likely to be cost effective.

RECOMMENDATIONS

- C There is good evidence to recommend screening for asymptomatic bacteriuria in pregnancy

- C In 1989, the U.S Preventive Services Task Force [19] recommended periodic testing for asymptomatic bacteriuria,

For pregnant women. Since urine culture is more accurate screening test than dipstick urinalysis, it was recommended for detecting asymptomatic bacteriuria during pregnancy.

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