

The prevalence of Asymptomatic bacteriuria amongst pregnant women attending ante-natal care in Mbanjo Joint Hospital, Imo State, Nigeria.

Nwokorie CC¹, Otutu E.A¹, Ikonne O²

1. Department of Microbiology, Abia State University Uturu, P.M.B.2000.

2. Department Of Sociology, (Demography), Abia State University, Uturu. Nigeria

Corresponding author email: Chigo205@yahoo.com

ABSTRACT: The prevalence of asymptomatic bacteriuria amongst pregnant women attending antenatal at Mbanjo joint Hospital in Isiala Mbanjo L.G.A was investigated using culture techniques. Out of the 120 patients examined, 46(38%) had asymptomatic bacteriuria, while 25(21%) had none. The predominant bacteria isolated were E-coli, Staphylococcus aureus. Klebsiella species and Proteus species. The age group 39-45 years had the highest prevalence 86% with respect to occupation. Pregnant women in their third trimesters had the highest prevalence 51%. This study emphasizes the need for continuous routine screening of the urine of pregnant women in order to avert the consequence of the subsequent complications.

Keywords: Phytochemicals, Asymptomatic, Bacteriuria, Prevalence.

INTRODUCTION

Bacteriuria is a clinical condition that refers to the presence of high number of one or more bacteria in urine. It is basically a disease condition caused by a wide variety of bacteria. The upper urethra is the most frequent site of infection within the urinary tract, but the entire system is always at risk of invasion by bacteria once one of the parts is infected (Kunin, 1997). Knowledge of the nature, cause and outcome of bacteriuria has obviously been based on the study of the development of symptoms and signs over a period of time.

Urinary tract infection is also the presence of urinary tract infection or significant number of pathogenic microorganism anywhere within the urinary tract (Volk, 2000).

This syndrome in adult usually leads to the irritation of urethral mucosa, causing frequent painful urination with turbid urine (Kaye and Santoro, 1979). In infants there may be unexplained jaundice or an appearance suggestive of sepsis. In healthy individuals the normal kidney and bladder urine are sterile, but according to Farr, (1970), the urethral and introital flora consist largely of nonpathogenic *Corynebacterium*, *Lactobacillus*, *Staphylococcus epidermis*, *Gardnerella vaginalis* and non-haemolytic streptococci, while *E-coli* may be absent or found in small quantities. The state of bacteriuria is detected by qualitative urine culture indicated by finding more than 100,000 colony forming units (CFU) (Buckley et al, 2000).

This study is aimed at isolating the bacteria found in the urine samples of pregnant women attending antenatal at Mbanjo joint Hospital, Mbanjo.

MATERIALS AND METHODS

The study group was conducted in the Microbiological laboratory of School of Nursing Mbanjo in Imo State. The study population was 120 pregnant women with confirmed diagnosis of pregnancy of 12-26 weeks attending the Gynaecology/Obstetrics were interviewed and data recorded in proforma. Only those women that were registered who fulfilled the criteria of apparently normal health without any sign of UTI except frequency.

SPECIMEN COLLECTION

The pregnant women were given sterile bottles to collect early morning urine. The women were instructed on how to collect the specimens. The sample were immediately transported to the laboratory and processed on the same day. In case of delay, the specimen was refrigerated at 4°C.

Culturing Of Urine Sample

Having shaken the bottles, sterile standard inoculation loop was dipped into the urine and was streaked on plates of MacConkey agar Nutrient agar and CLED agar respectively. The inoculation plates were inoculated for 18 to 24 hours at 37°C and examined for growth of colonies after the incubation. The types of colonies formed were presumptively identified using morphological characteristics and biochemical tests.

Examination Of Culture Plates

Certain criteria were used to sort out urine samples with or without significant growth.

A plate showing no growth was designated sterile.

Culture plates with 10⁵ cfu/ml or more bacteria per ml were recorded as showing significant bacteriuria. Identification of all the organisms isolated was done as described by (Lennette, 1980).

Where 2 different organisms occurred morphologically as a mixed culture either of them showing significant growth, the urine samples were repeatedly analyzed and if the same organisms were re-isolated showing growth, both were incriminated.

RESULTS

Out of the 120 specimens examined 46 (38%) had asymptomatic bacteriuria. The highest percentage occurrence, 44% was amongst the age group 39-45 years, followed by the 18-24years (40%), while the age group 25-31 years had the least prevalence of 33% (Table 1). House wives were mostly affected than teachers, traders and students (Table 2). The third trimester of the pregnancy had the highest infection of 51%, while 25% was observed at the first trimester (Table 3). *Staphylococcus aureus* showed the highest prevalence of 33%, while *Proteus* species was the least with 13% (Table 3.0).

Table 1. Prevalence of Asymptomatic bacteriuria amongst pregnant women in Mbanjo Joint Hospital, Mbanjo according to Ages (years).

Age-groups (Years)	No Examined	No. Infected (Affected)	%Infected (Affected)
18-24	20	8	40
25-31	36	12	33
32-38	30	11	36
39-45	34	15	44
Total	120	46	38

Table 2. Prevalence of Asymptomatic bacteriuria according to Occupations.

OCCUPATION	NO EXAMINED	No. INFECTED	%INFECTED
Traders	30	15	50
House wives	15	13	86
Students	22	10	45
Civil servant	35	8	23
Teachers	18	12	67
Total	120	58	48

Table 3. Prevalence of asymptomatic bacteriuria according to ages of Pregnancy.

TRIMESTERS	NO EXAMINED	NO. INFECTED	%INFECTED
FIRST	20	5	25
SECOND	45	21	42
THIRD	55	28	51
TOTAL	120	54	45

Table 4. Prevalence of bacteria isolated from urine sample of pregnant women attending Mbanjo Joint Maternity in Isiala Mbanjo L.G.A

ORGANISMS	NO ISOLATED	% ISOLATED
E-coli	35	29
Staphylococcus Aureus	40	33
Klebsiella specie	30	25
Proteus specie	15	13

DISCUSSION

Prevalence of 38% was observed in the study population. This is different from the result obtained (23%) by Umeh (2006). Either studies reported lower prevalence rates in healthy population (Perez and Ferre, 2004; Uwaezuoke and

Ogbulie, (2006). The organism isolated were *E-coli*, *Staphylococcus aureus*, *Klebsiella* species and *Proteus* species. This was also different with organisms reported by other studies conducted in Nigeria (Umeh 2006, Ogbulie, 2006).

The most prevalent organism observed in this study was *Staphylococcus aureus* (33%), followed by *E-coli* (29%), *Klebsiella species* (25%), and *Proteus specie* (13%). This finding agrees with that of Akerele et al (2001) and Amadi (2007) that reported the same trend for *Staphylococcus aureus*, *E-coli*, and *Klebsiella species*. The prevalence rate of *Staphylococcus aureus* observed in the study was 33% higher than 27.1% reported by Amadi (2007). *Staphylococcus aureus* has been reported as the most prevalent organism amongst pregnant women in Nigeria (Akerele 2001, Amadi 2007). Olusanya (1993) also reported same result amongst pregnant women in Shagamu, Nigeria. These findings did not agree with the work of Bloomberg (2005), who reported that *E-coli* were the most prevalent organism isolated in Tanzania. The highest prevalent was observed amongst women in their third trimester of pregnancy 51% followed by those in the second trimester 47% and the least in the first trimester 25%. This finding agrees with the work of Amadi, (2007). Kunin (2005) also reported that asymptomatic bacteriuria increases with increases in gestational period.

Based on occupation, house wives had the prevalence of 26%. The high frequency of asymptomatic bacteriuria amongst this group could be attributed to high level of illiteracy amongst this group and ignorance of proper hygiene practices, (Umeh 2006). Observed that toilet habit in the manner after defaecation appeared to be one of the predisposing factors to bacteria.

Clinically it has been shown that these organisms cause pyelonephritis, urethritis and cystitis (Atlas, 2004)

CONCLUSION

The result of this study shows that age, personal hygiene and socio-economic factors contribute tremendously to the prevalence of bacteriuria in the community and Nigeria in general. The incidence of this disease condition was amongst pregnant women with higher gestational period.

The most dominant causative microbe encountered was *Escherichia coli*, together with some organisms which have been associated with bacteriuria infection by different workers in the past.

Due to high prevalence of bacteriuria in the human community, it is hoped that studies such as this would help produce the necessary data and knowledge to aid the planners of our health care delivery system in the total control of urinary asymptomatic tract infections. People are advised to consult the appropriate health personnel such as medical microbiologists, physicians and other qualified health workers for appropriate diagnosis and treatment to avoid subsequent complications. This study further emphasized the need for routine screening of pregnant women for asymptomatic bacteriuria as a part of the antenatal health care for pregnant women in Nigeria.

REFERENCES

- Akerele, J, Abhulimen, P, and Okonofua, F (2001). Prevalence of asymptomatic bacteriuria among pregnant women in Benin City, Nigeria. Nigeria J. Obstet Gynaecol 21: 141-144.
 Amadi, E.S; Enemu, O.B; Uneke, J.C; Nwosu, O.K Onyeagba, R.A and Ugbogu, O.C (2007) Asymptomatic bacteriuria among women in Abakiliki, Ebonyi State, Nigeria. J. med. Microbiology, 4: 200-25

- Atlas, R.M. (2004). Human Disease caused by microorganism, microbiology: Fundamentals and applications. Boston: The McGraw-Hill Comp, 614-620.
- Bloomberg B, Olsen B.E, Hinderaker S.G, Langeland N., Gasheka, P, Jureen, R, Kvale, G and Midtvedt, T (2005). Antimicrobial resistance in urinary bacteria isolates from pregnant women in rural Tanzania. Implication for public Health. *Scan. J. Infect. Dis.* 37:262-274
- Buckley, W. Davis, B. L. and Rosser, E. (2000) Urethral catheter as a cause of urinary tract infection in pregnancy. *Journal of Med. Microbiology*, 8: 420-430.
- Carin, B, Land, D.D and Thornsby (2005). The Host parasite relationship in Urinary Tract infection. *Kidney int. (supple)*, 8: 24-34.
- Cheesrough (2002). *District laboratory practice in Tropical countries. Part 2* Cambridge University Press. UK pp. 391.
- Dure, S, A. (1998). *Urinary Tract infections.* Oxford University Press. 332-335.
- Farr, W. R (1970). Observations on the origin of Urinary Tract Infections. Kinacid-smith, P.E. and Fairley, K. (eds). *Renal infections*, Cambridge. Cambridge University Press. 258-260.
- Fawole, M. O and Oso, B.A (1987). *Laboratory manual of microbiology, spectrum books* urinated Ibadan, 25-60.
- Kass, A.H. (1986). Asymptomatic infection of the Urinary Tract. *Journal of Association of American Physician* 69:56-63.
- Kaye, C.M. and Santoro (1989). A ten year study of bacteriuria in school boys, girls: Final report of Bacteriologic Urologic and Epidemic findings England *Journal of Infection Disease.* 122: 382-390.
- Kunin, C.M. (1994) An overview of Urinary Tract infection. *Detection, prevention and management of Urinary Tract infection.* 1-54, 227 - 317.
- Lennette, A.H; Balows, A., Hausler, J.J (1980). *Manual of clinical Microbiology*, America society for micro. Pub., Washington, 1-54, 227-229.
- Linton, K.B., Richmond, M.H. Bevan, M., and Gillespie W.A. (1974). *Septic infections due to Gram negative aerobic Bacilli* in Dopley and Wilson's principle of Bacteriology, Virology and Immunity. Edward Arnold Ltd. London 275-295.
- Maceleod, T. (1986). *Disease of the kidney and Urinary Tract system.* In principle and practice of medicine Cambridge, Edward Arnold Ltd. 376-407.
- Montefiore, J.Z. (1982), Factors affecting Virulence in E-coli. *Urinary Tract infectious Disease*, 137: 645-650.
- Montefiore, R. (1992) *Lecture Handout on Urinary Tract infection.* U.C.H. Ibadan. 1-65.
- Murray, F.W. and Rosenbatt C.C (2003). Bacteria interference by Oropharyngeal and clinical isolates of Anaerobic Bacteria. *Manual of clinical microbiology.* ASM Press. 134: 281-285.
- Nicolle L.E. (1994). Screening of asymptomatic bacteriuria in pregnancy. *Canadian guide on preventive health care* Ottawa Health Canada: 100-106.
- Olusanya, O. (1998). Bacteriological Complications from the use of Urethral Instrument, *Nigeria journal of Microbiology.* 104: 221-225.
- Perez, J.A and Ferrez J.F (2004) Asymptomatic bacteriuria in women. *Epidemiological pathologic and therapeutic study.* *Arch. Exp. Urology* 57:784-804..
- Rosenbery E., and Colen, il. (1983). Specific Diseases Related to infection by Microbial parasites in *microbial Ecology*, 51: 404-405.
- Umeh, E.U; Hassan, M and Ogbulie.A (2006) Host-related risk factors associated with asymptomatic bacteriuria in a rural community in Benue State, Nigeria. *Nigerian journal of Microbiology.* 20: 873-879.
- Uwaezuoke, J.C and Ogbueli J.N. (2006). Asymptomatic bacteriuria amongst school girls in Owerri. *Nigerin journal of Microbiology* 20:880-885.
- VOLK, W.A., Swatzwelder, T.C., and Winberg, J. (2000). Urinary Tract infection in men, Bacterial growth in Human Urine. *Basic Microbiology.* London: Edward Arnold Ltd 220-231.