

Asymptomatic Bacteriuria (ASB) in Pregnant Women in Enugu, Nigeria.

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Abstract

Background: The main goal of detecting and treating asymptomatic bacteriuria (ASB) in pregnant women is to prevent urinary tract infection (UTI) and its consequences. The value and cost effectiveness of routine screening for ASB in pregnancy is controversial. However, it is agreed that it is worthwhile in populations with high incidence of ASB in pregnancy.

Objective: This study aims to evaluate the prevalence, demographic and microbiological characteristics of ASB in pregnancy among booked antenatal patients in Enugu.

Study design, setting and subjects: This is a prospective study covering nine months and involving all consenting patients booked at the antenatal clinic of University of Nigeria Teaching Hospital Enugu. Questionnaires were used to collect information from the patients and their urine samples examined.

Results: 430 women who had no symptoms of urinary tract infection in pregnancy were screened for ASB. 15.1% of them had ASB in pregnancy. 18.3% of them were in the second trimester. 64.6% of patients with ASB had normal urinalysis. *Escherichia coli* was the commonest pathogen isolated (30.8%). The antibiotic with the highest sensitivity was nitrofurantoin.

Conclusion: The prevalence of ASB in our locality is high (15%). We recommend the use of urine culture to routinely screen all pregnant women at their first prenatal visit.

Key Words: Asymptomatic bacteriuria, pregnancy, urine culture.

Introduction

Asymptomatic bacteriuria (ASB) is significant bacteriuria i.e. at least 10^3 pathogens of the same specie per milliliter of urine in two consecutive urine samples in the absence of any declared symptoms.¹ It is a risk factor for fetal and maternal morbidity. Among young girls, 1.2% of them will have ASB sometime before puberty; and this will increase to 10% with the onset of sexual activity². The prevalence of ASB in pregnancy is 5-10% with the vast majority antedating the pregnancy³.

Pregnancy does not increase the prevalence of ASB, but enhances its progression to symptomatic disease. Untreated, symptomatic UTI develop in 40% of these patients⁴. The incidence of UTI in pregnancy varies with the population, being 4 - 7%¹ in studies in North America, and 18.5%⁵ among Maori women in a New Zealand study. In Nigeria, there are three reports of asymptomatic bacteriuria in pregnancy, two of which were among antenatal patients in UCH Ibadan and showed a high incidence of 12%^{6,7} while in the third study, 4.5%⁸ was recorded in Orba, Nsukka. Thus, we decided to evaluate its incidence in our antenatal population.

Materials and Methods

During a nine-month period, all antenatal patients who consented to participate in the study were administered a protocol questionnaire obtaining the following data; age, LMP, gestational age, history of urinary symptoms, vaginal discharge, intake of antibiotics, diabetes

mellitus, hypertension, renal disease, sickle cell disease (SCD), and previous urinary tract infection (UTI). Out of these, 430 antenatal patients had no urinary symptoms and were screened for asymptomatic bacteriuria.

They were taught to collect urine specimens by the clean-catch mid-stream method after thorough antero-posterior swabbing of the vulva using gauze soaked in normal saline. Each patient collected 2 consecutive specimens into 2 separate sterile containers. Each specimen was sent immediately to the microbiology laboratory for urinalysis, microscopy and culture. Urine was analyzed for protein, sugar, white blood cells, red blood cells, and casts. Only specimens with bacterial counts greater than or equal to 100,000 bacteria per milliliter in each of two urine samples were considered significant. Sensitivity was determined using antibiotic discs. All positive cases were treated with antibiotics to which the organisms were sensitive. The urine samples of treated patients were re-examined 3 weeks later for relapse. All the patients were followed up till delivery.

Results

A total of 430 women with no urinary symptoms were involved in the study. Sixty-five of the 430 women had ASB on urine culture giving a prevalence of 15.1%.

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Table 1:
Urinalysis Results in 65 Women with ASB

Result	Number	%
Normal	42	64.62
Pyuria	18	27.69
Haematuria	5	7.69
Proteinuria	0	0.00
Casts	0	0.00
Total	65	100.00

The prevalence of ASB among different age groups in the study population were 19.5% in those 30 - 39 years of age, 12.6% in those 20 - 29 years of age while none of those less than 20 years (8) or 40 years and above (10) had ASB.

When the parities of patients were analyzed, 18.33% of para 3-4 subjects had ASB, 18.18% of para 5 or more subjects had ASB and 14.66% of para 1-2 subjects were positive for ASB. Among the ladies screened, 18.49% of them in the second trimester had ASB, 13.91% in the third trimester had ASB, and 3.7% of those in the first trimester had ASB. However, the differences were not statistically significant in all three cases ($p > 0.05$).

The urinalysis of 65 women with ASB in pregnancy is depicted in Table I. It shows that 64.62% of patients with ASB had normal urinalysis. 26.69% had pyuria and 7.69% had haematuria. Table II shows the pathogens isolated from the urine samples of the 65 pregnant women with ASB. *Escherichia coli* was the greatest number of isolates occurring in 30.77%, then *Staphylococcus aureus* 26.15% and *Streptococcus faecalis* at 23.08%. Most of the organisms were highly sensitive to nitrofurantoin, nalidixic acid and gentamicin, moderately sensitive to colistin and erythromycin, and least sensitive to ciproxin, cefuroxime and chloramphenicol.

There was no re-infection or relapse in all cases treated. Pregnancy outcome was satisfactory as all babies were of normal weight with no malformations.

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Table 2:
Pathogens isolated from Urine samples of 65 Pregnant Women with ASB

Pathogen	Number	%
E. coli	20	30.77
Staph. aureus	17	26.15
Staph. albus	5	7.69
Strep. faecalis	15	23.08
Pseudomonas	5	7.69
Proteus species	3	4.62
Total	65	100.00

Discussion

The incidence of ASB in our series is 15.1% and is consistent with the findings in antenatal patients in UCH, Ibadan⁷. This may be due to the fact that it is equally a hospital incidence. The high incidence may also be explained by the fact that only one examination was performed on each patient and a positive culture in a particular examination may be negative in a second examination⁹. An incidence of 4.5%⁸ was obtained in pregnant women in Orba, a rural community in Nsukka, Enugu State.

64.6% of pregnant women with ASB had normal urinalysis. This is in keeping with findings in literature. McNair et al¹⁰ found a false negative rate of 19.4% in their population. Most (18%) of the pregnant women with ASB were in their second trimester. However, there was no statistical significance when compared to the other trimesters. This may be due to our small sample size. It is agreed that with an incidence of 9% or more, routine screening should be a standard of care in that population¹¹. Every community needs to find out its incidence so as to determine the value of routine screening.

In conclusion, an incidence of 15% is disturbingly high and we recommend routine culture at booking, preferably in the second trimester in all pregnant women, to reduce the incidence of urinary tract infection and its consequences. A survey of bacteriuria in the puerperium will be the subject of a later communication.

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