AN APPRAISAL OF ASYMPTOMATIC BACTERIURIA IN PREGNANCY–THE LAGOS STATE UNIVERSITY TEACHING HOSPITAL EXPERIENCE

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Abstract

Background

Obstetric care aims at reducing maternal (and perinatal) mortality and morbidity making the identification and management of related risk factors, such as asymptomatic bacteriuria in pregnancy of paramount importance. This study aimed at determining the prevalence of asymptomatic bacteriuria in the booking antenatal patients as no such data exist for this centre.

Methods

Three hundred and fifty two (352) patients attending the antenatal booking clinic who had not used any antibiotic within the last 3 months prior to presentation were recruited into the study after informed consents were obtained. Having been taught the art of urine collection, a mid-stream urine specimen was taken and immediately plated on and cultured in Cysteine-Lactose Electrolyte Deficient (CLED) media and Mac-Conkey agar[1] at the medical laboratory under aerobic condition at 37^0C.

Results

Out of the 352 patients in the study, 31 [8.8%] were excluded from the analysis because they had symptoms relating to the urinary tract infections. Among the remaining 321 patients whose urine samples were cultured, 36 [11.2%] samples yielded significant growth of bacteria (greater than $1x10^5$ per ml of urine)**.** Ninety seven (97) samples yielded mixed growths of organisms of no significance while there was no growth in 188 samples. The bacterial species identification showed a preponderance of Escherichia coli (48.5%).

Discussion

The finding of a prevalence of 11.2% for asymptomatic bacteriuria in the booking antenatal patients in this study shows that attention should be given to pregnant patients to prevent sequelae such as pyelonephritis in the mother and adverse fetal outcome. The high incidence of Klebsiella species (12.3%) is a cause for concern.

Conclusion

Proper surveillance will reduce maternal and perinatal mortality and morbidity.

Keywords: *Asymptomatic bacteriuria, booking antenatal patients, pregnancy*

Introduction

Pregnant women are at increased risk of urinary tract infection. Beginning at six weeks gestation and peaking at the twenty fourth week of pregnancy, about 90% of pregnant women develop urethral dilatation which remains till delivery due to many factors including hormonal changes [2] Since qualitative urine culture technique was introduced and women differentiated into those with bacteriuria and those without, the impact of asymptomatic bacteriuria on pregnancy outcome has been in focus[2,3]

Asymptomatic bacteriuria (ASB) connotes the presence of bacteria in the urine (greater than 10^5 bacteria per ml) while there is no symptom. Asymptomatic bacteriuria has been associated with overt urinary tract infection in late pregnancy, intra-uterine growth restriction, preterm delivery, stillbirth and even early perinatal morbidity and mortality. (2,3,4,5)

The Lagos State University Teaching Hospital (LASUTH) is a relatively new tertiary health facility serving a broad spectrum of the population of the cosmopolitan city of Lagos with a delivery rate of about 4000/per annum.[6] However, it still lacks institution-based baseline data to assist in formulating management protocols. This study was therefore designed to determine the incidence of significant bacteriuria in pregnant women at the booking clinic; define the presence or absence of symptoms; and analyze the specific flora and their sensitivity pattern.

Subjects and Methods

A total of three hundred and fifty two (352) pregnant patients attending the booking clinic at the Department of Obstetrics and Gynecology unit (Ayinke House), Lagos State University Teaching Hospital, Ikeja constituted the study population**.** All the patients

were counseled and written consent received. Questionnaires were administered requesting demographic data for age, parity, blood group and Rhesus factor. In addition, questions were asked as to the presence of frequency of micturition, pain during voiding of urine [dysuria], loin pains or fever. However, patients with any past history of diabetes mellitus or chronic renal disease were excluded from the study.

Mid-Stream Urine samples were collected in sterile universal specimen bottles, having tutored each patient in the art of collection, and immediately cultured in Cysteine-Lactose Electrolyte Deficient (CLED) media and Mac Conkey agar[1] at the medical laboratory under aerobic condition at 37^{o}C. Bacterial specie identification was done and sensitivity pattern of the organisms determined. (7)

Results

Of the 352 patients, 168 were primigravidae while 184 were multigravidae. [P: M=1:1.1]. The patients' ages ranged from19 to 40 years with the 31-35 age range accounting for over 42% of the study population. (Table I)

Out of the 352 patients in the study, 31 [8.8%] had symptoms suggestive of urinary tract infections and were excluded from the analysis.

Of the remaining 321 patients urine samples cultured, 36 [11.2%] samples yielded significant growth of bacteria [greater than 1x10^{5}bacteria per ml of urine]**.** Ninety seven (97) samples yielded mixed growth of organisms of no significance, while 188 samples yielded no growth at all.

Majority of the study group [52%] had Blood group O, while 20.0% were blood group A and 24.0% blood group B.

There was no patient with SS genotype. Genotype AA accounted for 70.7%; AS [21.3%]; AC [6.7%]; and SC [1.3%].

The specific organisms [bacteria] isolated are as shown in Table II with Escherichia coli being 48.5% of the isolates.

Discussion

The pioneering work of Edward Kass discovered that 6% of pregnant women had asymptomatic bacteriuria[2] which has been associated with increased prematurity and increased perinatal mortality compared with women with sterile urine. [2,3,4]

In this study, of the 321 patients' urine sample cultured, 36 (11.2%) samples yielded significant growth of bacteria (greater than 10^5 per ml of urine). This compares favorably with 12.7% reported from Enugu [9], but less than figures reported from Benin [11] and from Ile-Ife [12]. Akinloye et al however, reported a prevalence rate of 21% at Ibadan [8].

It has been reported that bacteriuria in pregnancy increases from the first trimester of pregnancy and also with increasing age [8]. In our study, 42.1% of the study population is between 31-35years and the gestational age of the pregnancy between 21-26weeks thus the prevalence of 12.7%

In this study there was no patient with SS genotype and it is noted that even the SC patients had no bacteria in the urine. It was noted however, that 25% of AS genotype patients had asymptomatic bacteriuria compared with 12% of AA genotype patients which contrasts with AR Thuman et al [13] who stated that sickle-cell trait carriers were no more susceptible to acute cystitis and asymptomatic bacteriuria than were the control patients.

The specific bacteria isolated in the study specimens showed a preponderance of *Escherichia coli* (48.5%) as had been reported by others [5, 9, 10, 12, 14]. However the increasing influence of *Klebsiella* species (12.3 %.) as pointed out by Thuman AR et al [13] and Omoigberale AI et al [11] was also noted in this study.

In our environment, because of the mandatory blood donation by the husbands of the patients before registration for antenatal care, most of the study group patients were between 21and 26 weeks pregnant. This may also explain the prevalence of asymptomatic bacteriuria (11.2%) in this study.

Conclusion

The increasing influence of *Klebsiella* species (12.3 %.) as seen in the study, calls for a re-evaluation of age long view of E. coli as the commonest pathogen in asymptomatic bacteriuria. Thus proper surveillance to reduce maternal and perinatal mortality and morbidity is suggested.

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Table I: The Demographic Picture of Subjects

AGE	NUMBER	%	PARITY	
			PRIMIGRAVID	MULTIGRAVID
< 20	5	1.4	5	Nil
21-25	36	10.2	31	5
26-30	127	36.1	76	51
31-35	148	42.1	51	97
36-40	36	10.2	5	31
>40	Nil	Nil	Nil	Nil
Total	352	100	168	184

Table II: Organisms Isolated and Percentages

Microorganism	Numbers	Percentage (%)
1. *Escherichia coli*	18	48.5
2. *Klebsiella aerogenes*	4	12.3
3. *Proteus sp.*	4	12.3
4. *Streptococcus agalactiae*	3	9.2
5. *Staphylococcus saprophyticus*	3	8.0
6. *Staphylococcus aureus*	2	6.1
7. *Pseudomonas aeruginosa*	2	3.6
Total	36	100