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Gynaecology

THE STUDY OF PREVALENCE OF ASYMPTOMATIC BACTERIURIA IN ANTENATAL WOMEN.

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ABSTRACT

BACKGROUND: Asymptomatic becteriuria (ASB) is one of the manifestations of UTI in which urine culture reveals a significant growth of pathogenic bacteria (greater than 105 bacteria/ml) without the presence of symptoms of urinary tract infection (UTI). Urine culture is the gold standard test for detecting ASB. Most Common organisms isolated is Escherichia coli .The Prevalence of ASB in developing countries is 5-12%.ASB is more common in pregnant females and if left untreated can cause adverse maternal and fetal outcomes . Hence, the present study was aimed to know the prevalence of ASB, and to highlight the importance of universal screening for ASB in antenatal women in our population. .

METHODS: A total of 200 antenatal women having no clinical features of urinary tract infection were recruited for this study over a period of 6 months. Midstream urine sample was collected and sent for routine examination and culture-sensitivity testing.

RESULTS: Significant bacteriuria was detected in 19 (9.5%) antenatal women. Of them 36.8% were in the age group of 26-30 years. Maximum no. of culture positive cases were multi-gravida (63.2%) and were in their second trimester (63.2%). Majority of the women were illiterate or educated upto primary school only (36.8%, 31.5%). Maximum cases were from class IV and V (47.4% and 31.6%), The most common organism isolated was E. coli (68.4%)

CONCLUSIONS: Screening of pregnant women for ASB may safeguard maternal and fetal health and reduce all the sequelae of ASB during pregnancy. Hence urine culture should be a part of routine antenatal investigations and also health education on personal hygiene should be incorporated in all ANC clinics.

KEYWORDS : ASB, UTI, Antenatal women, Urine culture

INTRODUCTION

Urinary Tract Infection (UTI) is one of the common infections. It is more common in women because their urethra is short and is close to anus and vagina.[1,2] Asymptomatic becteriuria is one of the manifestations of UTI in which urine culture reveals a significant growth of pathogenic bacteria (greater than 10^5 bacteria/ml) without the presence of symptoms of urinary tract infection (UTI).[3] Urine culture is the gold standard test for detecting ASB.[4-6] It can be a useful screening test if done between 12-16 weeks of gestation routinely. Most Common organisms isolated is *Escherichia coli* (80-85%), followed by *Staphylococci*, *Klebsiella*, *Pseudomonas* etc. The Prevalence of Asymptomatic Bacteriuria (ASB) as documented by various studies, in developing countries is 5-12%, while in the West it is approximately 2-7%.[2] The higher prevalence in developing world may be due to lack of personal and environmental hygiene, socio-economic status, parity and race.[3]

ASB is more common in pregnant females because of urinary stasis due to smooth muscle relaxation effect of progesterone ,reduced immunity , renal glycosuria and various anatomical changes of pregnancy.[7,8] Untreated asymptomatic bacteriuria in pregnancy can cause adverse maternal and fetal outcomes like pyelonephritis, cystitis, hypertension, preeclampsia, anaemia and preterm labour in mother while fetal complications include IUGR, prematurity, low birth weight and even death[9-11]These complications are preventable by timely detection and treatment.

Urine culture, currently is not included in routine antenatal investigations, may be due to cost and time factors. Hence, the present study was aimed to know the prevalence of ASB, and to highlight the importance of universal screening for ASB in antenatal women in our population. .

MATERIALS AND METHODS.

This prospective study was conducted in the Department of Obstetrics and Gynecology, SSMCH Jabalpur on 200 antenatal women, during a period of march- August 2018.

Inclusion criteria
• All antenatal women, attending antenatal OPD irrespective of their period of pregnancy.

Exclusion criteria
• Women with symptoms of UTI.
• History of fever.
• History of diabetes.
• History of sickle cell trait.
• Pre-eclampsia.
• Vaginal infections.
• Known case of renal disease.
• Catheterization during last 2 weeks.
• Antibiotic intake during last 2 weeks.
• Known congenital anomaly of urinary tract.
• Not giving consent.

After taking informed consent cases were interviewed for demographic details including age, parity, gestational age, education and socioeconomic status. They were instructed regarding collection of "clean catch" mid-stream urine sample in sterile, wide mouthed container covered with a tightly fitted lid. The sample was processed on the same day. After physical examination, culture of urine sample was done on a Blood agar, CLED & Mac Conkey agar plates. After 24 hours of incubation, bacterial growth of $>=10^5$ was considered significant. Colony morphology, gram staining, motility test, catalase test, oxidase test, coagulase test, and other standard microbiological procedures were used to identify the isolates. Chi-square test was applied. P-value less than 0.05 was considered statistically significant.

RESULTS

Table 1 shows the demographic features such as age, gestational age, parity, and socio-economic status of the cases. Out of 200 pregnant women screened , maximum cases were from age group of 21-25 years (45%) followed by 26-30 years and < 20 years respectively(32.5%, 13.5%) .In our study maximum no. of cases were in their second trimester of pregnancy (44.5%), 58% cases were multi-gravidas while 42% were primi. 19.5% cases were illiterate and maximum patients belonged to lower socio-economic class (class III- 43.5%, class IV – 34.5% and class V – 16%)(table- 1)

Table 1: Distribution of pregnant women according to Demographic features (n=200)

Demographic variable	Number of cases	Percentage
Age		
<20	27	13.5
21-25	90	45
26-30	65	32.5
>30	18	09
Gestational age		
I trimester	42	21
II trimester	89	44.5
III trimester	79	34.5
Parity		
Primigravida	84	42
Multigravida	116	58
Education		
Illiterate	39	19.5
Primary school	59	29.5
High school	74	37
Graduate and above	28	14
Socio-economic status		
Class I	00	00
Class II	12	06
Class III	87	43.5
Class IV	69	34.5
Class V	32	16

Out of 200 urine samples tested, significant bacteriuria was reported in 19 samples , the prevalence being 9.5%.143 (71.5%) samples were sterile, 33 (16.5%) were contaminated, and insignificant growth was seen in 5 cases (2.5%) (Table2). Table 3 shows the association of culture positive cases with demographic features. Of the 19 cases with significant growth, 7 (36.8%) were in the age group of 26-30 years, 5 (26.3%) were between 21-25 years, 4 (21.1%) were of <20 years and 3 (15.7%) of >30years. Maximum no. of culture positive cases were multi-gravida (63.2%) and were in their second trimester (63.2%), however the result was not significant (P > 0.05). Majority of the cases of ASB were illiterate or educated upto primary school only (36.8%, 31.5%).None of the 200 cases belonged to socioeconomic class I. Maximum cases of ASB were from class IV and V (47.4% and 31.6%), 15.7% cases were from class III and 5.3% from class II. This association of ASB with socioeconomic status was found to be significant (p <0.05).The most common organism isolated was *E. coli* in 13 (68.4%) cases, followed by *K. Pneumonia* in 3 (15.7%), *S. aureus* in 2 (10.6%) and *P. Mirabilis* in 1 (5.3%) of them (Table 4).

Table 2: Results of urine culture (n=200)

Result of culture	Number of cases	Percentage
Significant bacteriuria	19	9.5
Insignificant bacteriuria	05	2.5
Contamination	33	16.5
Sterile	143	71.5

Table 3: Association of culture positive cases with Demographic features.

Demographic variable	Number of culture positive (n = 19)	Number of culture negative (n=181)	P value
Age			
<20	4 (21.1%)	23(12.7%)	0.2942
21-25	5 (26.3%)	85(46.9%)	
26-30	7(36.8%)	58(32.1%)	
>30	3(15.7%)	15(8.3%)	
Gestational age			
I trimester	3(15.7%)	39(21.5%)	0.2215
II trimester	12(63.2%)	77(42.5%)	
IIItrimester	4(21.1%)	65(36%)	
Parity			
Primigravida	7(36.8%)	77(42.5%)	0.6321
Multigravida	12(63.2%)	104(57.5%)	
Education			
Illiterate	7(36.8%)	32(17.6%)	0.1789
Primary school	6(31.5%)	53(29.3%)	
High school	4(21.2%)	70(38.7%)	
Graduate and above	2(10.5%)	26(14.4%)	
Socio-economic status			
Class I	0(00)	0(00)	0.0478
Class II	1(5.3%)	11(6.1%)	
Class III	3(15.7%)	84(46.4%)	
Class IV	9(47.4%)	60(33.1%)	
Class V	6(31.6%)	26(14.4%)	

Table 4: Distribution of Bacterial isolates detected.

Organisms	Culture positive cases	Percentage
E. Coli	13	68.4
K. pneumoniae	03	15.7
S. aureus	02	10.6
P. mirabilis	01	5.3
Total	19	100

DISCUSSION

Urinary tract infection should be investigated carefully both clinically and by laboratory diagnosis followed by appropriate management. As ASB does not present with any signs and symptoms, it remains undiagnosed and thus may result in many maternal and fetal complications. Timely diagnosis and management can help to prevent such complications.

The prevalence of ASB in our study was 9.5% which is comparable with the finding of study by Radha S, et al.[12] where the prevalence was 8.2% and Abbas N, et al[13] which showed the prevalence of ASB being 8.89%. The result of our study, however, was significantly low as compared to findings of Imade et al[14], (45.3%) and Amadi et al, (78.7%).[15]This differences can be attributed to differences in environmental ,social and economical conditions of the community.

Present study showed increased prevalence of ASB in the age group of 26-30 years (36.8%) followed by 21-25 years (26.3%). However, no statistical association of ASB was found with age. Similar pattern was observed in other studies.[10-12]This could be due the fact that women belonging to this age group are sexually active, use contraceptive methods. Our study showed maximum incidence of ASB in multi-gravida (63.2%) which is comparable with the result of Prabhavathi V, et al[16] where 70.7% of the cases were multiparous. The multiple pregnancies may result in the descent of pelvic organs which leads to widening of the urethral orifice, making ascend of microorganisms easier. Majority of the cases (63.2%) in our study were in the second trimester. The lowest frequency was observed in the first trimester of pregnancy, (15.7%).The result however was not significant (P>0.05). Similar results were seen in the studies of Abdel-Aziz Elzayat M, et al[11] who reported a higher prevalence of ASB in the second trimester compared to the third trimester.

In our study highest prevalence of ASB was seen in illiterates (36.8%) and in cases belonging to lower socio-economic classes (class IV - 47.4% and V-31.6%). This association of ASB with socioeconomic status was found to be significant (p <0.05). Poor hygiene and lack of basic facilities may be the reason behind this result. Similar trend was noted in the study by Lavanya et al,[17]

As evidenced in several studies, *E. coli* is the most frequent organism isolated in the urine samples of pregnant women with ASB.[4,14] In our study also the most common organism isolated was *E. coli* (68.4%) , followed by *K. Pneumonia* (15.7%), *S. aureus* (10.6%) and *P. Mirabilis* (5.3%) . The results can be compared with the studies of Abbas N, et al,[13] and Prabhavathi V, et al,[16] where again E.coli was found in cultures most frequently.

CONCLUSION

The prevalence of ASB in our study was 9.5%, which is quite high. No significant relationship of ASB was found with age, parity, trimester and educational status but ASB had significant relationship with Socio-economic status (P<0.05). E. coli was most dominant organism isolated in culture.

Thus screening of pregnant women for ASB may safeguard maternal and fetal health and reduce all the sequelae of ASB during pregnancy. Hence by this study we suggest that urine culture should be a part of routine antenatal investigations and also health education on personal hygiene should be incorporated in all ANC clinics.

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