

## Original Article

### Evaluation of asymptomatic bacteriuria in pregnancy

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#### ABSTRACT:

**Background:** Urinary tract infections commonly occurs in pregnancy due to the morphological and physiological change that take place in genito- urinary tract. The present study was conducted to evaluate asymptomatic bacteriuria in pregnancy.

**Materials & Methods:** 72 patients diagnosed with asymptomatic bacteriuria were included. In all urine routine and urine culture sensitivity was performed. **Results:** Urine culture showed negative in 25%, significant bacteriuria in 3% and insignificant growth in 72%. Bacteriuria was seen in 45% second, 30% primi, 15% in 3<sup>rd</sup> and 10% in 4<sup>th</sup> gravida. Bacteriuria was seen in 11% in 1<sup>st</sup>, 31% in 2<sup>nd</sup> and 58% in 3<sup>rd</sup> trimester. Patients with 10-10.9 had 68% and >11 gm% had 32% bacteriuria. Patients with 25-29.9 BMI had 28% and >30 BMI had 72% bacteriuria. Microorganisms found were E. coli in 45%, staphylococcus aureus in 30%, Klebsiella Oxytoca in 12% and Enterobacter aerogenes in 13%. The difference was significant (P< 0.05). **Conclusion:** Urine culture sensitivity is considered as the gold standard test to detect asymptomatic bacteriuria. Most common isolated microorganism was E. Coli and Staphylococcus aureus.

**Key words:** Asymptomatic bacteriuria, E. coli, Urine culture sensitivity

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#### INTRODUCTION

Prevalence of bacteriuria is common in women due to short urethra, and easy contamination of urinary tract with fecal flora and it increases with age and/or sexual activity. Urinary Tract Infections (UTIs) commonly occurs in pregnancy, due to the morphological and physiological change that take place in genito urinary tract.<sup>1</sup>

Pregnant women are affected twice as compared to non- pregnant women in acquiring urinary tract infections because of the anatomical and physiological changes occurring in pregnancy. Urinary tract infections may be associated with symptoms or without symptoms.<sup>2</sup> In females, urethra is short and located close to the anal canal due to which it can be easily contaminated with fecal microorganisms and thereby increase the chance of urinary tract infections.<sup>3</sup>

Asymptomatic Bacteriuria (ASB) is defined as the presence of actively multiplying & persistently appearing bacteria, which is greater than 10<sup>5</sup> /ml of urine within the urinary tract, excluding the distal

urethra, at a time when the patient has no symptoms of a UTI. ASB can be found in both pregnant and non-pregnant women.<sup>4</sup>

Untreated asymptomatic bacteriuria in pregnancy leads to progression into pyelonephritis in few cases. Complications associated with untreated bacteriuria include neonatal complications like low birth weight and preterm babies, intrauterine growth retardation and also increased Perinatal mortality and morbidity.<sup>5</sup> Maternal complications include anaemia, hypertensive diseases, preterm labour, chorio amnionitis, and postpartum endometritis. If early diagnosis of this asymptomatic bacteriuria by routine screening is made and treated appropriately these complications can be prevented.<sup>6</sup> The present study was conducted to evaluate asymptomatic bacteriuria in pregnancy.

#### MATERIALS & METHODS

The present study comprised of 72 patients diagnosed with asymptomatic bacteriuria. They were made ware of the study and their written consent was obtained.

Demographic data of each patient was recorded. Obstetric examination was done. Routine investigations such as Hb, TLC, platelet count, RBS, urine routine and urine culture sensitivity was performed. A clean catch, mid- stream urine sample in the sterile wide mouthed leak proof container with lid was collected and urine routine and Urine C/S was done. Urine routine and microscopy was done to look

for urine albumin, sugar, pus cells, epithelial cells and casts. Urine culture is proceeded by a standard loop method where a loop of sample is streaked over the culture media (MacConkey and Blood agar) and incubated at 37°C for 24 hours to see for any growth. Results thus obtained were studied statistically. P value less than 0.05 was considered significant.

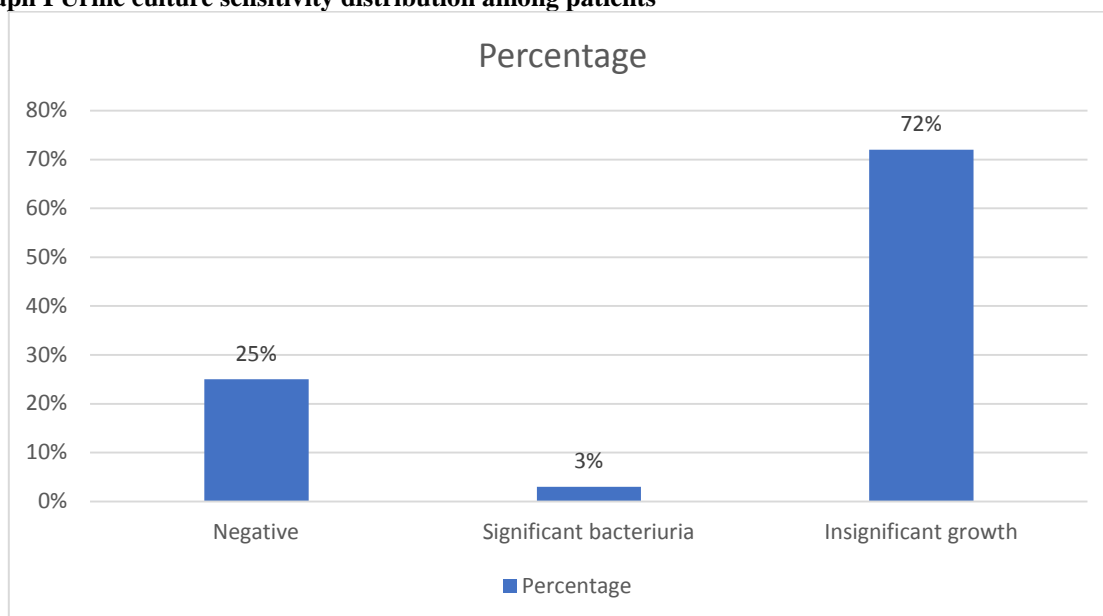
**RESULTS**

**Table I Urine culture sensitivity distribution among patients**

Urine culture sensitivity	Percentage	P value
Negative	25%	0.01
Significant bacteriuria	3%	
Insignificant growth	72%	

Table I, graph I shows that urine culture showed negative in 25%, significant bacteriuria in 3% and insignificant growth in 72%. The difference was significant (P< 0.05).

**Graph I Urine culture sensitivity distribution among patients**



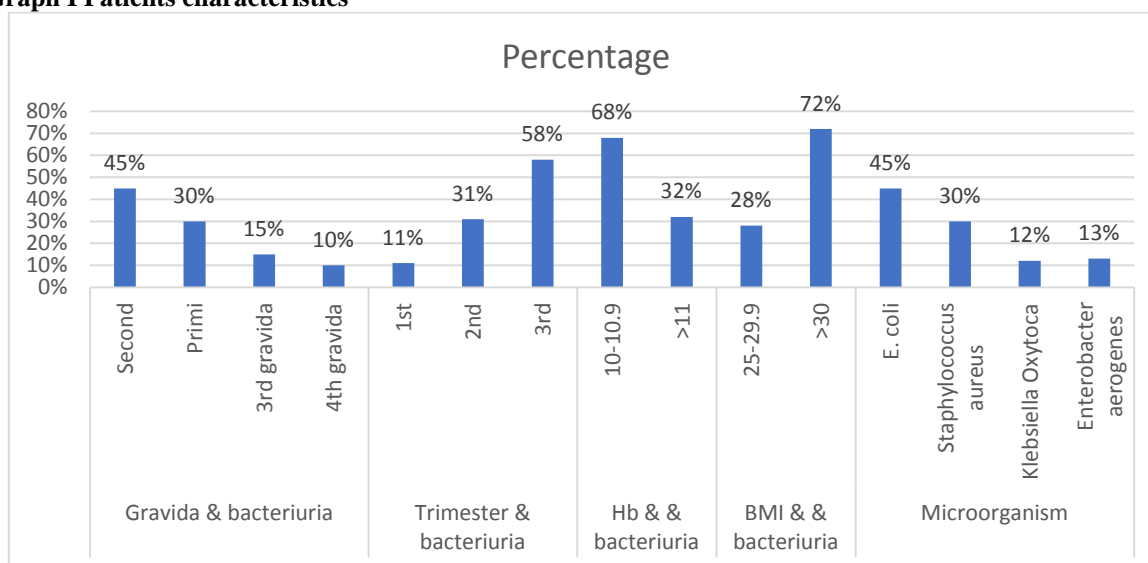
**Table II Patients characteristics**

Parameters	Variables	Percentage	P value
Gravida & bacteriuria	Second	45%	0.041
	Primi	30%	
	3 <sup>rd</sup> gravida	15%	
	4 <sup>th</sup> gravida	10%	
Trimester & bacteriuria	1 <sup>st</sup>	11%	0.024
	2 <sup>nd</sup>	31%	
	3 <sup>rd</sup>	58%	
Hb & & bacteriuria	10-10.9	68%	0.05
	>11	32%	
BMI & & bacteriuria	25-29.9	28%	0.02
	>30	72%	
Microorganism	E. coli	45%	0.03
	Staphylococcus aureus	30%	
	Klebsiella Oxytoca	12%	
	Enterobacter aerogenes	13%	

Table II, graph I shows that bacteriuria was seen in 45% second, 30% primi, 15% in 3<sup>rd</sup> and 10% in 4<sup>th</sup> gravida. Bacteriuria was seen in 11% in 1<sup>st</sup>, 31% in 2<sup>nd</sup> and 58% in 3<sup>rd</sup> trimester. Patients with 10-10.9 had 68% and >11

gm% had 32% bacteriuria. Patients with 25-29.9 BMI had 28% and >30 BMI had 72% bacteriuria. Microorganisms found were *E. coli* in 45%, *staphylococcus aureus* in 30%, *Klebsiella Oxytoca* in 12% and *Enterobacter aerogenes* in 13%. The difference was significant ( $P < 0.05$ ).

**Graph I Patients characteristics**



## DISCUSSION

Progesterone in pregnancy causes changes such as increased bladder volume, decrease in tone of ureter and bladder. Decrease in peristalsis of ureter causes mild hydronephrosis and urinary stasis which is favourable for the growth of microorganisms causing Asymptomatic bacteriuria.<sup>7</sup> In the later trimesters as the gravid uterus enlarges it exerts pressure over the urinary bladder leading to rise in intra vesicular pressure, vesico ureteral reflex and retention of urine which provides suitable medium for the growth of bacteria.<sup>8</sup> Glycosuria in pregnancy is due to raised glomerular filterate and inability of the renal tubules to completely reabsorb the filtered glucose and it provides good environment for the growth of bacteria in glycosuric urine.<sup>9</sup> The present study was conducted to evaluate asymptomatic bacteriuria in pregnancy.

We found that urine culture showed negative in 25%, significant bacteriuria in 3% and insignificant growth in 72%. Mallikarjun et al<sup>10</sup> found that out of 200 patients studied, significant bacteriuria was noted in 36 (18%) cases and 8(4%) patients had insignificant bacteriuria. Highest incidence of 22 cases (61.11%) were reported in the age group of 26-35 years. It was found that asymptomatic bacteriuria showed significant increase with respect to parity, higher incidence was seen in multi gravidae 58.9% (3rd and 4th parity). Incidence of Asymptomatic bacteriuria was found to decrease with the increase in gestation time, maximum number were noted in first trimester 19 (52.78%) followed next by second trimester 13 (36.11%) and in third trimester 4 (11.11%). *E. coli* 20 (55.56%), was the most common etiological agent followed by *Klebsiella spp* in 9 cases (25%) *Coagulase negative Staphylococcus* in 2 cases (5.56%) and *Pseudomonas spp* in 2 cases (5.56%),

*Proteus mirabilis* and *Enterobacter*, *Staphylococcus aureus* each in one case (2.78%) all the strains were sensitive to imipenem and meropenem. As asymptomatic bacteriuria is associated with complications in pregnancy, it is therefore imperative that pregnant women be screened for bacteriuria, periodically in every trimester of the gestational period.

We found that bacteriuria was seen in 45% second, 30% primi, 15% in 3<sup>rd</sup> and 10% in 4<sup>th</sup> gravida. Bacteriuria was seen in 11% in 1<sup>st</sup>, 31% in 2<sup>nd</sup> and 58% in 3<sup>rd</sup> trimester. Patients with 10-10.9 had 68% and >11 gm% had 32% bacteriuria. Patients with 25-29.9 BMI had 28% and >30 BMI had 72% bacteriuria. Microorganisms found were *E. coli* in 45%, *staphylococcus aureus* in 30%, *Klebsiella Oxytoca* in 12% and *Enterobacter aerogenes* in 13%. Jojan et al<sup>11</sup> found out the prevalence of urinary tract infections in asymptomatic pregnant women and to study the antimicrobial susceptibility pattern of the isolated bacteria to guide the treatment. A total of 100 mid-stream urine samples from Asymptomatic Antenatal Care (ANC) cases were screened for significant bacteriuria by using standard procedures. The bacterial isolates were subjected to antimicrobial susceptibility studies. Significant bacteriuria was found positive in 23% cases. It was more common and in the age group 18 to 25 years (91.30%), and during 2 trimester (47.82%). *S. aureus* (82.60%) was found to be the most common uropathogen. Imipenem and meropenem (82.60% each) were found to be most effective antimicrobial agents. Kant et al<sup>12</sup> estimated the proportion of pregnant women with UTI among antenatal clinic attendees in rural Haryana. A total of 1253 pregnant women were included in the study. The proportion of women with symptoms of UTI on the

basis of history was 33.3% and UTI by colony count was 3.3%. The presence of UTI was found to be significantly associated with the presence of any symptom of UTI on multivariate analysis.

### CONCLUSION

Authors found that urine culture sensitivity is considered as the gold standard test to detect asymptomatic bacteriuria. Most common isolated microorganism was *E. Coli* and *Staphylococcus aureus*.

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