ASYMPTOMATIC BACTERIURIA IN PREGNANCY AND COMPLICATIONS ASSOCIATED WITH ASYMPTOMATIC BACTERIURIA

Microbiology

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ABSTRACT

Introduction- Urinary tract infections refers to both microbial colonization of urine and tissue invasion of any structure of urinary tract. ASYMPTOMATIC BACTERIURIA (ASB) is a condition in which urine culture reveals significant growth of pathogens that is greater than 1,00,000 bacteria/ml of urine but not showing symptoms of urinary tract infection. Asymptomatic bacteriuria may be of significance or to doubtful significance or of no significance depending on number of bacteria present in urine. ASB is more common in women. **Material and Method-** The present study was conducted on 200 pregnant women without any symptoms of urinary tract infection attending Obs & Gynae department of RIMS, Ranchi, Jharkhand. It was conducted between August 2013 to December 2014. Urine specimen should be cultured for isolation of the common agents of UTI. The urine should be mixed thoroughly before plating. The plates are inoculated using a calibrated loop designed to deliver a known volume either 0.01 or 0.001 ml. Choice of media to inoculate depends on patient served and microbiologist preference, usually MacConkey Agar and 5% Blood Agar were used. In recent years a selective media CLED (Cysteine lactose electrolyte deficient) agar is used. This media is selective for urinary pathogens cultured plates are incubated at 37°C for 24 hrs. Colony count is done >100000/ml of CFU was taken as significant bacteriuria. Kirby Baur disc diffusion is used for sensitivity test. **Result** – Asymptomatic bacteriuria is seen in 7.5% cases. It is more common in age group 20- 30 yrs age group and in second trimester of pregnancy. Most common species isolated was E.coli followed by Klebsiella species. **Discussion-** The percentage of ASB in the present study (7.5%) correlates with the studies of Lavanya SV et al 2002 (8.4%) CA Turpin et al 2007 (7.3%) & R. Sujata et al 2012 (7.3%). In this study, culture positivity with significant bacteriuria was highest in age group 20-30 yrs (73.34%). In 2011 study done by Dr. Rajshekhar maximum incidence was seen in 20-30 yrs age (57.57%).

KEYWORDS

INTRODUCTION:

Urinary tract infections refers to both microbial colonization of urine and tissue invasion of any structure of urinary tract.

ASYMPTOMATIC BACTERIURIA (ASB) is a condition in which urine culture reveals significant growth of pathogens that is greater than 1,00,000 bacteria/ml of urine but not showing symptoms of urinary tract infection. Asymptomatic bacteriuria may be of significance or to doubtful significance or of no significance depending on number of bacteria present in urine. ASB is more common in women.

Prevalence of ASB in pregnancy varied from (4-7%). Complications associated with ASB when left untreated in previous study were pyelonephritis, hypertension, pre-eclampsia, anaemia. Foetal complications included premature birth, low birth weight, perinatal death. Early diagnosis of ASB during antenatal care may reduce complications to a greater extent.

METHODOLOGY:

The present study was conducted on 200 pregnant women without any symptoms of urinary tract infection attending Obs & Gynae department of RIMS, Ranchi, Jharkhand. It was conducted between August 2013 to December 2014.

EXCLUSION CRITERIA:-

- Pregnant women who were on antibiotic treatment within few weeks period to their initial visit.
- Those who exhibit exhibited clinical signs and symptoms of urinary tract infection.
- Functional and anatomical abnormality of urinary tract.

MEDIA'S USED:

- MacConkey Agar, Cled Media, Blood Agar, Mueller Hinton Agar, Christensen's urease medium, Simmon's citrate medium, TSI medium, SIM's media, Peptone water, Sugar set.
- Biochemical Reagents- Hydrogen Peroxide, Bile esculin disc, oxidase disc, Nitrate reduction reagent, Mc. Farland suspension, Antibiotic discs.

SPECIMEN COLLECTION-SPECIMEN COLLECTION-Clean Catch Midstream urine was collected. 10-20 ml was collected in a sterile wide mouthed container. Instructions for proper collection of urine sample was given to patients as contamination rate is high in women.

SPECIMEN TRANSPORTED- Urine should be immediately transported to laboratory or at 4°C it can be preserved for as long as 24 hrs. Ideally plating should be done within 2 hrs.

INOCULATION AND INCUBATION OF URINE CULTURES:

Urine specimen should be cultured for isolation of the common agents of UTI. The urine should be mixed thoroughly before plating. The plates are inoculated using a calibrated loop designed to deliver a known volume either 0.01 or 0.001 ml. Choice of media to inoculate depends on patient served and microbiologist preference, usually MacConkey Agar and 5% Blood Agar were used. In recent years a selective media CLED (Cysteine lactose electrolyte deficient) agar is used. This media is selective for urinary pathogens cultured plates are incubated at 37°C for 24 hrs. Colony count is done >100000/ml of CFU was taken as significant bacteriuria. For identification for bacteria isolated following test were done:-

- Motility
- Biochemical Reactions (catalase test,) coagulase test, oxidase test, indole test, MR test, citrate test, urease test, VP test, sugar fermentation test, TSI media.

ANTIMICROBIAL SUSCEPTIBILITY OF UR PATHOGENS.

The test was done using disc diffusion method (Kirby Bauer method.) Modified form of lawn culture is used for uniform growth for testing organism in mueller hinton agar plate. The plates are dried earlier. Broth containing the growth is taken and its turbidity is matched with 0.5 Mc farland solution to standardize the inoculum size. The inoculated plate are left at room temperature for 3-5 min and then antibiotic discs are applied. On a 90mm plate 6 antibiotic discs are applied. Then the plates are incubated at 37°C for 24 hrs. The results are read as sensitive, intermediate and resistant according to latest CLSI guidelines.

RESULT

Table:-1 CULTURE RESULTS

CULTURE RESULTS	No. of culture	Percentage%
Significant bacteriuria (>10 ⁵ CFU/ml)	15	7.5%
No Significant bacteriuria (>10 ⁵ CFU/ml)	16	8%
No Growth	169	84.5%
Total	200	100%

Table 2: Age Wise Distribution And Culture Positivity With Significant Bacteriuria

Age Groups In Years	No. of Cases Screened	No. of positive Culture with significant Bacteriuria	Percentage %
<20	46	3	20%
20-30	148	11	73.34%
>30	6	1	6.66%
Total	200	15	100%

Table-3 Percentage of culture positivity with significant bacteriuria in different trimester

Gestational Age	No. of Cases Sceened	No. of positive culture with significant bacteriuria	Percentage%
1 st Trimester	38	3	20
2 nd Trimester	93	9	60
3 rd Trimester	69	3	20

Table-4 Past H/O UTI and culture positivity with significant bacteriuria

Criteria	No. of Cases Screened	No. of cultures positivity with significant bacteriuria	Percentage %
Pat H/O UTI	49	11	73.34%
No Past H/O UTI	151	4	26.66%

Table-5 Uropathogens Isolated In Culture Showing Significant Bacteriuria

ORGANISM	No. of Cultures	Percentage%
ESCHERICHIA COLI	6	40%
KLEBSIELLA PNEUMONIAE	4	26.7%
PSEUDOMONAS AERUGINOSA	2	13.34%
PROTEUS SPECIES	1	6.66%
STAPHY LOCOCCUS AUREUS	1	6.67%
ENTEROCOCCUS SPECIES	1	6.66%

Table-6 Relation Of Prematurity With Asymptomatic Bacteriuria

Group	No. of Cases	Prematurity			
		Duration of gestation less than 36 wks		Weight less than 2500 g	
		Number	(%)	Number	(%)
BACTERIURIA TREATED	12	1	8.4%	2	16.6%
BACTERIURIA UNTREATED	3	1	33%	1	33%

DISCUSSION:

ASB is a common cause of serious maternal and perinatal morbidity.

- The percentage of ASB in the present study (7.5%) correlates with the studies of Lavanya SV et al 2002 (8.4%) CA Turpin et al 2007 (7.3%) & R. Sujata et al 2012 (7.3%)
- In this study, culture positivity with significant bacteriuria was highest in age group 20-30 yrs (73.34%). In 2011 study done by Dr. Rajshekhar maximum incidence was seen in 20-30 yrs age (57.57%).
- In the present study, ASB was noted maximum in 2nd trimester (60%) comparable with study by Dr. Rajshekhar et al 2011 (57.5%) and R.J. Girish Babu et al 2011 (40%).
- In the present study, E. coli was the predominant organism isolated (40%) The findings correlated with Gebre-Selassie S (46%) and CA Turpin (37.5%). Next predominant organism was Klebsiella Pneumoniae.

CONCLUSION AND SUMMARY:

This study included 200 pregnant women having no symptoms of UTI.

- The frequency of ASB was 7.5% showing significant bacteriuria.
- ASB was found common in 20-30 yrs age group (73.37%) and in 2nd trimester (60%) and in those with past history of UTI (73.34%)
- E. coli was the predominant organism isolated (40%) followed by Klebsiella pneumonia (26.7%)
- 70% cases were sensitive to Nitrofurantoin, 95-100% cases were sensitive to imipenem, 70-80% cases was sensitive to ceftaxone/ceftazidime.

To conclude all pregnant women should be screened for ASB to

prevent future complication that can occur due to untreated ASB like overt UTI, hypertension and in child prematurity. Proper hygiene, plenty of water & early diagnosis can prevent complications.

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