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Original Article

Empirical Treatment of Asymptomatic Bacteriuria (ASB) and Urinary Tract Infection (UTI) in Pregnancy

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Abstract
Objective: *Present study was undertaken to determine the prevalence of Asymptomatic Bacteriuria (ASB) and Urinary Tract Infection (UTI) in Pregnancy and to isolate the uropathogens and Drug used as empirical therapy.*
Materials and Methods: *A total of 260 Pregnant woman attending the Obstetrics & Gynaecology out patients door (GOPD), during routine Antenatal check-up were studied, from all the woman urine sample were collected send for routine examination of urine and Drug Sensitivity Test.*
Results: *Out of 260 Pregnant woman, 28 (10.76%) Pregnant woman had significant bacteriuria, Insignificant bacteriuria was found in 6 (2.3%) cases, 14 (5.38%) patient had contaminated growth and 212 (81.53%) cases were found culture negative. E. coli was most common isolates accounting 23 (82.14%), Klebsiella spp. and staphylococcus spp. were found in 2 (7.14%) and 2 (7.14%) respectively, only 1 (3.75%) isolates of Enterococcus faecalis was isolated. After Drug sensitivity Tests Amoxycillin, Ampicillin, Cephalexin, Nitrofurantoin, Fosomycin, Ceftriaxone, Cefuroxime and Cefazolin are sensitive and they are also safe in pregnancy.*
Conclusion: *Asymptomatic bacteriuria is common in Pregnancy. Woman coming for antenatal check-up must be recommended for urine culture and routine examination of urine to prevent the risk of developing symptomatic urinary tract infection, usually in the form of Pyelonephritis. In later pregnancy pyelonephritis increases risk of Pre-term labour (PTL), Low birth weight infants (LBW) and foetal mortality.*
Keywords: *Pregnancy, Bacteriuria, Pyelonephritis, Low birth weight, Drug Sensitivity.*

Introduction

Asymptomatic bacteriuria (ASB) is defined as persistent bacterial colonization of the urinary tract without specific urinary symptoms, defined by $>10^5$ CFU of a single organism. The IDSA (Infectious Disease Society Of America) recommends accepting a lower CFU of $>10^2$ of a single organism if symptomatic, Urinary Tract

Infection (UTI)/Cystitis has symptoms of Dysuria, increase frequency, urgency, haematuria, Pyuria, Chills and fever, Lower bechache, suprapubic Pain and lack of evidence for systemic illness. It occurs in 2 to 10% of Pregnancy. The Prevalence of infection in pregnant ladies is higher than non pregnant of same age group. This may be due to Hormonal (Progesterone) change.

Progesterone acts as smooth muscle relaxant and causes urinary stasis. Other morphological and physiological change in pregnancy also contribute to this infection. Mechanical compression from enlarging uterus is the principal cause of hydroureter and hydronephrosis and later on pyelonephritis. Difference in urine PH, osmolality, pregnancy induced glycosuria and amino aciduria may facilitate bacterial growth.

Predisposing or risk factor which may increase the ASB include :- Age, Parity, sexual activity, lower socioeconomic status, history of recurrent UTI, Diabetes Mellitus, anatomic or functional Genito-Urinary abnormalities, History of Chlamydia infection, and sickle cell disease (Renal damage).

Pregnant woman with undetected, untreated ASB in early pregnancy have a 20-40% risk of developing symptomatic urinary tract infection, usually in the form of Pyelonephritis. In later pregnancy Pyelonephritis increase risk of Pre Term Labour (PTL), Low Birth Weight infants (LBW), and foetal mortality. Pyelonephritis places the patients at increase risk of Anemia, Thrombocytopenia, Transient renal insufficiency, postpartum endometritis, sepsis and ARDS. Treatment of ASB has been shown to reduce subsequent infection by 80-90% and reduce incidence of preterm delivery and low birth weight infants.

Pyelonephritis occurs in 1-2% of pregnant woman, most often in the 2nd and 3rd trimesters. Associated with systemic symptoms including fever, Costovertebral tenderness, flank pain, nausea, vomiting, shaking chills, Lecocytosis and pyuria. Hospitalization is generally considered, although out patient management may be reliable.

E. coli is the most commonly Pathogens associated with ASB representing more than 80% of isolates. Other organism include Gram's Negative organism and Group B streptococci. Uropathogenic Gram's Negative bacteria posses specific virulence factor that enhance both colonization and invasion of urinary tract.

Materials and Methods

Present study was conducted in the Department of Pharmacology, Sri Krishna Medical College, Muzaffarpur with the help of Department of Microbiology and Department of Obstetrics and Gynaecology, during the period of October 2017 to June 2018.

A total of 212 pregnant women attending GOPD for routine antenatal check-up was clinically examined and send for routine examination of urine and Culture and Sensitivity Tests of urine. Culture and sensitivity test was done according to CLSI guidelines.

Results

Out of 260 pregnant women, 28 (10.76%) woman had significant bacteriuria, 6 (2.3%) woman had In significant bacteriuria, 14 (5.38%) patient had contaminated growth and 212 (81.3%) cases were found to be culture negative. E. coli was the most common isolates accounting 23 (82.14%), Klebsiella spp. and staphylococcus spp. were found in 2 (7.14%) and 2 (7.14%) respectively. Only 1 (3.57%) isolates of Enterococcus fecalis was isolated. Pregnancy safe antibiotic were sensitive, drugs used are Amoxycillin, Ampicillin, Cephalosporins (Ceftriaxone Cephalaxin, Cefuroxime, Cefazolin), Fosomycin and Nitrofurantoin.

Discussion

Urine culture by clean catch at initial (OB) Obstetrics visit best at 12-16 weeks, identifies 80%of woman with ASB. Urine cultures monthly would catch an additional 1-2%. Urinalysis and urine dipstic are not adequate screening for ASB (Presence of Pyuria, Leukocyte esterase, and

nitrites have high specificity but poor sensitivities and thus poor predictive value for ASB). Urine oxide tests may be acceptable (Semi quantitative dip inoculum method). Catheterized urine would catch 96% of ASB but increase complication risk in pregnant woman and is only indicated if repeated contaminated clean catch urine are obtained.

In the present study, clean catch urine was collected in sterile container after appropriate ano-genital toilet and culture was done by quantitative method, which is the gold standard for diagnosis (Bachman 1993; MC. Nair 2000). In this study significant bacteriuria was found in 10.76% cases where as 2 to 10% cases was reported by whalley 1967. Similar range were reported by Fatima 2006

Treatment

Medication commonly used, ultimately best choice on Drug sensitivities.

Amoxycillin-3 gm in a single dose or 500mg TID

Cephalaxin - 2 or 3 gm in a single dose or 250-500 mg QID

Ampicillin- 2 or 3 gm in a single dose or 250-500mg QID

Nitrofurantoin – 100mg BID (some evidence against use in 1st trimester due to its association with birth defect, but these studies were not strong.)

Fosomycin – 3g in a single dose.

Trimethoprin/Sulfa methoxazole – 160/800 BID (C/I in 1st trimester due to teratogenicity and in late 3rd trimester due to risk of neonatal kernicterus.

Fluoroquinolones and Tetracyline are C/I in pregnancy.

Ceftriaxone - 1 gm iv/im BD – 7 – 10 days

Cefuroxime, Cefazolin – are safer in Pregnancy.

Conclusion

Now a day's increasing antibiotic resistance complicate the choice of empiric regimen. So Cephalosporins like Ceftriaxone, Cefotaxime can be used as empirical therapy in the patients with Asymptomatic Bacteriuria (ASB) while awaiting for culture report. Effective antibiotic treatment reduces the incidence of acute Pyelonephritis, Pre term labour (PTL), and lowers the incidence of Low birth weight infants (LBW) and foetal mortality.

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