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DEDICATION

Dear teachers, who have given us much

By doing so, they exerted great efforts in building the future generation... and before we proceed, I offer the highest verses of thanks, gratitude, appreciation and love to those who carried the holiest message in life...

To those who paved the path of science and knowledge for us, our distinguished professors, to all scholars

Be a scholar, and if you cannot, then be educated, and if you cannot, love scholars, and if you cannot, do not hate them.”

We would like to express our gratitude and appreciation to:

the respected surgeons branch doctors 



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ABSTACT

Objectives: To determine the prevalence of urinary tract infection (UTI) among pregnant women in Thi-Qar city and to classify the infected women according to their trimesters of pregnancy. The sensitivity of isolated organisms to various antibiotics was also examined. Patients and **methods:** Sample of 154 pregnant women attending Bent AlhudaHospital in Thi-Qar city. Information on age, gestational age, gravidity, parity, level of education and residence were collected for each woman. Clean midstream urine samples were examined for UTI microscopically and culture, and sensitivity tests were done for the organisms isolated using a range of antibiotics.

Results: Prevalence rate of UTI among the studied subjects was 47.4%. Eschirishia coli was the most frequently isolated organism (73.5%) which was highly sensitive to nitrofurantoin, ciprofloxacin, gentamycin, ceftriaxone and amikacin. Amoxicillin, cotrimoxasole, tetracycline and ciprofloxacin are the effective antibiotics to half of isolated Gram positive bacteria. Of the variables examined, 79.5% of the infected participants were in the age group 20-35 years, 53.0% were in their third trimester, 41.0% had 1-4 children, 30.1% were primigravidae, 63.0% attended the antenatal care unit on need, and 71.2% were urban at 6-12 years schooling.

Conclusion: UTI is still a major health problem among pregnant women especially during their third trimester. Escherichia coli is the predominant pathogen causing UTI. All detected bacteria were sensitive to amikacin. Urinalyses with culture and sensitivity tests are mandatory for all pregnant women during the different trimesters. Health education with regular antenatal care share greatly in reducing the incidence of this infection.

Urinary tract infections (UTIs) are frequently encountered in pregnant women. Pyelonephritis is the most common serious medical condition seen in pregnancy and may present similarly and may even result from inadequate treatment of urinary tract infections. Thus, it is crucial for providers to be able to distinguish normal versus abnormal findings of both the urinary tract and kidneys, evaluate abnormalities, and treat disease. Fortunately, urinary tract infections in pregnancy are usually easy to treat and respond well to treatment. This problem causes significant morbidity and healthcare expenditure. Three common clinical manifestations of UTIs in pregnancy are: **asymptomatic bacteriuria, acute cystitis and acute pyelonephritis**. Escherichia coli remains the most frequent organism isolated in UTIs. All pregnant mothers should be screened for UTIs in pregnancy and antibiotics should be commenced without delay. **Urine culture** and sensitivity is the gold standard in diagnosing UTIs. Without treatment, asymptomatic bacteriuria in pregnancy is associated with preterm delivery, intrauterine growth retardation, low birth weight, maternal hypertension, pre-eclampsia and anaemia. Acute pyelonephritis can lead to maternal sepsis. Recurrent UTIs in pregnancy require prophylactic antibiotic treatment.

Keywords

Urinary tract , pregnancy, antibiotics,pyelonephritis, bacteriuria,preterm, asymptomatic, infections. Organisms, E. Coli, culture,pre-eclampsia. Prophylactic,Prevalence ,sensitivity test.

Introduction

Urinary tract infections (UTIs) is defined as the presence of at least 100,000 organisms per milliliter of urine in an asymptomatic patient, or as more than 100 organisms/mL of urine with accompanying pyuria (> 7 white blood cells [WBCs]/mL) in a symptomatic patient. A diagnosis of UTI should be supported by a positive culture for a uropathogen, particularly in patients with vague symptoms. [1] are frequently encountered in pregnant women. Pyelonephritis is the most common serious medical condition seen in pregnancy. Thus, it is crucial for providers of obstetric care to be knowledgeable about normal findings of the urinary tract, evaluation of abnormalities, and treatment of disease. Fortunately, UTIs in pregnancy are most often easily treated with excellent outcomes. Rarely, pregnancies complicated by pyelonephritis will lead to significant maternal and fetal morbidity. Changes of the urinary tract and immunologic changes of pregnancy predispose women to urinary tract infection. Physiologic changes of the urinary tract include dilation of the ureter and renal calyces; this occurs due to progesterone-related smooth muscle relaxation and ureteral compression from the gravid uterus. Ureteral dilation may be marked. Decreased bladder capacity commonly results in urinary frequency. Vesicoureteral reflux may be seen. These changes increase the risk of urinary tract infections.

Asymptomatic bacteriuria

Asymptomatic bacteriuria is commonly defined as the presence of more than 100,000 organisms/mL in 2 consecutive urine samples in the absence of declared symptoms. Untreated asymptomatic bacteriuria is a risk factor for acute cystitis (40%) and pyelonephritis (25-30%) in pregnancy. This usually occurs in early pregnancy. Risk factors include prior UTIs, pre-existing diabetes, increased parity, and low socioeconomic status.

Cystitis

Acute cystitis involves only the lower urinary tract; it is characterized by inflammation of the bladder as a result of bacterial or nonbacterial causes (eg, radiation or viral infection). Acute cystitis develops in approximately 1- 2% of pregnant patients, of whom 60% have a negative result on initial screening. Signs and symptoms include hematuria, dysuria, suprapubic discomfort, frequency, urgency, and nocturia. These symptoms are often difficult to distinguish from those due to pregnancy itself.

Acute cystitis is complicated by upper urinary tract disease (ie, pyelonephritis) in 15-50% of cases.

Acute pyelonephritis

Pyelonephritis is the most common urinary tract complication in pregnant women, occurring in approximately 0.5-2% of all pregnancies. Acute pyelonephritis is characterized by fever, flank pain, and tenderness in addition to significant bacteriuria. Other symptoms may include nausea, vomiting, frequency, urgency, and dysuria. Most cases of pyelonephritis occur in the second and third trimester.

Additional risk factors for complicated UTI in pregnancy include the following ^[2] :

- Immunosuppression
- Pre-existing diabetes
- Sickle cell anemia
- Neurogenic bladder
- Recurrent or persistent UTIs before pregnancy
- Tobacco use
- Age < 20 years
- Late presentation for prenatal care.

Etiology

During pregnancy, urinary tract changes predispose women to infection. **Ureteral dilation** is seen due to compression of the ureters from the gravid uterus. **Hormonal effects of progesterone** also may cause smooth muscle relaxation leading to dilation and urinary stasis, and vesicoureteral reflux increases. The organisms which cause UTI in pregnancy are the same uropathogens seen in non-pregnant individuals. As in non-pregnant patients, these uropathogens have proteins found on the cell-surface which enhance bacterial adhesion leading to increased virulence. Urinary catheterization, frequently performed during labor, may introduce bacteria leading to UTI. In the postpartum period, changes in bladder sensitivity and bladder overdistention may predispose to UTI. Pregnancy is a state of relative immunocompromise.

E coli is the most common cause of UTI, accounting for approximately 70-80% of cases in pregnancy. It originates from fecal flora colonizing the periurethral area, causing an ascending infection. Other pathogens include the following [4]:

1. *Klebsiella pneumoniae* (5%)
2. *Proteus mirabilis* (5%)
3. *Enterobacter* species (3%)
4. *Staphylococcus saprophyticus* (3%)
5. Group B beta-hemolytic *Streptococcus* (GBS; 2-5%)
6. *Proteus* species (2%)

Epidemiology

The most significant factor predisposing women to UTI in pregnancy is asymptomatic bacteriuria (ASB). ASB is defined as more than 100,000 organisms/mL on a clean catch urinalysis obtained from an asymptomatic patient. If asymptomatic bacteriuria is untreated in pregnancy, the rate of subsequent UTI is approximately 25%.^[1] Due to both to the high rate and potential seriousness of pyelonephritis, it is

recommended that all pregnant women be screened for ASB at the first prenatal visit. This is most often done with a clean catch urine culture. Treatment of ASB decreases the rate of clinical infection to 3% to 4%.

The rate of asymptomatic bacteriuria in non-pregnant women is 5% to 6% which compares similarly to estimated rates in pregnancy of 2% to 7%. ASB is seen more frequently in parous women and women of low socioeconomic status. Women who are carriers for sickle cell trait also have a higher incidence of ASB.[1]

UTIs are a common cause of serious infection in pregnant women. In one study, 3.5% of antepartum admissions were due to UTI.[2] Pyelonephritis is the most common cause of septic shock in pregnant women. Risk factors for UTIs in pregnancy include low socioeconomic status, young age, and nulliparity. As with ASB some patients may be predisposed to infection and may report a history of having had ASB, cystitis or pyelonephritis in the past. Pyelonephritis is more often right-sided however may be bilateral in up to 25% of cases.

Overall, UTIs are 14 times more frequent in women than in men. This difference is attributed to the following factors:

1. The urethra is shorter in women, so perineal and fecal flora have a shorter distance to travel.
2. In women, the lower third of the urethra is continually contaminated with pathogens from the vagina and the rectum.
3. Women tend not to empty their bladders as completely as men do.
4. female urogenital system is exposed to bacteria during intercourse.

A difference between pregnant and nonpregnant women is that the prevalence of asymptomatic bacteriuria in pregnant women is 2.5-11%, as opposed to 3-8% in nonpregnant women. In as many as 35% of these cases, bacteriuria may progress to symptomatic upper UTI or pyelonephritis; this rate is significantly higher than that seen in nonpregnant women

International statistics Versi et al described a higher prevalence of bacteriuria in pregnant white women (6.3%) than in pregnant

Bangladeshi women (2%).^[12] Pregnancies that resulted in preterm deliveries were strongly associated with bacteriuria in white women; this association was not observed in Bangladeshi women. The authors hypothesized that the difference could be due to variation in hygiene practices and clothing.

A large population-based study of nearly 200,000 pregnant Israeli women demonstrated a 2.5% rate of asymptomatic bacteriuria^[13] and a 2.3% rate of symptomatic UTI.^[14] In this population, asymptomatic bacteriuria was found to have an association with multiple pregnancy complications, including hypertension, diabetes, intrauterine growth retardation, prolonged hospitalization, and preterm labor.

The authors suggested that these findings may be a marker for intensity of prenatal care rather than a specific causal effect of the urinary infection.^[13] Additionally, their follow-up study examining women with symptomatic UTI showed a clear association between UTI and low birth weight and preterm delivery, a finding consistent with those of multiple previous investigations.^[14]

Pathophysiology

Escherichia coli is the most common organism isolated. An 18-year retrospective analysis found E. coli to be the causative agent in 82.5% of cases of pyelonephritis in pregnant patients.[3]. Other bacteria which may be seen include Klebsiellapneumoniae, Staphylococcus, Streptococcus, Proteus, and Enterococcus species. Several patient-level factors are associated with an increased frequency of bacteriuria during pregnancy. Compared with nonindigent patients, indigent patients have a 5-fold increased incidence of bacteriuria. The risk is doubled in women with sickle cell trait. Other risk factors for bacteriuria include the following:

1. Pre-existing diabetes mellitus
2. History of vesicoureteral reflux (treated or untreated)
3. Kidney transplantation
4. Increased parity

5. History of previous UTIs

History and Physical

Patients with asymptomatic bacteriuria have no symptoms; thus, it is important to screen for the disease. These patients may have a history of frequent UTI or may have experienced ASB in a prior pregnancy. Cystitis presents with the same symptoms seen in non-pregnant individuals. Symptoms may include pain or burning with urination (dysuria), urinary **frequency or urinary urgency**. **Suprapubic pain and tenderness** may be noted. Likewise, patients with pyelonephritis exhibit symptoms seen in non-pregnant patients with the same disease. **Symptoms may include flank pain, fever, and chills**. **Non-specific symptoms such as malaise, anorexia, nausea, and vomiting** may be reported thus the differential diagnosis on initial presentation is often broad. Differential diagnosis includes acute intraabdominal processes such as appendicitis, cholecystitis, and pancreatitis as well as pregnancy complications including preterm labor and placental abruption.

Patients may report contractions or contractions may be seen with uterine monitoring. This uterine activity often is due to smooth muscle irritability caused by infection. Patients should be assessed, and if cervical dilation is not found, treatment is typically not needed for preterm labor. Patients should be monitored closely however as preterm labor may developed. Signs and symptoms of sepsis may be present. These include tachycardia and hypotension. Such patients require prompt evaluation and interventions. A full physical examination should be performed with special attention to vital signs and exam of the heart and lungs. An abdominal exam may reveal tenderness, and costovertebral

SYMPTOMS

- Strong and frequent urge to urinate.
- Bloody or dark urine with strong smell
- Burning sensation while urinating
- Pain in lower back or below the ribs
- Pain in your bladder region
- Muscle aches and abdominal pains.
- Nausea
- Vomiting
- Chills
- High fever (over 101°F)
- Fatigue



PREVENTION

- Drink eight to ten glasses of water a day
- Don't control, urinate as soon as you feel the need
- Take showers instead of baths
- Females should wipe from front to back after urinating.
- Avoid the use of douches or feminine hygiene sprays
- Warm heating of the abdominal area.
- Loose fitting clothes to promote air circulation.

tenderness is usually able to be elicited. A **genitourinary**(GU) exam should be performed to assess for cervical infection and assess cervical dilation on admission. Even when pregnancy complications are not a concern initially, it is still reasonable to evaluate if contractions or other abnormalities occur during hospitalization.

Evaluation

Evaluation will include urinalysis and clean catch urine culture. In the collection of urinary specimens in pregnancy a few considerations are noteworthy. Patients who are well hydrated may excrete dilute urine rendering some assessed parameters to be less accurate. Hematuria may be seen as a result of contamination, particularly when specimens are collected from laboring or postpartum patients. Due to reduced reabsorption of protein, small amounts of protein may normally be excreted. Contamination, as may occur with mucous discharge, may also contribute to the presence of proteinaceous material in the urine of pregnant women.

Laboratory analysis should include complete blood count (CBC), electrolytes and serum creatine. Tailored studies should be included as appropriate to exclude other causes of patient symptoms, for example, amylase and lipase if pancreatitis is being considered as a diagnosis. If there is a concern for sepsis lactic acid and blood cultures should be obtained. All cultures should be obtained as soon as possible and before starting antibiotic therapy.

When the **fetus is viable**, **fetal heart rate** and **contraction monitoring** should occur. Consideration should be given to obtaining cervical and GBS cultures on admission if pregnancy-related complications develop. Infrequently, renal ultrasound may be indicated to assess for a possible renal abscess.

Treatment

ASB and acute cystitis are treated with antibiotic therapy. Antibiotic choice can be tailored based on organism sensitivities when available from urine culture results. One-day antibiotic courses are not recommended in pregnancy, although 3-day courses are effective.[4] Antibiotics commonly used include amoxicillin, ampicillin, cephalosporins, nitrofurantoin, and trimethoprim-sulfamethoxazole. Fluoroquinolones are not recommended as a first-line treatment in pregnancy due to conflicting studies Regarding teratogenicity. Short courses are unlikely to be harmful to the fetus, and thus, it is reasonable to use this class of drugs with resistant or recurrent infections.

Recently evidence has developed suggesting a link between the use of sulfa derivatives and nitrofurantoin and congenital disabilities when these medications are prescribed in the first trimester. These studies have had limitations; however, it is currently recommended to avoid the use of these medications in the first trimester when alternatives are available.[5] Because the potential consequences of untreated UTI in pregnancy are significant, it is reasonable to use these medications when needed as the benefit strongly outweighs the risk of use. Additional cautions exist with respect to these 2 classes of antibiotics.

Patients with G6P deficiency should not be prescribed sulfa derivatives or nitrofurantoin as these medications can precipitate hemolysis. In the late third trimester, trimethoprim-sulfamethoxazole should be avoided due to the potential risk for development of kernicterus in the infant following delivery.If Group B Streptococcus (GBS) is noted on urine culture, patients should receive intravenous (IV) antibiotic therapy at the time of delivery in addition to indicated treatment for ASB or UTI. This is to prevent the development of early-onset GBS sepsis which may occur in the infants of women who are colonized with GBS.

Pyelonephritis in pregnancy is a serious condition usually requiring hospitalization. Once an evaluation has been completed, treatment consists primarily of directed antibiotic therapy and IV fluids to maintain adequate urine output. Fever should be treated with a cooling blanket and acetaminophen as needed. Commonly, second or third generation cephalosporins are used for initial treatment. Ampicillin and gentamicin or other broad-spectrum antibiotics are alternatives. Patients should be monitored closely for the development of worsening sepsis.

Differential Diagnosis

Differential diagnosis includes acute intraabdominal disease such as appendicitis, pancreatitis, or cholecystitis as well as pregnancy-related complications such as preterm labor, chorioamnionitis, or placental abruption.

Complications

They are on both pregnant and mother, fetus and child like :

1. bacteriuria
2. low-birth-weight infants
3. premature delivery
4. stillbirth
5. pyelonephritis
6. hypertension and preeclampsia
7. anemia
8. chorioamnionitis and endometritis
9. early preterm birth
10. premature rupture of membranes

11. intrauterine growth restriction
12. cerebral palsy/mental retardation
13. perinatal death

Prognosis

In most cases of bacteriuria and urinary tract infection (UTI) in pregnancy, the prognosis is excellent. The majority of long-term sequelae are due to complications associated with **septic shock, respiratory failure, and hypotensive hypoxia (ie, extremity gangrene)**.

Maternal UTI has few direct fetal sequelae because fetal bloodstream infection is rare; however, uterine hypoperfusion due to **maternal dehydration, maternal anemia**, and direct bacterial endotoxin damage to the placental vasculature may cause fetal cerebral hypoperfusion.

Untreated upper UTIs are associated with low **birth weight, prematurity, premature labor, hypertension, preeclampsia, maternal anemia, and amnionitis**. [16, 17] A retrospective population-based study by Mazor-Dray et al showed that UTI during pregnancy is independently associated with intrauterine growth restriction, preeclampsia, preterm delivery, and cesarean delivery. [13]

Methods

Cross-sectional study design was adopted and Bent Alhuda Hospital was the focal setting of this study. A random sample of 154 pregnant women attending the antenatal care (ANC) unit at the study setting was taken. Information on maternal age, gestational age, parity, gravidity, child spacing, educational level, residence and employment was collected by face-to-face interview with the study subjects. Clean catch midstream urine was collected from the studied sample in sterile bottles. General urine examination was carried out for each woman. Accordingly, for the infected women, urine culture and sensitivity test was done. Plates of blood agar and MacConcky medium were aseptically inoculated with 2-3 drops of the urine precipitate and then incubated for 24-48 hours. The isolation of the pathogens were identified using Cowan and Steel method.(13) The Kirby-Bauer disc diffusion method was adopted to perform the antibiotic sensitivity testing.(14) The medium used for this purpose was Muller-Hinton agar. The antibiotic contents of the multidiscs were amoxycillin, rifampicin, cotrimoxazole, cefaloxine, tetracycline, nitrofurantoin, ciprofloxacin and gentamycin in different concentrations for Gram-positive bacteria. The antibiotic contents of multidiscs for Gram-negative bacteria were amoxycillin, rifampicin, nitrofurantoin, amikacin, nalidixic acid, cotrimoxazole, ceftriaxone, ciprofloxacin, tetracycline and gentamycin at the same concentrations as for the Gram-positive bacteria. Most of the essential materials used in this work were purchased personally from the local markets.

Results

Results Of the 154 women tested, 73 women (47.4%) were positive for UTI, while 81 women (52.6%) were negative. The distribution of UTI among the infected women according to the sociodemographic and obstetric characteristics is shown in Table 1. The highest proportion (79.5%) of UTI is seen among women aged 20-35 years. Housewives constituted 91.8% of the studied sample, 71.2% of them were urban at 6-12 years schooling. Only 28.8% attend ANC unit regularly while, 63.0% attend it on need. Regarding the obstetric history, 69.9% of the infected women were multigravidae and those who have 1-4 children constituted 41.1% while, the grandmultiparous (>5 children) women shared by nearly one quarter (24.7%). Short child spacing (<2 years) was seen among 42.5% of the studied patients. According to the trimesters of pregnancy, the present study showed that, 30.0% of the infected women were in their first trimester, 44.0% in their second trimester and 53.0% in their third trimester with no significant statistical relationship ($p=0.15$), (Table 2). Of the total infected participants, bacteriuria was seen among 76.7%, while pyuria was found among only 49.3%, (Table 3). In relation to the culture and sensitivity test, positive growth of different bacteria was found among 46.6% of the infected patients, while the negative growth was seen among 53.4% of them. The highest proportion (73.5%) of the positive growths was related to *Escherichia coli*, while *Staphylococcus aureus*, *Proteus mirabilis* and *Pseudomonas aeruginosa* shared by lesser proportions (17.6%, 5.9% and 2.9% respectively), Table 4. All detected bacteria were sensitive to amikacin. Nitrofurantoin, gentamicin and nalidixic acid were effective agents against all isolates except *Pseudomonas* species. For Gram positive Bacteria higher sensitivity percentages (83.0% and 67.0%) were noted in case of gentamicin and Nitrofurantoin. However, half of them

were Sensitive to amoxicillin, cotrimoxazole, tetracycline And ciprofloxacin (Table 5).

Table 1. Distribution of sociodemographic and obstetric characteristics among the study sample.

Characteristic	Infected women (n=73)	
	No.	%
1. Age (years)		
<20	6	8.2
20-35	58	79.5
>35	9	12.3
2. Employment		
housewives	67	91.8
employed	6	8.2
3. Residence		
rural	21	28.8
urban	52	71.2
4. Education (years of schooling)		
no formal	17	23.3
6-12	52	71.2
>12	4	5.5
5. Antenatal care visit		
regular	21	28.8
on need	46	63.0
not present	6	8.2
6. Gravidity		
primigravida	22	30.1
multigravida	51	69.9
7. Parity		
Nullipara	25	34.2
1-4	30	41.1
≥ 5	18	24.7
8. Child spacing		
< 2 years	31	42.5
≥ 2 years	42	57.5

Table 2. Distribution of UTI according to the three trimesters of pregnancy.

Trimester of pregnancy	Among total women (n=154)		Among infected women (n=73)		P-value
	No.	%	No.	%	
First	20	13.0	6	30.0	0.157
Second	39	25.0	17	44.0	
Third	95	62.0	50	53.0	

Table 3. Distribution of the items of urinalysis among the infected subjects.

Item	No.	%
Bacteria	56	76.7
Pus	36	49.3
Crystals	18	24.7
Protein	6	8.2
Red Blood Cells	3	4.1

Table 4. Results of urine culture among the studied women.

Type of Bacteria	Positive Culture (n=34)	
	No.	%
Escherichia coli	25	73.5
Staphylococcus aureus	6	17.7
Proteus mirabilis	2	5.9
Pseudomonas aeruginosa	1	2.9

Table 5. Percentage of the susceptibility of the isolated bacteria to antimicrobial drugs.

Bacteria	No. of Isolates	Susceptibility of the isolated bacteria to antimicrobial drugs (%)										
		AM.	RI.	CO.	CE.	TE.	NI.	CI.	GE.	AMI.	NA.	CEF.
Escherichia coli	25	12	12	12	0	8	48	48	44	24	12	40
Proteus mirabilis	2	0	0	0	0	0	50	0	50	50	50	0
Pseudomonas aeruginosa	1	0	0	0	0	0	0	100	0	100	0	0
Staphylococcus aureus	6	50	33	50	0	50	67	50	83	33	33	0

Am.=Amoxicillin, Ri.=Rifampicin, Co.=Cotrimoxazole, Ce.= Cefaloxine, Te.= Tetracycline, Ni.= Nitrofurantoin, Ci.=Ciprofloxacin, Ge.=Gentamicin, Ami.= Amikacin, Na.= Nalidixic acid, Cef.= Ceftriaxone.

Discussion

UTIs are the widely spread infections seen in hospital settings, and the second commonest infections seen in the general population.(15) In this study the prevalence of UTI among the studied pregnant women was 47.4%. These results nearly corresponded with those of research workers in other countries, with minor differences, which could be due to variation in the environment, social habits of the community, and the standard of personal hygiene and education. (16) In similar studies in our region, the prevalence was 38.0% in Iraq, (17) 28.5% in Pakistan,(18) and 10.6% in Turkey. The present study showed that, the highest proportion of UTIs was detected among women aged 20-35

years with high parity. This concurs with the study done by Krcmery et al who stated that, the risk factors for UTI in women include: sexual intercourse, having first UTI at an early age, and having a maternal history of UTIs. UTI in the current study is frequently seen with increasing gestational age, which coincides with the findings of Sheik et al.(18) The most common uropathogen isolated from urine of infected subjects of the present study was *Escherichia coli* which constituted 73.5%. This is in agreement with the findings of Jonathan et al, who found that, *Escherichia coli* represents 80.0% of bacterial growth of infected women. *Staphylococcal* infection was seen among 17.6% of the infected women of the present study. Louise et al stated that, *staphylococcus aureus* is the second most common cause of UTI especially in young women. *Proteus mirabilis* and *Pseudomonas aeruginosa* are responsible for the remainders of uncomplicated UTIs. Based on the fact that the most offending pathogen is *Escherichia coli*, cephalosporine, amoxicillin or nitrofurantoin are reasonable choices. Trimethoprim is a folic acid antagonist therefore, it is generally avoided during organogenesis.

Conclusion

Urinary tract infections (UTIs) are the most common type of infection during pregnancy, affecting up to 10% of pregnant women. They are also recognized as the second most common ailment of pregnancy, after anemia. Three clinical types of pregnancy-related UTI are distinguished: asymptomatic bacteriuria (ASB), cystitis, and pyelonephritis. A particular form of ASB is the presence of Group B streptococci in the urinary tract of the pregnant woman. All clinical types of UTI may lead to serious maternal and fetal complications. Therefore, unlike in the nonpregnant female patient, all UTIs during pregnancy, including the asymptomatic infection, require treatment. In some patients, antibiotic prophylaxis should also be introduced. In the present work, we collectively summarize current practical recommendations from a

number of international bodies and organizations. It is concluded that, UTI is still a major health problem among pregnant women especially during their third trimester. Escherichia coli is the predominant pathogen causing UTI. All detected bacteria were sensitive to amikacin. Urinalysis with culture and sensitivity tests are mandatory for all pregnant women during the different trimesters. Health education with regular antenatal care share greatly in reducing this infection.

Recommendations

The recommendation is that all pregnant women have a screening urine culture at 16 weeks' gestation in the health center . If the results are negative for a UTI, no additional cultures are indicated. If the patient has a history of recurrent UTIs, further cultures and other screening techniques (eg, nitrite dipstick or urine Gram stain) may be needed to detect the development of asymptomatic bacteriuria. [Patient Education](#)

After 2 to 4 weeks following completion of treatment, urine culture should be obtained to assure that reinfection has not occurred.

Suppressive antibiotic therapy, usually with nitrofurantoin once daily, is commonly recommended especially in cases where patients have had prior UTI. This is typically continued thru pregnancy and the early postpartum period. [Enhancing Healthcare Team Outcomes](#)

Interprofessional collaboration is crucial in the management of these ill patients. With the administration of antibiotics patients may show initial worsening due to the release of endotoxin, however, most patients improve within 72 hours. Long-term complications such as renal damage are rare .

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