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Prevalence of Urinary Tract Infections on Pregnant Women

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Abstract:

Introduction: Urinary tract infections (UTIs) are one of the most frequent complications during pregnancy. UTI is classified as either involving the lower urinary tract (acute cystitis) or the upper urinary tract (acute pyelonephritis). Although all women are susceptible to the development of UTIs, pregnant women are at increased risk because of anatomical and hormonal changes that contribute to ureteral dilatation and urinary stasis. Both local and systemic signs or symptoms can accompany UTIs; however, asymptomatic bacteriuria (ASB) can occur when a significant quantity of bacteria consistent with infection is isolated from the urine. Any UTI in a pregnant woman is considered to be complicated and warrants proper treatment. The incidence of ASB and acute cystitis during pregnancy is 2–10% and 1– 4%, respectively.

Objective: - The prevalence of urinary tract infection in women in middle age especially pregnant one and the purpose of the study is the definition of Bacterial Infection and sensitivity to antibiotics of microbial strains isolated from middle aged women with UTIs.

Methodology: Specimens from 30 clinically suspected pregnant women of bacterial that cause UTI were processed by Urine routine, culture and antibiotic sensitivity with Gram stain.

Results: the overall percentage of infection explain the prevalence of urinary tract infection between women and it was so closed (16) case has UTI presented (47.1 %) and (14) cases has no UTI presented by (41.2%) will the other study in deferent colleges were obtained in 87 pregnant women from 845 sample by (11.28%) the rate of infections in the age groups, and the percentage was high in the age groups (41 - 45), at a rate of (31.2%) the rate of tract infection among pregnant and non-pregnant women, so the infection rate in pregnant women was 56.2% and the rate in non-pregnant women was 43.8%. the rate of recurrent tract infections in pregnant women, at 70.0%, and in non-pregnant women, at 30.0%.

Conclusion: Urinary tract infection is a serious problem, especially when a pregnant woman is exposed to it and it is more dangerous when exposing her fetus to a life-threatening bacterium that causes him problems during its formation. Through our study of sample of (30) cases of women in different ages in some clincs surrounding Qaser Bin Ggashir area, we concluded that the rate of UTI in pregnant women was high by (56.2 %) as pregnant women were more susceptible to infection. Our study showed that Escherichia coli is the most common causative agent ofurinary tract infections in pregnant womenratio of (37.5%) , and as evidenced from the samples taken from a range of pregnant women the rate of High antibacterial activity effect or sensitivity to this type of bacteria was Cipofloxacin CIP by 31.5% Based on our findings, theseantibiotics may be prescribed to pregnant women in order to address infections.the most common bacterial types in urinary tract infections, Escherichia coli (37.5%), and Pseudomonas arganse, which ranked lowest by (6.25%), will the returners review in deferent collages were

bacteria of Enterobacteriaceae group, and Escherichia coli strains dominated (55.17%), the most anti-allergic agents in the bacteria samples, so the highest percentage of anti-Cipofloxacin CIP was (31.5%).

Keywords: Urinary Tract Infection (UTI). Bacterial Infection, Pregnant Women.

نسبة انتشار التهابات المسالك البولية لدى النساء الحوامل

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الملخص

مقدمة: التهابات المسالك البولية (UTIs) هي واحدة من أكثر المضاعفات شيوعا أثناء الحمل. تقليديا، يصنف التهاب المسالك البولية على أنه إما يشمل المسالك البولية السفلية (التهاب المثانة الحاد) أو المسالك البولية العلوية. على الرغم من أن جميع النساء عرضة لتطور عدوى المسالك البولية، إلا أن النساء الحوامل معرضات لخطر متزايد بسبب التغيرات التشريحية والهرمونية التي تساهم في توسع الحالب وركود البول. يمكن أن تصاحب كل من العلامات أو الأعراض الموضعية والجهازية عدوى المسالك البولية. ومع ذلك، يمكن أن تحدث البيلة الجرثومية بدون أعراض (ASB) عندما يتم عزل كمية كبيرة من البكتيريا المتوافقة مع العدوى من البول. يعتبر أي التهاب في المسالك البولية لدى المرأة الحامل معقدا ويستدعي العلاج المناسب. معدل الإصابة ب ASB والتهاب المثانة الحاد أثناء الحمل هو 2-10٪ و1-4٪ على التوالي.
الهدف: - انتشار عدوى المسالك البولية عند النساء في منتصف العمر وخاصة الحوامل والغرض من الدراسة هو تعريف العدوى البكتيرية والحساسية للمضادات الحيوية للسلالات الميكروبية المعزولة من النساء في منتصف العمر المصابات بعدوى المسالك البولية.
المنهجية: تمت معالجة عينات من 30 امرأة حامل يشتبه سريريا في إصابتهن بالبكتيريا المسببة لالتهاب المسالك البولية عن طريق روتين البول والمزرعة والحساسية للمضادات الحيوية مع صبغة الجرام.
النتائج: النسبة الإجمالية للعدوى تفسر انتشار عدوى المسالك البولية بين النساء وتم إغلاقها على هذا النحو (16) حالة ظهرت عليها عدوى المسالك البولية (47.1٪) و(14) حالة بها التهاب المسالك البولية قدمت (41.2٪) والدراسة الأخرى في الكليات المختلفة تم الحصول عليها في 87 امرأة حامل من 845 عينة بنسبة (11.28٪) نسبة الإصابات في الفئات العمرية. وكانت النسبة مرتفعة في الفئات العمرية (41 - 45 سنة)، بنسبة (31.2٪) نسبة إصابة بالمسالك بين النساء الحوامل وغير الحوامل، فبلغت نسبة الإصابة عند النساء الحوامل 56.2٪، وبلغت النسبة عند النساء غير الحوامل 43.8٪. معدل التهابات المسالك المتكررة عند النساء الحوامل بنسبة 70.0٪، وعند النساء غير الحوامل، بنسبة 30.0٪.
الخلاصة: تعتبر عدوى المسالك البولية مشكلة خطيرة، خاصة عندما تتعرض المرأة الحامل لها وتكون أكثر خطورة عند تعريض جنينها لبكتيريا تهدد الحياة تسبب له مشاكل أثناء تكوينها. من خلال دراستنا لعينة من (30) حالة لنساء في مختلف الأعمار في بعض المناطق المحيطة بمنطقة قصر بن بن غشير، توصلنا إلى أن معدل الإصابة بالتهاب المسالك البولية لدى النساء الحوامل كان مرتفعا بنسبة (56.2٪) حيث كانت النساء الحوامل أكثر عرضة للإصابة بالعدوى. أظهرت دراستنا أن الإشريكية القولونية هي العامل المسبب الأكثر شيوعا لالتهابات المسالك البولية عند النساء الحوامل بنسبة (37.5٪)، وكما يتضح من العينات المأخوذة من مجموعة من النساء الحوامل، فإن معدل التأثير المضاد للبكتيريا العالي أو الحساسية لهذا النوع من البكتيريا كان CIP Cipofloxacin بنسبة 31.5٪ بناء على النتائج التي توصلنا إليها، هذه المضادات الحيوية يمكن وصفها للنساء الحوامل من أجل معالجة العدوى. الأنواع البكتيرية الأكثر شيوعا في التهابات المسالك البولية، الإشريكية القولونية (37.5٪)

الكلمات المفتاحية: التهاب المسالك البولية، الالتهابات البكتيرية، النساء الحوامل.

Introduction

Urinary tract infections (UTIs) are one of the most frequent complications during pregnancy [1]. Traditionally UTI is classified as either involving the lower urinary tract (acute cystitis) or the upper urinary tract (acute pyelonephritis). Although all women are susceptible to the development of UTIs, pregnant women are at increased risk because of anatomical and hormonal changes that contribute to ureteral dilatation and urinary stasis [2][3]. Both local and systemic signs or symptoms can accompany UTIs; however, asymptomatic bacteriuria (ASB) can occur when a significant quantity of bacteria consistent with infection is isolated from the urine. Any UTI in a pregnant woman is considered to be complicated and warrants proper treatment. The incidence of ASB and acute cystitis during pregnancy is 2–10% and 1– 4%, respectively [4][5]. As many as 20– 40% of pregnant patients with ASB will eventually develop pyelonephritis later in pregnancy [6]. Pyelonephritis is the most common severe bacterial infection that can lead to maternal and perinatal complications during pregnancy [7]. Acute pyelonephritis occurs in 1–2% of pregnant women, particularly during the end of the second and beginning of the third trimester [8][9]. A predisposing factor or precursor to UTI is bacteriuria. Asymptomatic bacteriuria is defined as the presence of a positive urine culture in an asymptomatic person and occurs in 2 to 7 percent of all pregnancies [10]. Asymptomatic bacteriuria rates in the pregnant and non-pregnant population are similar, however bacteriuria during pregnancy has a greater tendency to progress to ascending infection than in the non-pregnant woman [11]. This is because pregnancy is associated with a rapid increase in progesterone levels which leads to ureteric

dilatation and urinary stasis which increases the risk of bacteriuria. Mechanical pressure from the gravid uterus and the physiological changes that occur in pregnancy further increase the risk of asymptomatic bacteriuria and in turn ascending infection [12]. Asymptomatic bacteriuria is associated with an increased risk of adverse fetal outcomes. In particular, an increased risk of preterm birth and an increased risk of delivering a low-birth-weight infant [13]. Furthermore, studies have also shown that treatment of asymptomatic bacteriuria during pregnancy reduces the incidence of these complications. The prompt recognition and treatment of bacteriuria therefore should limit the risk of progression to ascending infection and the risk of these adverse maternal and fetal outcomes [14]. A review reported that 67% (total of 656) of pyelonephritis cases occurred during the second and third trimesters, and 27% developed during the postpartum period [15]. A history of childhood UTI in the absence or presence of renal scarring increases the risk for ASB during pregnancy by 27% and 47%, respectively [16]. The development of UTIs during gestation can result in both fetal and maternal complications. The risks for premature delivery, infants with low birth weight, and fetal mortality are elevated in the presence of pyelonephritis [17]. One study reported an incidence of 15% (n = 487) of newborns with birth weights <2500 g in pregnant women with acute pyelonephritis (APN) [18]. Two studies reported that 20–25%of pregnant patients with pyelonephritis developed transient renal insufficiency [19]. Severe and potentially life-threatening manifestations of maternal complications associated with pyelonephritis include sepsis, disseminated intravascular coagulation, and acute respiratory distress syndrome (ARDS). ARDS is mediated by end toxins that damage the alveolar capillary membrane of the lungs. The incidence of ARDS in pregnant women with pyelonephritis has been reported to be1–8% [20].

Methodologies

Subjects

A total of 30 pregnant women in middle age suffering from urinary tract infection, were recruited into this descriptive analytical study using a convenient sampling Method Attendance at the in group of clinical surrounding Qaser Ban Qesher Municipality, Libya in the period of time (from 15 -Apri -2020 to 15 -Dec- 2020).

Sample collection and storage

Ethical approval was accepted by Aldiaa Hospital and Alfaraby Clinic for conducting the questionnaire.
to study the general features of the research sample.

Laboratory method for detection of Bacteriuria and identification of microorganisms associated with urinary tract by principle early morning urine sample was analysis Routinely and culture examination, Through the examination process, bacteria are isolated and their characteristics and sensitivity to antibiotics are studied.

Statistical analysis

Bacteria were studied and isolated from urine samples of infected cases among women, and the data were distributed using Excel, and frequency and percentage tables were created to calculate the prevalence rates of the most common bacteria as well as the most responsive antibiotics.

Result And Dissection

This study performed on sample of middle age marred women most of them and suffering from Urinary Tract Infection in group of clinical surrounding Qaser Ban Qesher in the period of time (from 01 -Sep -2020 to 30 -Nov- 2020). the total sample assimilate in (30) case with ages ranging between 18–50 years.

Table 1 the distribution of Urinary tract Infection between cases.

	Frequency	Percent	Valid Percent	Cumulative Percent
She Has No UTI	14	41.2	41.2	52.9
She Has UTI	16	47.1	47.1	100.0
Total	30	100.0	100.0	

the prevalence of urinary tract infection between women and it was so closed (16) case has UTI presented (47.1 %) and (14) cases has no UTI presented by (41.2%) will the other study in deferent colleges were obtained in 87 pregnant women from 845 sample by (11.28 %).

Table 2 distribution of the UTI items by age's group.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	15-20	3	18.8%	18.8%	18.8
	21-25	2	12.5%	12.5%	31.2
	26-30	2	12.5%	12.5%	43.8
	31-35	2	12.5%	12.5%	56.2
	36-40	1	6.2%	6.2%	62.5
	41-45	5	31.2%	31.2%	93.8
	>46	1	6.2%	6.2%	100.0
	Total	16	100.0	100.0	

the rate of infections in the age groups, and the percentage was high in the age groups (41 – 45y), at a rate of (31.2%.) And then (15- 20y) at a rate of (18.8%), The lowest percentage was for age groups (36-40 and > 46y) with percentage (62%)

Table. States of pregnancy with prevalence of UTI**.**

		Normal Delivery	cesarean Section	None of the last	Total
Non-UTI Pt.	Count	10	4	1	15
	% of UTI Each Case	66.7%	36.4%	25.0%	33.3%
UTI Pt.	Count	5	7	3	15
	% of UTI Each Case	33.3%	63.6%	75.0%	66.7%
Total	Count	15	11	4	30
	% of Total UTI	50.0%	36.7%	13.3%	100.0%

the correlation of the state of childbirth with infection in terms of natural childbirth, at 33.3% and the percentage in terms of cesarean delivery was 63.6%.

Table 4 follow up of pregnancy with prevalence of UTI**.**

	Follow up with doctor				Regular Follow up		
	No	Yes	Sometime	Total	No	Yes	Sometime
Count of non-UTI Pt	2	9	3	14	0	7	7
% percentage of non-UTI	33.30%	75.00%	25.00%	46.70%	0.00%	70.00%	38.90%
Count of UTI Pt	4	3	9	16	2	3	11
% percentage of UTI	66.70%	25.00%	75.00%	53.30%	100%	30.00%	61.10%
Total Count	6	12	12	30	2	10	18
%percentage of Total	20.00%	40.00%	40.00%	100%	6.70%	33.30%	60.00%

the rate of inflammation in terms of follow-up by a specialized doctor at 25.0%, non-follow-up cases at 66.7%, and in terms of regularity in follow-up at 30.0%, and irregular cases at 100%.

Table 5 Routine test and treatment of pregnancy with prevalence of UTI**.**

	Routine Laboratory Test				Treatment during pregnancy			
	No	Yes	Sometime	Total	No	Yes	Sometime	Total
Count of non UTI Pt	1	9	4	14	2	9	3	14
% percentage of non-UTI	25.0%	60.0%	36.4%	46.7%	22.2%	64.3%	42.9%	46.7%
Count of UTI Pt	3	6	7	16	7	5	4	16
% percentage of UTI	75.0%	40.0%	63.6%	53.3%	77.8%	35.7%	57.1%	53.3%
Total Count	4	15	11	30	9	14	7	30
%percentage of Total	13.3%	50.0%	36.7%	100.0%	30.0%	46.7%	23.3%	100.0%

the correlation of infections with routine analyzes by 40% and irregular cases with routine analyzes by 75.0% and in terms of treatment during pregnancy in regular cases by 35.7% and cases that did not take treatment during pregnancy by 77.8%.

Table 6 Prevalence of abortion in pregnant women with prevalence of UTI**.**

	Had Abortion Before pregnancy			More than 3 Abortion		
	No	Yes	Total	No	Yes	Total
Count of non-UTI Pt.	8	6	14	13	1	14
% percentage of non-UTI	47.1%	46.2%	46.7%	48.1%	33.3%	46.7%
Count of UTI Pt.	9	7	16	14	2	16
% percentage of UTI	52.9%	53.8%	53.3%	51.9%	66.7%	53.3%
Total Count	17	13	30	27	3	30
%percentage of Total	56.7%	43.3%	100.0%	90.0%	10.0%	100.0%

the percentage of cases subjected to miscarriage, at a rate of 53.8%, and cases that were subjected to more than 3 abortions and were due to infection, at 66.7%.

Table 7 Prevalence of Type to Bacterial infection in all cases.

Results	Frequency	Percent
Escherichia coli	6	37.5%
Staphylococcus aurous	4	25.0%
Klebsiellapreunos	3	18.75%
Protuse spp.	2	12.5%
Pseudomonas arganse	1	6.25%
Total	16	100.0

the most common bacterial types in urinary tract infections, Escherichia coli (37.5%), and Pseudomonas arganse, which ranked lowest by (6.25%), will the returners review in deferent collages were bacteria of Enterobacteriaceae group, and Escherichia coli strains dominated (55.17%).

Table 8 prevalence of the most sensitive Antibiotic Effective in urine culture.

Antibiotic	Frequency of Sensitivity	Percentage %
Cipofloxacin CIP	5	31.25 %
Norfloxacin NOR	3	18.75 %
Cetazidime CAZ	2	12.5 %
Ceftioxone CRO	1	6.25 %
Doxycycline DO	1	6.25 %
Gentamin CN	2	12.5 %
Azetronem ATM	1	6.25 %
Clatrithromycin CL	1	6.25 %
Total	16	100 %

the most anti-allergic agents in the bacteria samples, so the highest percentage of anti-Cipofloxacin CIP was (31.5%), and then Norfloxacin NOR with percentage (18.75 %)

Conclusion

Urinary tract infection is a serious problem, especially when a pregnant woman is exposed to it and it is more dangerous when exposing her fetus to a life-threatening bacterium that causes him problems during its formation. Through our study of sample of (30) cases of women in different ages in some clinics surrounding Qaser Bin Ggashir area, we concluded that the rate of UTI in pregnant women was high by (56.2 %) as pregnant women were more susceptible to infection. Our study showed that Escherichia coli is the most common causative agent of urinary tract infections in pregnant women ratio of (37.5%), and as evidenced from the samples taken from a range of pregnant women the rate of High antibacterial activity effect or sensitivity to this type of bacteria was Cipofloxacin CIP by 31.5% Based on our findings, the antibiotics may be prescribed to pregnant women in order to address infections.

Recommendation

- We recommend cases with routine examination and regular follow-up, especially during pregnancy.
- Regularly drinking water and feeding healthy It is recommended to drink 8-10 glasses (64-80 ounces) of water daily.
- Regularity in treatment and routine analysis of the crisis and continuous detection to avoid exposure to infections recurrent pathways.
- We recommend cases of diabetes patients to maintain and the need to adjust the level of diabetes in the blood because of its effect on reproduction.

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