

Antimicrobial Susceptibility of uropathogens isolated from Male catheterized patients

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Abstract

A total of 34 catheterized paraplegic patients with age range between 22-53 years old at Dijlah Rehabilitation Hospital (DRH) in Tikrit with signs and symptoms of urinary tract infection (UTI) were studied . All 34 (100%) patients were positive for significant UTI. The highest prevalent pathogen was *Escherichia coli* (47%). Only in 30 patients , the bacteriuria was associated with pus cells . Most of isolated organisms were highly sensitive to augmentin , ciprofloxacin and cefatoxime .

المستخلص

تم في هذا البحث التحري عن خمج المجاري البولية في الاشخاص المرضى الراقدين في مستشفى دجلة- تكريت والذين لديهم اعراض وعلامات المرض. لقد تبين بان جميع المرضى وعددهم 34 مصابون بالخمج وتم عزل البكتريا المرضيه منهم وكانت بكتريا القولون باعلى نسبه (74%). شملت الدراسه ايضا اجراء الفحص المجهرى وظهر بان 30 مريض فقط لديهم خلايا قيحيه مع الادرار اما نتائج الحساسيه للمضادات الحيويه فقد تبين لان معظم العزلات حساسه للاوكمنتين والسيبروفلاكسلين والسيتوفاكسيم.

Introduction

UTI in an extremely common clinical problem. It is important because they may involve the urethra, bladder, uterus and kidneys (1). The prevalence of UTI varies markedly with sex and age (2). Each year, urinary catheters are inserted in more than 5 million patients in acute-care hospitals and extended-care facilities. Catheter-associated urinary tract infection is the most common nosocomial infection in hospitals and nursing homes, comprising >40% of all institutionally acquired infections (3). Approximately 4 million people each year receive an indwelling urinary catheter (IUC) (4) and 5–20% of hospitalized patients who receive an IUC will be diagnosed with a urinary tract infection (UTI) (5). IUC use is thought to be the most significant risk factor for developing nosocomial UTIs, especially in acutely ill elderly patients (5,6). The aim of this study was to determine the prevalence of significant bacteriuria in catheterized male patients in DRH in Tikrit city and study the susceptibility of isolated organisms to various common used antibiotics.

Patients and methods

Our study included random selection of 34 paraplegic male patients, all of them were admitted to DRH. Their age range was 22-53 years and all of them were having permanent urinary catheterization. Mid stream urine samples were cultured on Blood and MacConkey agar aerobically at 37° C for 24-48 hours. Identification of etiological microorganisms and susceptibility of antimicrobial agents were performed according to Stokes and Ridgway (7) and Chesobrough (8). General urine examination (GUE) was done for all the 34 patients according to Linne and Ringstud (9) that revealed the presence of bacteria, pus cells, red blood cells, renal casts and crystal. Patients with antimicrobial therapy was excluded

from this study. The antibiotic resistance pattern of the resistant strains was determined by disk diffusion method (Stokes 7). The following antimicrobial discs had been used: ampicillin (25 µg), amoxicillin (25 µg), cephalexin (30 µg), ciprofloxacin (30 µg), gentamicin (10 µg), nitrofurantoin (50 µg), nalidixic acid (30 µg), cefotaxime (25 µg) and augmentin (25 µg). The zone of inhibition were estimated for each media and the results were analyzed

Results

As described in Table 1, all 34 (100%) patients were positive for significant UTI. *E. coli* was the most isolated organism 16 (47%) followed by *Klebsiella aerogenosa*, 8 (15%). The gram positive cocci *Streptococcus pyogenes* represent 3% of total isolates. The results of General Urine examination findings were also described in Table 1. Pus and bacterial cells were found in a high value (30 cases), while RBCs, crystal and casts found in 13, 15, and 9 cases respectively. Table 2 shows the overall susceptibility patterns of organisms to different antimicrobial. *E. coli* was highly susceptible to Augmentin (14 cases), Ciprofloxacin (12 cases) and cephalexin (10 cases).

Discussion

Urinary catheters are routinely cited as the primary cause of nosocomial infections (11). On the other hand, previous studies have shown that decreasing urinary catheters use is not associated with a decrease in UTIs (12). The present study showed that 100% of elderly patients who received an IUC were diagnosed with a UTI during their hospitalization. These data support the strong association between urinary catheters use and a diagnosis of UTI that has been shown in previous studies (13, 14). Although the results obtained from the current study showed similar outlines

to uncomplicated UTI regarding both the invading pathogens and sensitivity to antimicrobials, but it is still reflects some important differences that must kept in mind. That is to say, that the overall percentages of etiological; agents for UTI in this study was 100% and *E. coli* is still the commonest UTI pathogen in catheterized patients but in much less frequently than reported in previous studies (15,16).The susceptibility of clinical bacterial isolated to different antimicrobial drugs are shown in this study. The emergence of antimicrobial

resistance is of great clinical and economic importance. The susceptibility of *E. coli* to Augmentin and ciprofloxacin were high and higher than reported previously (17).In general, the resistant of microorganisms to drugs is a very serious problem in Iraq. This may be contributed to the vast consumption of these drugs especially by elderly people. However there are many recommendations for catheter care that may help for preventing UTI (18).

Table (1): Frequency distribution of micro-organisms and the relation with urinalysis

	Pathogen	No.	%	Pus cells	Bacteria	RBCs	Crystals	Casts
1	<i>E.coli</i>	16	47 %	16	16	8	8	5
2	<i>Klebsiella aerogenosa</i>	8	23 %	8	8	2	2	2
3	<i>Proteus sp</i>	5	15 %	2	2	1	2	1
4	<i>Staphylococcus aureus</i>	4	12 %	3	3	1	2	5
5	<i>Streptococcus pyogenes</i>	1	3%	1	1	1	1	1
	Total	34	100	30	30	13	15	9

Table (2): Susceptibility of uropathogens to antimicrobial drugs

	Antimicrobial	No. of sensitive strain				
		<i>E. coli</i>	<i>Klebsiella</i>	<i>Proteus sp.</i>	<i>Staph. aureus</i>	<i>Strepto. pyogenes</i>
1	Ampicillin	8	2	0	1	0
2	Amoxycillin	10	1	0	0	0
3	Cephalexin	10	2	1	1	0
4	Ciprofloxacin	12	5	2	1	1
5	Gentamycin	2	0	0	0	1
6	Nitrofurantoin	0	0	0	3	1
7	Nalidixic acid	4	1	0	0	0
8	Cifotaxime	10	4	2	2	0
9	Augmentin	14	6	2	1	1

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