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Urinary Tract Infection Among Children's Under (12) Years Old In Tikrit City

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الخلاصة:

تم جمع (160) عينة بول من المرضى المراجعين الى مستشفى تكريت التعليمي للفترة من حزيران لغاية 30 ايلول 2001 مع علامات واعراض الاصابة بمرض اللتهاب المجاري البولية، فقط (51) عينة بول نسبتها (32%) هي موجبة مع ملاحظة معنوية بظهور البكتيريا في البول.

أظهرت النتائج ان الاشريشية القولونية هي الغالبة بنسبة (41%) وتسميتها *Klebseilla* و*Enterobacter* بنسبة (15,5%) والمتقلبات الرائعة والكواذب الزنجارية بنسبة (10%)، كما أظهرت النتائج أن التهاب المجاري البولية هو الاقل في الذكور عن الاناث (19,2%) و (32,2%) على التعاقب، وأن الخلايا موجودة مع البكتيريا في كل النماذج الموجبة وهي (51) أنموذج. وتشير النتائج ان الغالبية تكون في المجموعة العمرية من (6–8سنوات) في الذكور والاناث (5,6%) 9 و (3%) 5.

أختبرت النتائج في 30 دقيقة ثم زرعت في الأوساط الزرعية الدم والماكزنكي والنيوترتبت وحضن هوائياً في درجة 37ْم لمدة (18–24ساعة)، وهذا المقطع العرضي يدل على النسبة في اللتهاب المجاري البولية في الاناث أكثر من الذكور بنسبة (1:0:6).

تم إجراء الزرع واختبار الحساسية لتمييز العوامل الأساسية المسببة والمضاد الحيوي المناسب.

Abstract:

A total of 160 urine samples from patient attendants to Tikrit Teaching Hospital in Tikrit during the priod from 1st June to 30 September 2001 with signs and symptoms suggestive of urinary tract infection .Only 51 urine sample (32%) were positive yielded significant Bacteruria.

The result indicated that *E.coli* was the most frequent organism (41%) and consequently followed by *Klebseilla spp.*, *Enterobacter spp*. (15.5%) and *proteus mirabilus*, *pseudomonas aeruginosa* (10%). Urinary Tract Infections are less common in male than female 19 (12%) and 32 (20%) respectively. Cell was found with bicteria in all the positive cases (the 51 urine sample).

Regarding to relation of U.T.I. with age, the result showed that the most frequent infected patient was in age group of (6-8) years in both females and male 9(5.6%) and 5 (3%) respectively .The samples were examined within 30 min, specimens were cultured on blood agar, MacConky agar .and nutrient agar,

incubated aerobically at 37^{o}Cfor 18-24 hrs. This is a cross section study indicated the Ratio of Urinary tract infections in girls more than boys a ratio of 1:0.6

Culture and sensitivity test of antibiotics were done to recognize the etiological agent and select the suitable antibiotics.

Introduction:

Urinary tract infections are the most common disorders a physician deal with both in our patients and hospitalized patients. The most common sites of U.T.I. are the urinary bladder (cystitis) and the urethra. From these sites, the infection may ascend into the ureters (ureteritis) and subsequently involve the kidney (pyelonephrtis). Female are more prone o infection of the urinary tract and present the greater problem in the proper collection of specimens [1].

U.T.I. presents a major problem for public health care counting the costs of antibiotic and other treatment required such as hospitalization and he time loss from work. In addition to the costs. U.T.I. cause considerable discomfort and inconvenience to the patient and are occasionally responsible for protected symptoms or more manifestations such as sepsis and death [2].

U.T.I. are caused mainly by colonic bacteria .In females 75-90% of the infections are caused by *Escherichia* coli followed by *Klebsiella spp.* and *Proteus spp.*[3]. It has been estimated that approximately 10% of humans are affected with a U.T.I.at sometime during their lives. The exact prevalence is age and sex dependent. Approximately 1% of male infants acquire infection.

In contrast the prevalence of bacteria in school age girls is 1-2%and as many as 5% eventually are involved of sometime during their childhood years [4].

In Iraq, many studies have been done to demonstrate the relation of U.T.I. with bacteria AL-Heeti [5] showed that the prevalence rate of significant bactria among 534 patients admitted to Basrah teaching hospital was 6.7%the most frequently encountered organism was *E.coli* (75%) Hussain [6] showed signs and symptoms of U.T.I.were studies in (69.8%) patients who were positive for significant bacteria.

The aim of this study to determine the bacteria, which cause urinary tract infection, and to study its sensitivity to antibiotics.

Materials and Methods:

160 patients were attended to Tikrit Teaching Hospital in Tikrit for sign and symptoms of urinary tract infection during the period from June to September 2001.

Prevention of contamination by vaginal perined and anterior urethral flora is the most important consideration for collection of clinically relevant urine specimen. Mid stream urine specimens were collected aseptically from the patient that has signs and symptoms suggestive of urinary tract infection.

A bacterial concentration of 100.000CFU/ML of urine represents significant bacteruria and indicates definite urinary tract infection although fewer counts may occur in patients receiving antibacterial therapy, bacterial count between 10^4 CFU/ml and 10^5 CFU/ml of urine are highly suggestive of infection. Fewer than 10^3 CFU/ml urine are insignificant and probably represent transurethral or eternal genital contamination [7,8]. U.T.I. was diagnosed whenever there was pure growth of more than 10^5 CFU/ml of urine or mixed infection with significant growth and pyria. The urine specimens were subjected to general urine analysis for bacteria, pus cell according to line and ring stad [9]. Urine specimens were cultured on MacConky and Blood agar incubated aerobically at 37C^o for (18-24 hrs) [10].

Results:

A total of (160) urine samples were submitted for general urine examination and culture 51(32%) were shown the presence of the Bacteria significant bacteria.

Table-1 shows the frequency distribution of patients according to age and sex. It was found that 32 (20%) of patient were females and 19 (12%) were males with presence of statistical significant.

The higher prevalence rate was found in the age group (0-2) years with presence of statistical significant.

Table-2 represents the results of general urine examination which showed the pus cell red blood cells were detected in 51 (100%), 23 (45%) of examine specimen respectively with presence of highly statistical significant.

Table-3 represents the distribution of isolated bacteria from the patients. It was found that *E. Coli* the most frequent isolate 21 (41.2%) followed by *Klebsiella spp* 8 (15.5%) and *Enterabacter spp*. 8 (15.5%), *Proteus spp*. 5 (10%) with no statistical significant.

Table-4 shows the antibiogram profile of isolated bacteria. It was found that (76%) of *E. Coli* was resistant to ampicillin while (9%) were resistant to Cephotaxame, since only (9%) of *E. Coli* (12.5%), of *Klebsiella spp* were resistant .But all other species were sensitive to it.

Children		**0-<2**	**2-<4**	**4-<6**	**6-<8**	**8-<10**	**10-<12**	**Total**	**X^2**	**DF**	**P. Value**	
Male	No.+ve	0	6	8	9	6	3	32	6.935	5	>0.05	No Sig.*
	%	0	3.75	5	5.6	3.75	1.87	20				
	No.-ve	4	12	16	6	5	5	48				
Female	No.+ve	0	3	4	5	4	3	19	5.037	5	>0.05	No Sig.*
	%	0	1.87	2.5	3	2.5	1.87	12				
	No. -ve	8	11	18	8	9	7	61				
Total	No.+ve	0	9	12	14	10	6	51	11.845	5	<0.05	Sig.**
	%	0	5.6	7.5	8.75	6.25	3.75	32				
	No.- ve	12	23	34	14	14	12	109				

Table-1: Frequency distribution of patient according to age and sex.
*** No Significance, ** Significance**

Finding		Male	Female	Total
Pus cell	No.+ve	19	32	51
	%	38	62	100
	No.-ve	32	19	109
RBC	No.+ve	7	16	23
	%	14	31	45
	No. -ve	73	64	137
Ca- Qxalate	No.+ve	24	21	45
	%	47	41	88
	No.- ve	56	59	115
Epithelial Cell	No.+ve	16	29	45
	%	31	57	88
	No.- ve	64	51	115
Amrophous urate	No.+ve	18	24	42
	%	35	47	82
	No.- ve	62	56	118
X^2		13.05	9.506	14.932
DF		4	4	4
P. Value		<0.05	<0.05	<0.01
		Significant	Significant	Highly Significant

Table-2: Frequency distribution of deposit finding of general urine examination among patient (51 patients).

Bacteria		Percentage		
		Female	Male	Total
E.coli	No.+ve	14	7	21
	%	27.4	13.7	41.2
	No.-ve	18	12	30
Klebsiella spp.	No.+ve	5	3	8
	%	10	5.5	15.5
	No.-ve	27	16	43
Enterobacter spp.	No.+ve	5	3	8
	%	10	5.5	15.5
	No.-ve	27	16	43
Proteus minrabilis	No.+ve	1	4	4
	%	2	8	10
	No.-ve	31	15	46
Pseudomonas Aergnosa	No.+ve	4	1	5
	%	8	2	10
	No.-ve	28	18	46
Staph aureus	No.+ve	3	1	4
	%	5.8	2	7.8
	No.-ve	29	18	47
Total	No.+ve	32	19	51
	%	62	38	100

Table-3: The distribution of isolate bacteria from the patients.

Organism		Percent of strains resistant to antibiotics										
		AMP	AMX	KF	GM	Clox	Trim	SXT	E	NA	NF	CTX
E.coli	No	16	12	8	11	13	7	5	15	4	3	2
	%	76	57	37	53	62	33	25	72	20	15	9
Klebsiella spp.	No	7	7	5	3	4	3	2	7	2	2	1
	%	87	87	62	37.5	48	37.5	25	87.5	25	25	12.5
Enterobacter spp.	No	7	7	6	1	2	2	1	7	2	1	0
	%	87.5	87.5	75	12.5	25	25	12.5	87.5	25	12.5	0
Pr. minrabilis	No	4	3	2	2	3	2	1	3	1	1	0
	%	80	60	40	40	60	40	20	60	20	20	0
p. Aerogenosa	No	4	4	3	1	2	2	1	4	1	1	0
	%	80	80	60	20	40	40	20	80	20	20	0
Staph aureus	No	1	1	2	2	1	1	1	1	1	1	0
	%	25	25	50	50	25	25	25	25	25	25	0

Table-4: Percentage of resistance among all bacterial species isolated from urine.
AMP: Ampicillin; AMX: Amoxicillin; KF: Cefalexine; GM: Gentamycin; Clox: Cloxacillin; Trim: Trimethoprim; SXT: Co-trimoxazole; E: Erythromycin; NA: Nalidixic; Acid NF: Nitrofuranton; CTX: Cephotaxame; % (Resistant Rate).

Discussion:

Infections with U.T.Is. were more commonly diagnosed in females 32 (20%) than in males 19 (12%)(table-1). The anatomy of the female urinary organs (or opening) is of particular importance to the pathogenesis of U.T.I. The female's urethra is relatively short compared with the male urethra and lies in close proximity to the warm moist per rectal region. Because of the shorter urethra, bacteria can reach the bladder more easily in female [11].

In females the majority of bacterial infection were in the (608) years age group 9 (5.6%) (table-1), that may represent the beginning of schooling when young females for the first time errors in self managements embarrassment of micturating away from home. Errors in management made by schoolgirls are to clean the perineum forward from the anusto the valva and to micturate in frequency. In frequent micturation leads to over distension of the bladder with subsequent incomplete emptying, residual urine when interferes with bladder defenses by allowing bacterial colonization of bladder urine to occur more readily (2,5) While in males the majority of bacterial infection were in the (8-10) years age 4 (2.5%).

However the incidence of U.T.I.Is among males is low after age 1 year and until approximately age to when enlargement of the prostate interferes with emptying of the bladder [11].

From the result of general urine examination showed in (table-2) we found that all the examined patients were has pyuria at same time with significant bacteruria. Approximately three-quarter of patients with urinary tract infection have pyuria (that is more than 100 white cells per milliliter of urine). These finding is also common how ever in a number of non-infection diseases[3].

Also we found that 23 (45%) of patients with Heamaturia; When heamaturia is accompanied by dysuria or frequency. The source is usually in the bladder, and possibly bacterial infection of the bladder wall (cystitis), while heamaturia which clears rapidly during micturition is usually urethral in origin[3].

E. Coli is responsible for 21(41.02%) of all urinary infections (table-3). Many investigation suggest that the strains of *E.Coli* that causes the U.T.Is. possess certain virulence factors that enhance their ability to colonize and invade the urinary tract .Some of these virulence factors include increased adherence to vaginal and uroepithelial cells by bacterial surface structures (adhesions, in particular pili) x-hemolysin production and resistance to serum killing activity[11,12]. *E.Coli* is followed by *Klebsiella spp.* 8 (15.5%), *Enterobacter spp*. 8 (15.5%) and Proteus spp. 5 (10%); the percentage of resistance among all bacterial species isolated from urine samples showed in (table-4).

Nitrofurantoin and Co-trimoxazole are the drug of choice for U.T.I; combination of sulfamethoxazole and trimethoprim either orally or intravenously is effective against a variety of gram–negative organism other than *Pseudomonas spp*[11].

The use of gentamycin and ampicillin for long time that gave enough chance for resistant strain to emerge and dominant over sensitive bacterial populations [12].

The resistance to antibiotics may be due to developing altered receptors for drug decreasing the amount of drug that reaches the receptor by altering the means of entry or removal of drug destroying or inactivating a drug or by synthesizing resistant metabolic path way [12,13].

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