URINARY TRACT INFECTION AMONG INFANTS[+]

Tagreed Ali obeed[*] Thair Fowzi AL-Khyat[**]

Abstract :

Fifty samples of urine were collected from infants under 10 months of age suffering from urinary tract infection visiting children hospital .All urine samples which had been collected from patient showed pus cells by microscopical examination .Culture was done for each sample to find out the causative agents (bacteria) and their antimicrobial sensitivity . The most effective antibiotic for*E.coil* ,*klebsiella* and mixed *E.coil* and *proteus* infection was furantin , trimethoprim was the next to both *E.coil* and *klebsiella* and amoxicillin was the drug of choice in treating *strepto coccus pyogen* . Trimethoprim was the drug choice in treating *sterptococcal fecalise* .

***Proteus* species showed eguivocal sensitivity for each of furantin ,trimethroprim , ceflazidime ,ceflxime , amikacin and nalidixic acid .**

All samples which were collected from patient showed that urinary tract infection occurs more in females than in males which were 29cases 58% ,21 cases 42% respectively.

المستخلص :

خمسون نموذجاً جمعت من أطفال تحت سن عشرة اشهر من العمر يعانون من التهاب المجـــاري البولية . جميع النماذج التي جمعت من المرضى عند فحصها مجهرياً ظهرت فيها خلايا قيحية .

ثم زرعت النماذج المذكورة اعلاه وذلك لمعرفة المسبب للالتهاب ونوع البكتريـــا المعزولـــة مـــن النماذج .كما اجري فحص الحساسية للمضادات الحيوية لجميع النماذج التي جمعت من المرضى كما وجـــد ان التهاب المجاري يحدث اكثر في ألأناث مما هو عليه في الذكور ٢٩حالة بنسبة ٥٨ % أما بالذكور ٢١ حالة بنسبة٤٢ % .

Introduction :

1. Anatomy and phsiology of urinary tract :

The urinary tract is composed of kidney ,ureters ,bladder and urethra.The kidneys act as specialized filtering system to clean the blood of many waste materials selectively , reabsorbing substances that can be reused .Waste materials are excreted in the urine ,which is usually acidic (about PH 6) the urine PH ranges from 4.8- 7.5 ,

[+]Received on ٢٠٠٥/٤/٥ , Accepted on ٢٠٠٧/٥/٢٤

[*]Medical LABORATORY Technical Department\Basrah Technical Institute\Basrah – Iraq
[**]Medical LABORATORY Technical Department\Basrah Technical Institute\Basrah – Iraq

consistently alkaline urine suggests infection with urease–producer bacterium that converts urea in urine to ammonia [1].

2. Urinary tract is generally –protected from infection :

Urinary tract infection (U.T.I) occurs more frequently in women than in men besause of short female urethra compared to that of male and it is adjacent to genital and intestinal tract .The downward flow of urine also helps clean the system by flushing out microorganisms before they have achanced to multiply and cause infection [2] .

The urinary tract is protected from infection by a number of mechanisms besides its anatomy [3] .

3. Kidney infection may follow bladder infection :

Unless infection of the lower urinary tract is overcome either by antimicrobial treatment or by natural defence mechanisms it can ascend through the ureters and involve the kidneys . Most kidney infections develop after a bladder infection .However ,bacteria circulating in the blood stream can sometimes infect the kidney [2] .

4. Origin of urinary tract infection :

More than 90 % of urinary tract infections are caused by bacterial spp. that are part of normal fecal flora and consequently can readily contaminate the urinary tract when its natural defenses are weakened . Studies have shown that usually strains from the patients own intestinal bacteria rather than from the environment ,such as E.coli [1] can cause U.T.I .

The E.coli strain that cause urinary infection have adhesions factors that attach specifically to resptors on bladder and kidney epithelium [4] .

Eschrichia E.coil accounts for the majority of urinary tract infection in young patient .But other gram negative rods of different generea ,such as proteus and Enterobacter ,can also be the cause [3] .

Urinary tract infection (U.T.I) is the most common genitourinary disease of childhood .

The signs and symptome of(U.T.I) vary markedly with age . Neonates commonly present with failure to thrive ,feeding problems ,diarrhea,vomiting fever,and hyperbilirubinemia .In Ist month of life ,a male preponderance is seen in patient with (U.T.I) .The sex ratio of U.T.I has a female preonderance from the 2nd month of life to adulthood [5]

Diagnosis : The diagnosis of UTI is made by a postive culture of bacteria in the urine , the most common bacteria isolated from symptomatic or a symptomatic childern experiencing their first UTI occuring at any age and both sexes ,is E.coil .Other organisms such as klebsiella ,proteus ,enterococci and staphylococcus saprophytic appear more frequently in the presence of obstruction or abnormalities in the urinary tract [3] .

5. Bacterial count of UTI :

Bacterial count of 105 per/ml of urine indicates infection for most but not all bacterial species .Lower counts are usually due to normal bacteria flora that enter the

urine as it passes from the lower urethra but they may indicate infection if it is composed of single species of recognized urinary pathogen [6] .

Method :

Fifty urine samples were collected from infants under 10 months of age by special sterilized containers .General urine examination was done for each sample before culture .Samples were cultured on blood and macconky´s agar using a sterilized loop to inoculate 2-3 drops of urine by streaking method of urine on the media to get isolated colonies . Bacterial species was identified according to their gram reaction ,colonial morphology biochemical character [7]

Sugar fermentation and blood hemolysis accur after 24h.Of incubation at 37C°. Results from bacterial antibiogram activity (sencitivity test) was carried on each single isolate by using disc diffusion method .After incubation for 24h. inhibition zone around antibiotic disc was measured [8] .

Result and discussion :

Table 1.shows the of microorganisms isolated from (UTI).Eschrichia E.coil represents the most common bacteria involved in (UTI) of infants under 10 months of age 68% .Followed by klebsiella 10% ,4% for each of staph aureas ,proteus , strepto coccus pyogen ,monillia. mixed growth E.coil and proteus infection with strepto facalis repesented only 2% of all infections .

Table 2. shows the prevalenle of UTI according to patient sex. In males it is 58% and in females 42% .

Table 3. shows the different types of infection in relation to the sex of infants .Equal percentage of E.coil was isolated from both sexes of infants,while is clear that infection with staph aureas ,strepto coccus pyogens and proteus microorganism is exclusively encountered in females only . Similarly strespto fecalis , monillia and mixed E.coil and proteus infection is encountered only in male patients .

Klebsiella infection is more common in females (80) than males .Table 4 shows the age groups of infants collected in relation to the sex for each mico organism .In this table it guite evident that (UTI) occurs in younger age groups (1- 4) month in males for all microorganism .While it effects older age groups in females for all microorganism (2-10) months .

Table 5 shows the sensitivity of each micro organism for different antibiotic used .The most effective antibiotic for E.coil ,klebsiella and mixed E.coil and proteus infection was furantin ,trimethoprim is next to it both E.coil and klebsiella ,amoxicillin is the drug of choice in treatingstrepto coccus pyogen .While trimethoprim is the best treating sterptococcal fecalise .

Proteus infection shows equal sensitivity for each of furantin , trimethroprim , ceflazidime ,ceflxime , amikacin and nalidixic acid .

Table 1: Microorganism isolated from U.T.I of infants .

Pathogens	NO. Of isolates	Percentage
E .coil	34	68%
Klebsiella spp.	5	10%

Staph .aureas	2	4%
Streptococcus pyogenes	2	4%
Proteus	2	4%
E.coil and proteus	2	4%
monillia	2	4%
Strepto . fecalise	1	2%
Total NO.	50	100%

Table 2: Prevelance of UTI according to sex .

Sex	**urinary tract infection**	
	NO.of sample	**percentage**
Male	21	42%
Female	29	58%

Table 3. Distribution of pathogenes isolated from both sexes of infants patients .

Pathogens	**Females NO.**	**Percentage**	**Males NO.**	**Percentage**
E.coli	19	55.88%	15	44.11%
Klebsiella spp.	4	80%	1	20%
Staph .aureas	2	100%	-	-
Sterptococcus pyogen	2	100%	–	–
proteus	2	100%	–	–
E.coli +proteus			2	100%
Monillia	–	–	2	100%
Sterpto fecalies			1	100%
Total NO.	29	–	21	1

Table 4: Microorganisms isolated from both sexes of different age groups of infants .

Pathogen	**Female**	**Age in months**	**Males NO**	**Age in months**
E.coli	19	2-10	15	1-4
Klebsiella spp.	4	2-9	1	4

Staph aureas	2	5-10	-	-
Strepto fecalies	-	-	1	2
Strepto coccus pyogen	2	7-9	-	-
E.coli and protus	-	-	2	2-3
Proteus	2	6	-	-
Monillia	-	-	2	1-3

Table 5 . Antibiotic sensitivity test for microorganism isolated from U.T.I of different age groups of infants .

pathogens	**Antibiogram**									
E.coil	FT	TM	AN	CA	AMX	NA	CE	CFM	AMP	CO
	93%	60%	46%	33%	30%	30%	26%	13%	6%	6%
Klebsiellia spp.	100%	60%	30%	20%	-	20%	-	-	-	-
Staph Aureas	50%	-	50%	-	-	-	-	-	-	-
Streptococus pyogen	-	50%	50%	50%	100%	-	50%	-	-	-
Strepto Fecalise	100%	100%	100%	-	-	-	-	-	-	-
E.coli and proteus	100%	50%	50%	-	-	-	-	-	-	-
Proteus	50%	50%	-	50%	-	50%	-	50%	-	-

Amitibiotic which were used in this research

1- nitro furantin FT:300 ma
2-co-Trimoxazole Co :25 mcg.
3-Amoxicilin Amx :25 mcg .
4-Nalidixic acid NA :30 mcg .
5-Tobromycn Tm:10 mcg .
6-Ciflazidime CA :30 mcg .
7-Cifotzxime Ce : 30 mcg.
8-Amikacin AN :mcg .
9-Cfixime CFm :5mcg .

Conclusion :

The most common pathogen encountered in (UTI) in infants under 10 months age is E.coil (68%)UTI is more pronounced in females than in males.Females are more prone to (UTI)than males , the ratio is about (1.5:1) .Males are affected in yonger age group than females .

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