EXPERIMENTAL RESULTS

Experimental Results

Examination of urine samples for the presence of pus cells :

I Symptomatic Cases :

50 urine samples (40 males and 10 females were examined for the presence of significant pyuria (more than 10 pus cells/H.P.F) and the result revealed that 32 male patients of 40 (80%) had significant pyuria and in female patients 9 of 10 samples (90%) had significant pyuria.

II Asymptomatic Cases :

Examination of 30 male samples and 20 female samples of urine for the presence of pus cells revealed that 7 of 30 male samples (23.3%) and 8 of 20 female cases had significant pyuria.

These results illustrated in Table I.

Bacteriological Examination

- Estimation of the viable bacterial count :

A: In Symptomatic Cases (group A)

On performing the viable bacterial count in case of symptomatic group A the following was found :

32 of 40 male patients (80%) had significant bacteriuria and 9 of 10 (90%) female patients had significant bacteriuria.

B: In Asymptomatic Cases (group B)

7 male samples of 30 had significant bacteriuria (23.3%) and 8 female samples of 20 (40%) had significant bacteriuria. Table (2).

-The organisms isolated from symptomatic cases are: table(3)

1- E.coli : 13 cases of 42 (30.95%)

2- Pseudomonas: 12 cases (28.57%)

3- Klebsiella: 8 cases (19.05%)

4- Proteus mirabilis: 5 cases (11.9%)

5- Staph. aureus: 4 cases (9.5 %)

-The organisms isolated from asymptomatic cases : group B table(4)

Staphylococcus aureus: 8 of 15 cases (53.3%)

E.coli : 3 cases of 15 (20%)

Pseudomonas: 2 cases of 15 (13.3%)

2 cases of proteus : one was proteus vulgaris and one was Proteus mirabilis.

Gram negative organisms predominated in symptomatic cases while gram positive organisms predominated in asymptomatic cases. In symptomatic cases the first predominant organisms were E.coli (13 cases) followed by Pseudomonas (12 cases) then klebsiella (8 cases) and Proteus (5 cases). The least incidence was Staphylococcus aureus (4 cases).

While in cases of Group B (asymptomatic cases : of the fifteen (significant bacteriuria cases) there was 8 cases of

staphylococcus aureus

E.coli were 3 cases

Pseudomonas: 2 cases

Proteus vulgaris was one case and Proteus mirabilis was one case.

- Table(5) illustrated the percentage of different organisms in symptomatic and asymptomatic cases.

- Serotyping of E.coli by slide agglutination test using E.coli antisera is shown in table(6) (a) and (b)

A- In group A symptomatic cases :

Among the 13 cases : There was No.1 and No.45 are of the same serotype O 55 K 59

No.8, No.18 and No.44 are non typable

No.5 O 127 K 63

No.10 O 119 K 69

No.12 O 128 K 67

No.17 O 124 K 72

No.20 O 114 K 95

No.23 O 126 K 71

No.32 O 119 K 69

No.38 O 111 K 58

B- In case of asymptomatic cases (group B)

Case No. F 11 (F=female) non typable, F 8 : O 124 K 72

Case No. 11: O 119 K 69

Antibiotic sensitivity test for the isolated organisms

a) Antibiogram pattern for E.coli strains isolated from symptomatic and asymptomatic bacteriuric cases illustrated in table "7" revealed that :

Of 13 cases of E.coli the most effective drug was Ceftriaxon, Norfloxacin and Furadantin, the remaning drugs used were less effective in treatment of urinary tract infection in this study.

In case of Ceftriaxone the number of sensitive were 11 cases and 2 cases were resistant.

- 10 cases were sesitive to Norfloxacin and 2 cases were resistant to it.
- 7 cases were sensitive to Furadatin and 6 cases resistant to it.
- Erythromycin, Vibramycin and Garamycin in the same level of sensitivity and 7 were resistant), the remaining antibiotics were less effective.

Table (8), illustrated the antibiogram pattern of Pseudomonas pyocyanea . Ps,was the most dangerous organism as it seems to be the most resistant organism to most antibiotics used.

In symptomatic cases Norfloxacin was 41.7% effective followed by Nalidixic acid (33.3%) then Ceftriaxone (16.7%). The remaining antibioticswere not effective.

And in asymptomatic cases : one case was sensitive to

Nalidixic acid and one casewas sensitive to Furadantin and the remaining antibioticswere ineffective.

- Antibiotic sensitivity for Klebsiella illustrated in table (9)

(No asymptomatic cases). the most effective antibiotic was Ceftriaxone followed by Norfloxacin, Amoxicillin, Negram Garamycin then Vibramycin, Sutrim Furadantin, Chloramphenicol and Streptomycin.

- Antibiogram pattern of Proteus speices isolated from symptomatic and asymptomatic cases. illustrated in table (10)

In symptomatic cases :

Ceftriaxone was the most effective antibiotic then Norfloxacin and amoxicillin then Negram, Vibramycin Erythrocin, sutrim Refocin and Chloramphenicol then Garamycin, Streptomycin and Furadantin .

Table (11) illustrated the antibiogram of Staphylococci strains isolated from symptomatic and asymptomatic cases.

The most effective antibioticswere :

- Rifocin, Garamycin, Norfloxacin then Erythromycin, Ceftriaxone then Vibramycin, Amoxicillin, Furadantin and Sutrim and the least effectivewere Pencillin, Streptomycin, Chloramphenicol and Negram.

Plasmid Curing

A) By Elevated Temperature :

Highly resistant strains of E.coli and pseudomonas were incubated into nutrient broth flasks (50 ml). The flasks were incubated at 42 °C, 45 °C for 24 hours with shaking, samples of 0.1 ml suspension from each flask were plated on nutrient agar plates at 37 °C for 24 hours, then the colonies were tested for the resistance level to antibiotics.

B) By Ascorbic Acid :

Cultures of E.coli and Pseudomonas isolated resistant to Garamycin, Streptomycin and Amoxicillin were grown in liquid nutrient broth supplemented with 100, 300 ug ascorbic acid/ml medium over night with shaking. Samples of 0.1 ml from each ascorbic acid concentration were plated on nutrient agar plates. The plates were incubated at 37 °C and the colonies from each plate were tested for their resistance to different antibiotic concentration.

The results were as follows :

- In Cases of E.coli resistant to garamycin : table (12)

Plasmid curing did not occur in 3 cases by either elevated temperature and ascorbic acid and 7 cases were cured and increasing the inhibitory zones by elevated temperature and increasing ascorbic acid concentration

together with increasing the antibiotic concentration. (70% curing)

- Cases of E.coli resistant to Streptomycin (table 13)

11 resistant cases of E.coli to Streptomycin were tested for curing of plasmid.

Curing occured in 7 cases and 4 cases not affected by elevated temperature nor by ascorbic acid, i.e (63.6% curing)

- Cases of E.coli resistant to amoxicillin (table 14)

In 4 of 12 cases curing did not occur (66.7% curing).

Plasmid curing of pseudomonas strains isolated from symptomatic and asymptomatic cases :

14 Pseudomonas strains resistant to Garamycin, Streptomycin and Amoxicillin were tested for plasmid curing and the results were as follows :

- In cases resistant to garamycin : (table 15)

Plasmid curing occured in 9 cases. (64.3% curing)

- In pseudomonas strains resistant to streptomycin (table 16) :-

Plasmid curing had occured in 10 cases (71.4%) and the remaining 4 cases there was no curing.

- In Pseudomonas strains resistant to Amoxicillin (table 17)

All the cases had cured by the two methods of plasmid curing i.e 100 % curing.

Table I

Percentage of pyuria in male and female geriatric people in symptomatic and asymptomatic urinary tract infection

Sex	Cases					
	Symptomatic			Asymptomatic		
	No of cases	+ve for pyuria	%	No of cases	+ve for pyuria	%
males	40	32	80%	30	7	23.3
females	10	9	90%	20	8	40%

Table II

Significant bacteriuria in male and female geriatric people in cases of symptomatic and asymptomatic U.T.I.

Sex	Cases					
	Symptomatic			Asymptomatic		
	No of cases	+ve for bacteriuria	%	No of cases	+ve for bacteriuria	%
males	40	32	80%	30	7	23.3
females	10	9	90%	20	8	40%

Organisms obtained from "group A" Symptomatic cases

Case No.	Organisms found in the urine	Viable count	Significant bacteriuria or Not
1	E.coli	$> 10^5$	significant bacteriuria
2	pseudomonas	"	"
3	Klebsiella	"	"
4	Klebsiella	"	"
5	E.coli	"	"
6	pseudomonas	"	"
7	staph.aureus	$<10^5$	Not significant
8	E.coli	$>10^5$	significant
9	pseudomonas	"	"
10	E.coli	"	"
11	Klebsiella	"	"
12	E.coli	"	"
13	staph.aureus	$<10^5$	Not significant
14	pseudomonas	$>$ "	significant
15	E.coli	$<10^5$	Not significant
16	Klebsiella	$>10^5$	significant
17	E.coli	"	"
18	E.coli	"	"
19	staph.aureus	"	"
20	E.coli	"	"
21	Klebsiella	$<10^5$	Not significant
22	proteus mirabilis	$>10^5$	significant
23	E.coli	"	"
24	pseudomonas	"	"
25	staph.aureus	"	"

Table (3)

cont. Table (3)

Case No.	Organisms found in the urine	Viable count	Significant bacteriuria Not
26	E.coli	$< 10^5$	not significant
27	Klebsiella	$> 10^5$	significant
28	pseudomonas	"	"
29	proteus Mirablis	"	"
30	Klebsiella	"	"
31	E.coli	$< 10^5$	not significant
32	E.coli	$> 10^5$	significant
33	pseudomonas	"	"
34	proteus Mirablis	"	"
35	pseudomonas	"	"
36	Klebsiella	"	"
37	staph.aureus	"	"
38	E.coli	"	"
39	pseudomonas	"	"
40	Klebsiella	$< 10^5$	not significant
41	proteus Mirablis	$> 10^5$	significant
42	pseudomonas	"	"
43	staph.aureus	$< 10^5$	not significant
44	E.coli	$> 10^5$	significant
45	E.coli	"	"
46	staph.aureus	"	"
47	proteus Mirablis	"	"
48	pseudomonas	"	"
49	Klebsiella	"	"
50	pseudomonas		

Bacteriological Examination of group B

Asymptomatic cases

Case No.	Viable count	Organisms found
3	$> 5x10^5$	Staph.aureus
6	$> 3x10^5$	proteus mirabilis
11	$> 2x10^5$	E.coli
17	$> 4x10^5$	pseudomonas
20	$> 3x10^5$	Staph.aureus
27	$> 1x10^5$	Staph.aureus
30	$> 2x10^5$	Staph.aureus
F_1	$> 2x10^5$	proteus vulgaris
F_4	$> 3x10^5$	Staph.aureus
F_7	$> 4x10^5$	Staph.aureus
F_8	$> 2x10^5$	E.coli
F_{11}	$> 5x10^5$	E.coli
F_{12}	$> 2x10^5$	pseudomonas
F_{15}	$> 1x10^5$	Staph.aureus
F_{16}	$> 3x10^5$	Staph.aureus

F = female

Table (4)

Table (5)

The percentage of different organisms in symptomatic and asymptomatic cases

Type of organism	% of cases in symptomatic cases	% in asymptomatic cases
E.coli	30.95%	20 %
Pseudomonas	28.57 %	13.3 %
Klebsiella	19.05%	———
Proteus	11.90%	13.3 %
staphylococci	9.50 %	53.3 %

Table 6(a) Serotyping of Ecoli strains isolated from the symptomatic cases

Case No.	Serotyping
1	O_{55} K_{59}
5	O_{127} K_{63}
8	non typable
10	O_{119} K_{69}
12	O_{128} K_{67}
17	O_{124} K_{72}
18	non typable
20	O_{114} K_{95}
23	O_{126} K_{71}
32	O_{119} K_{69}
38	O_{111} K_{58}
44	non typable
45	O_{55} K_{59}

Table 6(b) Serotyping of E.coli Strains Isolated From group "B" Asymptomatic cases

Case No.	Serotyping
11	O_{119} K_{69}
F_8	O_{124} K_{72}
F_{11}	non Typable

Table (7)

Antibiogram pattern of E.coli Organisms isolated from Symptomatic and Asymptomatic Bacteriuric Cases

DISC	No of strains isolated from symptomatic cases				No of strains isolated from asymptomatic cases			
	No of sensitive	%	No of resistant	%	No of sensitive	%	No of resistant	%
Negram	4	30.3%	9	69.2%	2	66.7%	1	33.3%
Garamycin	6	46.2	7	53.8%	—	—	3	100 %
Vibramycin	6	46.2	7	53.8%	2	66.7	1	33.3%
Erythromycin	6	46.2	7	53.8%	1	33.3	2	66.7%
Sutrim	4	30.8	9	69.2%	1	53.3	2	66.7%
Amoxicillin	4	30.8	9	69.2%	—	—	3	100 %
Refocin	2	15.4	11	84.6%	1	33.3	2	66.7%
Furadantin	7	53.3%	6	46.2%	2	66.7%	1	33.3
Chloramphen-icol	3	23.1	10	76.9%	3	100 %	--	--
Streptomycin	5	38.5	8	61.5%	—	—	3	100 %
Norfloxacin	10	76.9%	3	23.1%	2	66.7	1	33.3%
Ceftriaxon	11	84.6%	2	15.4%	2	66.7	1	33.3%

Table (8)

Antibiogram pattern of Pseudomonas Organisms isolated from Symptomatic and Asymptomatic Bacteriuric Cases

DISC	No of strains isolated from symptomatic cases				No of strains isolated from asymptomatic cases			
	No of sensitive	%	No of resistant	%	No of sensitive	%	No of resistant	%
Negram	4	33.3%	8	66.7%	1	50 %	1	50 %
Garamycin	—	—	12	100 %	—	—	2	100 %
Vibramycin	—	—	12	100 %	—	—	2	100 %
Erythromycin	—	—	12	100 %	—	—	2	100 %
Sutrim	—	—	12	100 %	—	—	2	100 %
Amexicillin	—	—	12	100 %	—	—	2	100 %
Refocin	—	—	12	100 %	—	—	2	100 %
Furadantin	2	8.3%	11	91.7%	1	50 %	1	50 %
Chlorampheni-col	—	—	12	100 %	—	—	2	100 %
Streptomycin	—	—	12	100 %	—	—	2	100 %
Norfloxacin	5	41.7%	7	58.3%	—	—	2	100 %
Ceftriaxon	2	16.7%	10	83.3%	—	—	2	100 %

Table (9)

Antibiogram pattern of Klebsiella Species isolated from Symptomatic Bacteriuric Cases

DISC	No of strains isolated from symptomatic cases			
	No of sensitive	%	No of resistant	%
Negram	6	75 %	2	25 %
Garamycin	5	62.5%	3	37.5%
Vibramycin	4	50 %	4	50 %
Erythromycin	3	37.5%	5	67.5%
SutriM	4	50 %	4	50 %
Amoxicillin	6	75 %	2	25 %
Refocin	3	37.5%	5	62.5%
Furadantin	4	50 %	4	50 %
Chloramphen-icol	4	50 %	4	50 %
Streptomycin	3	37.5%	5	62.5%
Norfloxacin	6	75 %	2	25 %
Ceftriaxon	7	87.5%	1	12.5%

Table (18)

Antibiogram pattern of Proteus species isolated from Symptomatic and Asymptomatic Bacteriuric Cases

DISC	No of strains isolated from symptomatic cases				No of strains isolated from asymptomatic cases			
	No of sensitive	%	No of resistant	%	No of sensitive	%	No of resistant	%
Negram	2	40%	3	60 %	—	—	2	100 %
Garamycin	1	20%	4	80%	—	—	2	100 %
Vibramycin	2	40%	3	60 %	—	—	2	100 %
Erythromycin	2	40 %	3	60 %	1	50%	1	50 %
Sutrim	2	40 %	3	60 %	1	50%	1	50 %
Amoxicillin	3	60 %	2	40%	—	—	2	100 %
Refocin	2	40 %	3	60 %	2	100%	—	—
Furadantin	1	20 %	4	80%	—	—	2	100 %
Chloramphen-icol	2	40%	3	60 %	—	—	2	100 %
Streptomycin	1	20 %	4	80%	—	—	2	100 %
Norfloxacin	3	60 %	2	40 %	1	50%	1	50 %
Ceftriaxon	4	80%	1	20 %	1	50%	1	50 %

Table (11)

Antibiogram pattern of Staphylococci strains isolated from Symptomatic and Asymptomatic Bacteriuric Patients

DISC	No of strains isolated from symptomatic cases				No of strains isolated from asymptomatic cases			
	No of sensitive	%	No of resistant	%	No of sensitive	%	No of resistant	%
Negram	1	25 %	3	75 %	2	25 %	6	75 %
Garamycin	4	100 %	—	—	8	100 %	—	— %
Vibramycin	2	50 %	2	50 %	3	37.5%	5	62.5%
Erythromycin	3	75 %	1	25 %	7	87.5%	1	12.5%
SutriM	2	50 %	2	50 %	5	62.5%	3	37.5%
Amoxicillin	2	50 %	2	50 %	2	25 %	6	75 %
Refocin	4	100 %	—	—	8	100 %	—	—
Furadantin	2	50 %	2	50 %	1	12.5%	7	87.5%
Chloramphen-icol	1	25 %	3	75%	5	62.5%	3	37.5%
Streptomycin	—	—	4	100 %	7	87.5%	1	12.5%
Norfloxacin	4	100 %	—	—	8	100 %	—	—
Ceftriaxon	3	75 %	1	25 %	6	75 %	2	25 %
Pencillin	—	—	4	100 %	3	37.5%	5	62.5%

Table (12)

The Mean Inhibitory Zones (mm) in Garamycin resistant strains of Ecoli before and after Curing by

- Temperature at 42 and 45°C
- Ascorbic acid at concentration of 100 and 300 ug/ml medium

Case No	inhibitory zones before curing				The Effect of Temperature								The Effect of Ascorbic Acid								REMARKS	
					42°C				45°C				100 ug/ml				300 ug/ml					
	Antibiotic Con.				Antibiotic Concentration				Antibiotic Concentration				Antibiotic Concentration				Antibiotic Concentration					
	25	50	100	200	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml		
5	1	2	3	4	8	10	12	18	10	12	15	22	7	10	12	15	10	12	15	18		
8	1	2	3	5	6	8	10	15	8	10	15	20	6	10	12	15	8	12	14	18		
10	3	4	5	7	8	12	14	16	12	14	16	18	10	14	16	20	12	16	18	22		
12	2	3	4	6	2	3	4	6	2	3	4	6	2	3	4	6	2	3	4	6	No Curing	A
18	1	2	3	4	6	8	12	16	10	12	15	20	6	8	12	16	10	14	18	22		
23	2	3	4	6	8	10	15	20	12	15	18	25	7	10	15	20	12	15	18	23		
45	4	5	6	7	4	5	6	7	4	5	6	7	4	5	6	7	4	5	6	7	No Curing	
11	2	3	4	6	10	12	14	16	16	18	20	25	8	10	12	14	12	14	16	18		
F_8	3	4	6	8	3	4	6	8	3	4	6	8	3	4	6	8	3	4	6	8	No Curing	B
F_{11}					15	16	17	20	18	20	22	24	12	13	14	16	14	15	16	18		

A Symptomatic cases

B Asymptomatic cases

Table (13)

The Mean Inhibitory Zones in Cases of Streptomycin resistant E.coli Strains

Before and After Curing by 1-Elevated Temperature 2-Ascrobic Acid

Case No	inhibitory zones before curing				The Effect of Temperature								The Effect of Ascorbic Acid								REMARKS	
					42°C				45°C				100 ug/ml				300 ug/ml					
	Antibiotic Concentration				Antibiotic Concentration				Antibiotic Concentration				Antibiotic Concentration				Antibiotic Concentration					
	25	50	100	200	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml		
5	3	4	6	7	6	8	10	15	9	12	15	20	6	8	10	15	8	10	12	15		A
8	2	3	4	5	2	3	4	5	2	3	4	5	2	3	4	5	2	3	4	5	No Curing	
10	3	4	4	5	6	8	10	15	8	10	12	18	7	9	11	13	10	12	15	18		
12	2	3	6	7	2	3	6	7	2	3	6	7	2	3	6	7	2	3	6	7	No Curing	
23	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	No Curing	
32	2	4	5	6	8	10	15	24	12	18	22	24	10	12	15	18	12	14	18	22		
38	3	4	5	6	10	15	20	25	12	16	22	26	12	15	18	22	14	16	19	24		
45	4	5	6	7	10	15	20	26	13	18	24	28	10	14	18	24	12	16	22	24		
11	2	3	4	5	2	3	4	5	2	3	4	5	2	3	4	5	2	3	4	5		B
F_8	3	5	7	9	12	14	16	20	18	20	23	26	12	14	17	20	17	20	22	23	No Curing	
F_{11}	3	5	6	7	15	16	17	20	18	20	22	24	16	18	20	22	20	23	25	27		

A Symptomatic cases

B Asymptomatic cases

Table (14)

The Mean Inhibitory Zones in Cases of Amoxicilline resistant Strains of E.coli

Before and After Curing by 1-Elevated Temperature 2-Ascorbic Acid

Case No	inhibitory zones before curing				The Effect of Temperature								The Effect of Ascorbic Acid								REMARKS	
					42°C				45°C				100 ug/ml				300 ug/ml					
	Antibiotic Con.				Antibiotic Concentration				Antibiotic Concentration				Antibiotic Concentration				Antibiotic Concentration					
	25	50	100	200	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml		
1	3	4	5	6	10	12	14	18	15	17	18	24	8	10	13	16	12	15	18	25		A
8	2	4	5	7	2	4	5	7	2	4	5	7	2	4	5	7	2	4	5	7	No Curing	
12	3	5	6	7	6	10	15	18	10	15	20	25	5	8	10	15	8	12	15	20		
18	2	4	5	6	5	8	12	18	8	12	15	22	5	8	12	18	10	12	18	22		
20	1	2	3	5	1	2	3	5	1	2	3	5	1	2	3	5	1	2	3	5	No Curing	
23	No	2	4	5	5	10	15	18	8	14	20	24	4	6	8	12	6	9	12	15		
38	2	3	4	5	5	7	9	12	8	10	12	14	5	7	10	12	8	10	11	13		
44	2	3	4	4	2	3	4	5	2	3	4	5	2	3	4	5	2	3	4	5	No Curing	
45	1	2	3	5	3	5	8	10	5	10	13	16	3	6	9	10	6	10	12	14		
11	No Zone				3	5	9	12	5	8	12	16	3	4	8	10	6	8	11	15		B
F_8	No Zone				No Response				No Response				No response				No Response				No Curing	
F_{11}	2	3	4	5	6	16	10	12	8	12	15	18	5	7	9	12	7	9	11	15		

A Symptomatic cases

B Asymptomatic cases

Table (15)

The Mean Inhibitory Zones in Cases of Garamycin resistant Strains of Pseudomonas isolated from symptomatic and asymptomatic cases by :

1-Elevated Temperature 2-Ascorbic Acid

Case No	inhibitory zones before curing				The Effect of Temperature								The Effect of Ascorbic Acid								REMARKS	
					42°C				45°C				100 ug/ml				300 ug/ml					
	Antibiotic Con.				Antibiotic Concentration				Antibiotic Concentration				Antibiotic Concentration				Antibiotic Concentration					
	25	50	100	200	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml		
2	No Zones				No Zones				No Zones				No Zones				No Zones				No Curing	A
6	3	4	5	7	6	8	10	15	8	10	12	18	5	7	8	10	7	10	12	15		
9	1	5	6	7	4	6	8	10	6	8	10	12	3	5	7	9	5	7	9	11		
14	No Zones				2	4	6	8	4	7	9	12	2	4	6	8	4	7	9	12		
24	No Zones				No Zones				No Zones				No Zones				No Zones				No Curing	
28	3	4	5	6	5	6	8	10	8	9	12	15	4	5	7	9	6	8	10	13		
33	2	4	5	6	2	4	5	6	2	4	5	6	2	4	5	6	2	4	5	6	No Curing	
35	1	3	4	5	1	3	4	5	1	3	4	5	1	3	4	5	1	3	4	5	No Curing	
39	No Zones				3	5	7	10	6	10	12	15	3	5	7	10	5	8	10	12		
42	No Zones				5	7	10	12	8	10	12	15	5	6	8	10	7	10	12	14		
48	1	2	3	4	4	6	8	10	6	8	10	12	4	5	7	8	6	8	10	12		
50	2	3	5	6	5	8	12	14	8	9	14	18	5	8	10	12	8	10	12	14		
19	No Zones				3	6	9	14	5	8	12	15	3	5	8	12	6	9	12	15		B
F_{12}	2	4	5	6	No Zones				No Zones5				No Zones				No Zones				No Curing	

The Diameter of Inhibitory Zones before and after Curing in mm

A Symptomatic cases

B Asymptomatic cases

Table (16)

The Mean Inhibitory Zones in Cases of Streptomycin Resistant Strains of Pseudomonas isolated from symptomatic and asymptomatic casesbefore and after Curing

Case No	inhibitory zones before curing				The Effect of Temperature								The Effect of Ascorbic Acid								REMARKS	
					42°C				45°C				100 ug/ml				300 ug/ml					
	Antibiotic Con.				Antibiotic Concentration				Antibiotic Concentration				Antibiotic Concentration				Antibiotic Concentration					
	25	50	100	200	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml		
2	3	4	6	7	16	18	20	23	18	20	22	25	12	15	18	22	15	18	20	24		A
6	2	3	5	6	12	14	17	20	16	18	22	26	10	13	15	20	13	15	20	23		
9	No Zones				No Zones				No Zones				No Zones				No Zones				No Curing	
14	No Zones				15	18	20	24	20	22	26	28	17	19	20	23	20	23	26	30		
24	4	6	7	8	18	20	22	23	24	26	28	30	14	16	18	20	18	20	22	25		
28	4	6	8	10	14	16	18	20	18	22	24	28	11	15	16	18	14	16	18	20		
33	2	3	5	7	16	18	20	23	20	22	25	28	13	15	18	22	16	18	22	24		
35	3	5	6	7	18	20	22	24	24	26	28	30	18	20	23	25	21	23	25	28		
39	No Zones				No Zones				No Zones				No Zones				No Zones				No Curing	
42	2	3	4	6	18	20	22	24	23	25	28	30	15	16	18	22	18	20	22	26		
48	1	2	3	5	19	22	24	26	24	26	28	30	15	16	18	23	18	20	22	26		
50	No Zones				No Zones				No Zones				No Zones				No Zones				No Curing	
19	No Zones				No Zones				No Zones				No Zones				No Zones				No Curing	B
F_{12}	2	3	4	5	10	12	15	18	14	16	20	22	11	13	14	16	13	15	16	19		

A Symptomatic cases

B Asymptomatic cases

Table (17)

Plasmid Curing for Pseudomonas Strains Resistant to Amoxicillin

The effect of -Elevated temperature
-Ascorbic acid
before and after curing

Case No	inhibitory zones before curing				The Effect of Temperature								The Effect of Ascorbic Acid								REMARKS	
					42°C				45°C				100 ug/ml				300 ug/ml					
	Antibiotic Con.				Antibiotic Concentration				Antibiotic Concentration				Antibiotic Concentration				Antibiotic Concentration					
	25	50	100	200	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml	25 ug/ml	50 ug/ml	100 ug/ml	200 ug/ml		
2	—	—	—	—	12	14	16	20	18	20	22	26	6	8	12	16	9	12	14	16	100 % Curing	A
6	—	—	—	—	82	12	14	18	10	14	18	22	7	9	12	17	12	14	17	20		
9	2	3	4	5	14	16	18	22	18	20	22	26	8	10	13	16	13	15	18	22		
14	1	2	3	4	15	17	20	24	18	20	22	26	12	14	16	21	15	17	20	23		
24	—	—	—	—	13	15	17	20	15	17	20	23	10	13	16	18	14	18	20	24		
28	—	—	—	—	12	13	15	18	14	16	14	24	11	12	13	15	14	19	22	25		
33	1	3	3	4	12	13	15	18	14	15	18	22	14	16	17	19	18	20	22	25		
35	—	1	2	3	15	17	20	24	17	20	23	27	12	13	15	16	16	18	20	23		
39	—	2	3	4	16	18	23	25	18	20	20	29	12	14	16	18	17	19	20	21		
42	—	—	2	3	14	16	17	19	17	19	20	22	12	13	14	15	16	17	18	20		
48	—	—	3	5	15	16	18	20	18	19	22	24	12	11	13	15	15	16	17	18		
50	—	—	—	—	17	19	22	25	19	21	24	29	10	14	15	18	16	17	18	19		
19	No Zones				12	13	15	17	15	16	18	22	10	12	13	16	12	13	15	18		B
F_{12}	No Zones				15	18	20	23	19	20	23	25	13	16	18	20	14	17	20	22		

The Diameter of Inhibitory Zones in mm

A Symptomatic cases

B Asymptomatic cases

DISCUSSION

DISCUSSION

Host, bacterial and environmental factors, all play a major role in the pathogenesis and management of urinary tract infection in the elderly.

(Shaeffer, 1991).

Elderly people differ from young in their susceptibility and response to certain infectious agents. These differences vary depending on the identity of the specific organisms which invade the host.

(Wolfson et. al 1986).

Screening for bacteriuria by Nordenstam was performed between 1984 and 1988 in persons aged 72-79 years in Goteborg, Sweeden. The frequency of bacteriuria at a single screening was 6% and 16% at age 72 years and 6% and 14% at age 79 years for the screened men (n=235 and 259) and women (n=259 and 297) respectively. By repeated screening after one month and 30 months of these previously negative at age 72 years, an additional 4% and 3% of men and 3% and 7% of women with bacteriuria were detected.

In this study bacteriuria was present in 80% of geriatric symptomatic male patients and in 90% of symptomatic geriatric female patients.

Asymptomatic bacteriuria was noted in 15% of 521 predominantly geriatric male patients (median age 63). While the occurence of predisposing factors increased with advancing age, there was a significant number of patients in whom these associated conditions were not found.

(Wolfson et. al 1965)

In a study performed by Dontas et. al (1966), the percentage of asymptomatic bacteriuria was 25%.

Nicolle et. al (1983) reported that once asymptomatic bacteriuria occured, it generally persisted or recurred. This differs from the findings of Kasviki et al. 1982 who reported a 23 percent negative conversion at one year in a male nursing home population.

Another study by Abrutyn (1991) was performed on asymptomatic bacteriuria in elderly ambulatory women residents without indwelling catheters. Antimicrobial therapy for asymptomatic bacteriuria was not given by the study team and he found that infection risk was associated with residents but was unrelated to age or scores evaluating activities of daily living or mental status.

The percentage of asymptomatic bacteriuria was 23.5% of male population and 40% in female population in this study.

Gram negative organisms predominated in symptomatic urinary tract infection and E.coli was the first predominant organism isolated from the symptomatic cases then Pseudomonas, Klebsiella and Proteus.

On the other hand gram positive organisms predominated in the asymptomatic cases. These results agree with the study performed by Mims et al. (1990) which proved that gram negative organisms cause overt urinary tract infections but gram positive organisms are the causes of asymptomatic bacteriuria.

On examining the presence of pyuria (More than 10 pus cells/H.P.F) 80 % of male population and 90 % of female population in symptomatic cases showed significant pyuria and in asymptomatic cases 23.3% of male and 40% of female patients showed significant pyuria. This agreed with the study performed by Chouldhurg et al. (1990) who found that there was a correlation between bacteriuria and leucocyturia.

Boscia et. al (1989) had proved that in elderly ambulatory women with no symptoms of urinary tract infection, pyuria is a poor predictor for bacteriuria and should not be used for this purpose, absence of pyuria is very predictive for the absence of bacteriuria and could be used for this purpose.

Antibiotic sensitivity was performed for gram negative isolated from symptomatic and asymptomatic cases.

E.coli strains were sensitive to the following antibiotics in order : Ceftriaxone, Norfloxacin, Furadantin, Erythromycin , Vibramycin and Garamycin.

Pseudomonas showed great resistance to almost all the antibiotics used, Norfloxacin was 41.7% sensitivity followed by Nalidixic acid (33.3%) then Ceftriaxone. The remaining antibiotics were not effective.

Klebsiella were sensitive to Ceftriaxone, Norfloxacin, Amoxicillin, Negram, Garamycin then Vibramycin Sutrim , Furadantin Chloramphenicol and Streptomycin.

Proteus : the most effective antibiotics were : Norfloxacin Amoxicillin, Negram, Vibramycin, Erythrocin, Sutrim , Refocin and Chloramphenicol.

In Staphylococcus aureus the most effective antibiotics were : Refocin, Garamycin, Norfloxacin then Erythrocin, Ceftriaxone, Vibramycin, Amoxicillin, Furadantin.

Serotyping of Ecoli strains isolated from symptomatic cases revealed that there were 3 cases which were nontypable and the remaining serotypes were O 55, O 127, O 119, O 128, O 124, O 114, O 126, O 111 and in asymptomatic cases their sertypes were O 119, O 124, and one case was non typable.

Collee et al., (1989) concluded that these strains are of enteropathogenic except the strains of serotype O 124 which is of enteroinvasive and originate from the bowel and reach the urinary tract by ascending or descending routes.

Shaeffer (1991) found that Ecoli isolated from 53 urine and 26 stool samples of patients with urinary tract infections and 50 stool samples of normal individuals were studied to see their hemolytic, hemagglutinating and "O" antigenic properties which might be related to the virulence of the organism. Significant higher number of Ecoli isolated from urine of UTI patients were found to possess hemolytic hemagglutinating preparation to certain "O" antigenic

groups either single or in combination as compared to these isolated individuals. Hemagglutinating property appeared to be most frequently associated with U.T.I.

(Mahammad et. al 1990)

Lipuma et. al (1989) found that isolation of Ecoli from elderly women after sterilization of the urinary tract usually reulted from introduction of a new strain. Elderly women who fail antibiotic therapy or receive no therapy may remain persistently infected with the same Ecoli strain.

Plasmids are extra chromosomal DNA elements in bacterial cells. R plasmid medialed resistaance is due to synthesis of protein which may modify the antibiotic to innocuous form or interact with the cell envelop to make it impermeable to the antibiotic.

(Davis and Kagan 1977)

Plasmid has been isolated from all genera of bacteria examined.

(Holloway 1979)

R - factor may determine resistance to one antibiotic or they may carry resistance to one or more distinct antimicrobial agent.

(Mitsuhashi et. al 1977)

Curing provids circumstantial evidence for the existence of plasmids.

To know the type of antibiotic resistance in cases of Ecoli and pseudomonas resistant strains to Garamycin, Streptomycin and Amoxicillin antibiotics, if it is plasmid mediated or not curing has been performed by a physical agent (elevated temperature) and chemical agent (ascorbic acid) There was increasing in the diameter of inhibitory zones with increasing the antibiotic concentration together with either :

1- elevated temperature.

2- or increasing ascorbic acid concentration.

There was no curing in 3 cases of Ecoli resistant to garamycin and in streptomycin resistant strains there was no curing in 4 cases and in amoxicillin resistant strains no curing in 4 cases and in cases of pseudomonas resistant strains to :

1- Garamycin : 5 cases showed no curing

2- Streptomycin : 4 cases showed no curing

3- Amoxicillin : curing had occured in all the cases

Toame et. al (1983) tested 16 strains of Ecoli for elimination of antibiotic resistance markers of R plasmid by subculturing Ecoli strains in the presence

of ethidiam bromide and acriflavin or at a maximum temperature of 41 ^{o}C, partial and/or complete loss of resistance markers were observed.