RESULTS

A- Clinical Data Related To This Study:

1) Urinary symptoms:

It was found that 53 (73.6%) out of 72 patients were suffering from urinary symptoms. 28 (52.8%) complained from frequency of micturition, 14 (26.4%) complained from urgency, 29 (54.7%) complained from terminal dribbling, 39 (73.5%) complained from dysuria and 2 patients (3.77%) complained from urethral discharge.

2) Sexual symptoms:

It was found that 51 (70.8%) out of 72 patients were suffering from sexual symptoms. Of these cases: 20 (39.2%) complained from decreased libido, 22 (43.1%) complained from potentia (impotence), 33 (45.8%) patients had rapid ejaculation, 12 (23.5%) complained from painful ejaculation and 2 cases (3.9%) complained from weak erection.

3) Infertility:

It was found that 17 (23.6%) out of 72 patients were suffering from infertility; 14 (19.4%) complained from primary infertility and the remaining 3 cases (4.2%) were secondary infertile.

4) Pain:

Out of 72 patients 7 (9.7%) were suffering from pain, either local or referred: 4 (5.5%) had local pain, 1 (1.4%) had referred pain and 2 cases (2.8%) had both local and referred pain.

5) Symptoms of systemic manifestations:

It was found that one patient only (1.4%) in this study had a history of recurrent prostatitis with fever, myalgia and arthralgia.

B- Laboratory Diagnosis:

I. Microscopical examination:

a- Examination of urethral swabs:

Gram stained film examination gave negative results.

b- Examination of expressed prostatic secretion:

1)   **Wet smear**: it was found that 18 (25%) out of 72 patients had no pus cells, while 16 (19.4%) had pus cells < 10/HPF and 28 (38.9%) out of 72 patients had pus cells > 10/HPF.

2)   **Gram stained film**: Gram positive Cocci were detected in 18 (25%) cases, Gram negative bacilli in 6 (8.3%), while both were detected in 2 (2.7%) cases.

3)   **Zeihl Neelsen stained film**: gave negative results.

II. Results of microbial cultures from urethral swabs
and the expressed prostatic secretions:

A- It was found that 28 (38.9%) out of 72 patients had bacterial prostatitis: Gram positive cocci were isolated from 20 (71.4%), Gram negative bacilli from 6 cases (21.4%), and 2 cases (7.1%) had mixed prostatic bacterial infection by both Gram positive cocci and Gram negative bacilli.

It was found that out of 22 isolated Gram positive cocci cases 16 (72.7%) were coagulase negative staphylococci (*Staph. epidermidis*), 2 (9.1%) were coagulase positive staphylococci (*Staph. aureus*) and 4 (18.2%) were *Strept. fecalis*.

Also it was observed that out of 8 Gram negative bacilli cases *Klebsiella pneumoniae*, *E. coli* and *Proteus mirabilis* were isolated from 2 (25%), 4 (50%) and 2 (25%) cases respectively.

Urethral and prostatic samples of all cases gave negative culture for *N. gonorrhea*.

B- In this study, one case only (1.4%) had prostatic *Candida albican* infection.

C- It was found that from 72 cases: 31 (43.1%) had urethral *U. urealyticum*, 48 (66.6%) had prostatic *M. hominis* and 20 (27.8%) had combined urethral *U. urealyticum* and prostatic *M. hominis* infection.

III. Results of tests used for diagnosis of *C.trahcomatis* infection:

A- DIMF test:

25 (41%) out of 61 cases were diagnosed as chlamydial urethritis by (DIMF) test done on their urethral swabs, 16 (64%) out of these 25 cases had also chlamydial prostatitis as diagnosed by DIMF test done on their expressed prostatic secretion.

B- Chlamydial cell culture:

The result of the chlamydial cell culture showed that no chlamydial cytopathic effect (CPE) was detected on cell culture of 25 positive and 19 negative chlamydial cases diagnosed previously by DIMF test.

The cell culture of the selected freshly collected samples from positive and negative immunofluorescent tested cases showed that the positive cases gave positive cell culture after 72 hours incubation in Co_2 incubator at 37°C, while the negative cases gave negative cell culture.

C- ELISA:

The (ELISA) which was performed on the first set inoculated cell culture 48 hours postinoculation of the suspected samples gave negative results for all cases.

D- **Dot ELISA**:

DOT ELISA which was performed on the collected urethral swabs (8 months ago) directly on the pathological material gave negative results for all samples.

Mixed infection of the prostate by more than one microbe was reported in 68.8% of cases (42 out of 61 chronic prostatitis cases as demonstrated in Table (R1).

STATISTICAL ANALYSIS[*]

The statistical analysis of this study was undertaken to find the relation between the different types of urethritis and chronic prostatitis (bacterial prostatitis, chlamydia urethritis and prostatitis, urethral *U.urealyticum* and prostatic *M.hominis*) with each of the following factors:

1) Urinary symptoms.

2) Sexual symptoms.

3) Number of pus cells/HPF in the expressed prostatic secretion.

4) Infertility.

Also, the relation between these different types of infection was carried out.

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*   **Harald Cramer, (1958)**
    The elements of probability theory and some of its publication, Wiley publication, 4th print, April 1958.

To test whether these two ratios show that the two populations are the same regarding this criterion, the following statistic "t" is calculated as follows:

$$t = \frac{[P_1-P_2]}{\sqrt{V(P_1-P_2)}} = \frac{\text{Positive difference between the calculated ratios}}{\text{Standard deviation of difference between the ratios}}$$

Where:

$V(P_1-P_2)$ representing the variance of difference is calculated as follows:

$$V(P_1-P_2) = \left(\frac{r_1 + r_2}{n_1 + n_2}\right)\left(1 - \frac{r_1 + r_2}{n_1 + n_2}\right)\left(\frac{n_1 + n_2}{n_1\, n_2}\right)$$

The normal curve of error was applied in this study (particularly that the number of cases is statistically large).

1)   If the calculated t > 1.96, the two ratios are not equal with confidence 95% i.e. significant at 5% level, otherwise they are equal.

2)   If the calculated t > 2.58, this value is considered to be highly significant, thus; the two ratios are not equal with confidence > 99%.

3)   If the tested hypothesis is:

Whether $P_1 > P_2$ or not.

If the calculated $t > 1.65$, the hypothesis is accepted with confidence 95%, otherwise it is rejected.

3) The Sensitivity, Specificity, Positive and Negative Predictive Values: were calculated as follows:

1)   Sensitivity (Se) is the proportion of true positives by the test to the actually affected subjects, i.e. the ability to identify correctly those who have the disease.

$$Se = \frac{TP}{TP+FN}$$

2)   Specificity (SP) is the proportion of the negatives by the test to the actually non-affected subjects, i.e. the ability to identify correctly those who do not have the disease.

$$Sp = \frac{TN}{TN+FP}$$

3)   Positive Predictive Value (PPV) is the proportion of true positives to all subjects marked positive by the test.

$$PPV = \frac{TP}{TP+FP}$$

4) Negative predictive value (NPV) is the portion of true negatives to all subjects marked negative by the test.

$$NPV = \frac{TN}{TN+FN}$$

N.B.: TP = true positive.

FP = false positive.

TN = true negative.

FN = false negative.

Table (R1): Clinical data and laboratory findings of the examined urethral swabs and expressed prostatic secretions.

Case No.	Marital state	Infertility 1ry	Infertility 2ry	Urinary symptoms	Sexual symptoms	Number of pus cells/HPF in expressed prost. secretion	Bacterial culture of expressed prost. secretion	C.trachomatis Ureth	C.trachomatis Prost	Mycoplasma Urethral U.Urealyticum	Mycoplasma Prostatic M.hominis
1	+	-	+	+	+	3-5	-	-	-	-	-
2	-	-	-	+	+	-	-	-	-	+	-
3	+	-	-	+	+	7-10	-	-	-	-	-
4	+	-	-	+	+	30-50	Kleb.pneumoniae	-	-	-	-
5	-	-	-	-	+	5-8	Staph.epidermidis	-	-	-	-
6	+	-	-	+	+	Over 100	Proteus,Staph.epi	-	-	+	-
7	+	-	-	+	+	25-30	E. coli	-	-	-	-
8	+	-	-	+	+	8-10	-	-	-	+	+
9	+	-	-	-	+	5-10	-	+	-	+	-
10	-	-	-	+	+	3-5	-	+	-	+	-
11	+	+	-	+	+	3-5	-	-	-	+	+
12	+	-	-	-	+	5-10	-	-	-	+	+
13	+	-	-	-	-	20-30	-	-	-	+	-
14	+	+	-	+	-	20-30	Staph.epidermidis	-	-	-	+
15	+	-	-	+	+	10-20	Staph.epidermidis	-	-	+	-
16	+	-	-	-	+	10-20	Staph.epidermidis	+	-	+	-
17	+	-	-	+	+	30-50	Strept.fecalis	-	-	+	+
18	+	+	-	-	+	10-20	Staph.epidermidis	-	-	+	-
19	+	-	-	+	+	15-20	Staph.aureus	-	-	+	-

Table (R1): Continue.

Case No.	Marital state	Infertility 1ry	Infertility 2ry	Urinary symptoms	Sexual symptoms	Number of pus cells/HPF in expressed prost. secretion	Bacterial culture of expressed prost. secretion	C.trachomatis Ureth	C.trachomatis Prost	Mycoplasma U.Urealyticum Urethral	Mycoplasma M.hominis Prostatic
20	+	-	+	-	+	20-25	E.coli	+	+	+	+
21	+	+	-	-	+	15-20	Staph.epidermidis	+	+	+	+
22	-	-	-	+	-	5-10	Staph.epidermidis	+	+	+	+
23	+	-	-	+	+	-	-	-	-	+	+
24	+	-	-	-	+	5-10	Staph.epidermidis	+	+	-	+
25	+	-	-	+	+	15-20	Staph.aureus	+	+	+	+
26	+	-	-	-	+	3-5	-	+	-	+	+
27	+	-	-	+	-	15-20	Strept.fecalis	+	+	-	+
28	+	+	-	+	+	3-5	-	+	+	+	+
29	+	-	-	+	+	3-5	-	+	+	+	+
30	+	-	-	+	+	3-5	-	-	-	-	+
31	-	-	-	+	-	-	-	-	-	-	+
32	+	-	-	-	+	15-20	Staph.epidermidis	-	-	-	+
33	-	-	-	-	-	-	-	+	-	-	+
34	+	-	-	+	-	-	-	-	-	+	+
35	+	-	-	+	+	10-15	Staph.epidermidis	-	-	+	+
36	+	+	-	-	+	-	-	-	-	+	+
37	+	+	-	-	+	-	-	-	-	-	+
38	+	+	-	+	+	-	-	-	-	-	+
39	+	+	-	-	+	-	-	-	-	+	+

Table (R1): Continue.

Case No.	Marital state	Infertility		Urinary symptoms	Sexual symptoms	Number of pus cells/HPF in expressed prost. secretion	Bacterial culture of expressed prost. secretion	C.trachomatis		Mycoplasma	
		1ry	2ry					Ureth	Prost	Urethral U.Ureabyticum	Prostatic M.hominis
40	+	-	-	+	+	-	-	+	+	+	+
41	+	-	-	+	+	20-30	E.coli	+	+	-	-
42	+	-	-	+	+	30-40	E.coli	+	-	-	+
43	+	-	+	+	+	15-20	Strept.fecalis	-	-	-	+
44	+	-	-	+	+	20-30	Staph.epidermidis	-	-	-	+
45	+	+	-	+	+	30-40	Proteus mirabilis	-	-	-	+
46	+	-	-	+	+	Over 100	E.coli,Staph.epi.	+	+	-	+
47	+	-	-	+	+	15-20	Strept.epidermidis	+	+	+	+
48	+	-	-	+	+	-	-	-	-	-	+
49	+	-	-	+	-	5-10	-	-	-	-	+
50	+	+	-	+	+	-	-	+	-	+	+
51	+	+	-	+	+	-	-	+	+	-	+
52	+	+	-	-	-	-	-	+	+	-	+
53	+	-	-	+	+	-	-	+	+	+	+
54	+	-	-	+	-	-	-	+	+	+	+
55	+	+	-	+	+	20-30	Staph.epidermidis	-	-	+	+
56	+	-	-	+	+	3-10	-	-	-	-	+
57	+	-	-	+	-	-	-	+	+	+	+
58	+	-	-	+	-	-	-	+	-	-	+
59	+	-	-	-	-	20-30	Kleb.pneumoniae	-	-	-	-

Table (R1): Continue.

Case No.	Marital state	Infertility 1ry	Infertility 2ry	Urinary symptoms	Sexual symptoms	Number of pus cells/HPF in expressed prost. secretion	Bacterial culture of expressed prost. secretion	C.trachomatis Ureth	C.trachomatis Prost	Mycoplasma U.Urealyticum Urethral	Mycoplasma M.hominis Prostatic
60	-	-	-	+	-	30-40	Strept.fecalis	-	-	-	-
61	-	-	-	-	+	30-40	-	-	-	-	-
62	+	-	-	+	-	20-30	-			-	+
63	+	-	-	+	-	30-40	-			-	+
64	-	+	-	-	+	30-40	-			-	-
65	-	-	-	+	-	20-30	-			-	-
66	-	-	-	+	+	20-30	-			-	+
67	+	-	-	+	-	30-40	-			-	-
68	-	+	-	+	-	50-60	-			+	+
69	-	-	-	+	+	30-40	-			-	-
70	+	-	-	+	-	10-20	-			+	-
71	-	-	-	+	-	15-20	-			-	+
72	+	-	-	+	+	30-40	-			-	-

N.B.:

1) C.trachomatis DIMF test was done on the first 61 samples only.

2) Bacterial culture of the urethral swabs in all cases gave no growth after 48 hours.

3) It was found that one case only out of 72 had prostatic Candida albican infection.

Table (R2a): Association of urinary symptoms with chronic bacterial prostatitis.

		Urinary symptoms		
		+ve	-ve	Total
Chronic bacterial prostatitis	+ve	20	8	28
	-ve	33	11	44
	Total	53	19	72

From table (R2a):

- Among 72 patients 53 were suffering from urinary symptoms (73.61%).

- Among 72 cases 28 had chronic bacterial prostatitis (38.8%).

- The number of patients had chronic bacterial prostatitis and were suffering from urinary symptoms was 20 (71.4% of those having chronic bacterial prostatitis), while the number of patients who were suffering from urinary symptoms and free from chronic bacterial prostatitis was 33 (75% of those who were free from chronic bacterial prostatitis).

- The test value t =0.335 i.e. insignificant at 5% level.

- So, the rate of occurrence of urinary symptoms was statistically equal in the presence or absence of chronic bacterial prostatitis.

Table (R2b):   Expected and observed frequencies of occurrence of urinary symptoms with chronic bacterial prostatitis.

		Urinary symptoms		
		+ve	-ve	Total
Chronic bacterial prostatitis	Expected +ve	$\frac{53 \times 28}{72} = 20.6$	$\frac{19 \times 28}{72} = 7.4$	28
	Observed +ve	20	8	
	Expected -ve	$\frac{53 \times 44}{72} = 32.4$	$\frac{19 \times 44}{72} = 11.6$	44
	Observed -ve	33	11	
	Total	53	19	72

From table (R2b):

-    Calculating the X^2 value for comparing between the expected and observed frequencies of occurrence of urinary symptoms with chronic bacterial prostatitis, it was found that:

$X^2 = 0.108$ i.e. very small and highly insignificant.

-    So, chronic bacterial prostatitis and urinary symptoms were highly independent with statistical confidence higher than 99%.

Table (R3a):   Association of sexual symptoms with chronic bacterial prostatitis.

		Sexual symptoms		
		+ve	-ve	Total
Chronic bacterial prostatitis	+ve	23	5	28
	-ve	28	16	44
	Total	51	21	72

From table (R3a):

-   Among 72 patients, 51 were having sexual symptoms (70.8%).

-   Among these 72 patients 28 had chronic bacterial prostatitis (38.8%).

-   The number of patients who were suffering from sexual symptoms and had chronic bacterial prostatitis was 23 (82.1% of those having chronic bacterial prostatitis). While the number of patients who were suffering from sexual symptoms and free from chronic bacterial prostatitis was 28 (63.6% of those who were free from chronic bacterial prostatitis).

-   The test value t = 1.68 which is insignificant at 5% level.

Table (R3b):   Expected and observed frequencies of occurrence of sexual symptoms with chronic bacterial prostatitis.

		Urinary symptoms		
		+ve	-ve	Total
Chronic bacterial prostatitis	Expected +ve	$\frac{51 \times 28}{72} = 19.8$	$\frac{21 \times 28}{72} = 8.2$	28
	Observed +ve	23	5	
	Expected -ve	$\frac{51 \times 44}{72} = 31.2$	$\frac{21 \times 44}{72} = 12.8$	44
	Observed -ve	28	16	
	Total	51	21	72

From table (R3b):

- Calculating the X^2 value for comparing the expected and observed frequencies of occurrence of sexual symptoms with chronic bacterial prostatitis, it was found that:

  $X^2 = 2.894$ i.e. insignificant at 5% level.

- So, chronic bacterial prostatitis and sexual symptoms were independent with confidence 90%.

Table (R4): Number of patients having pus cells/HPF > 10 in the fresh smear of expressed prostatic secretion in cases of chronic bacterial prostatitis.

		Number of patients having pus cells/HPF > 10	Total
Chronic bacterial prostatitis	+ve	25	28
	-ve	13	44
	Total	38	72

From table (R4):

- Among 72 cases, the number of patients having pus cells/HPF > 10 in the fresh smear of the expressed prostatic secretion = 38 (52.77%).

- 25 out of 28 chronic bacterial prostatitis patients had pus cells/HPF > 10 (89.2%).

- The number of patients having pus cells > 10 and free from chronic bacterial prostatitis was 13 (34.2%).

- So, the presence of pus cells in the expressed prostatic secretion of chronic bacterial prostatitis patients was higher than its presence in non infected patients.

Table (R5a):   Relation of infertility with chronic bacterial prostatitis.

		Infertility		Total
		Fertile	Infertile	
Chronic bacterial prostatitis	+ve	20	8	28
	-ve	35	9	44
	Total	55	17	72

From table (R5a):

- Among 72 cases 17 (23.61%) were suffering from infertility.

- Among 72 patients 28 had chronic bacterial prostatitis (38.8%).

- The number of infertile patients among those having chronic bacterial prostatitis was 8 (28.57%), while the number of infertile patients who were free from chronic bacterial prostatitis was 9 (20.45%).

- By comparing these two values they are statistically insignificant.

- So, in this study the chronic bacterial prostatitis had no effect on fertility.

Table (R5b): Expected and observed frequencies of occurrence of infertility with chronic bacterial prostatitis.

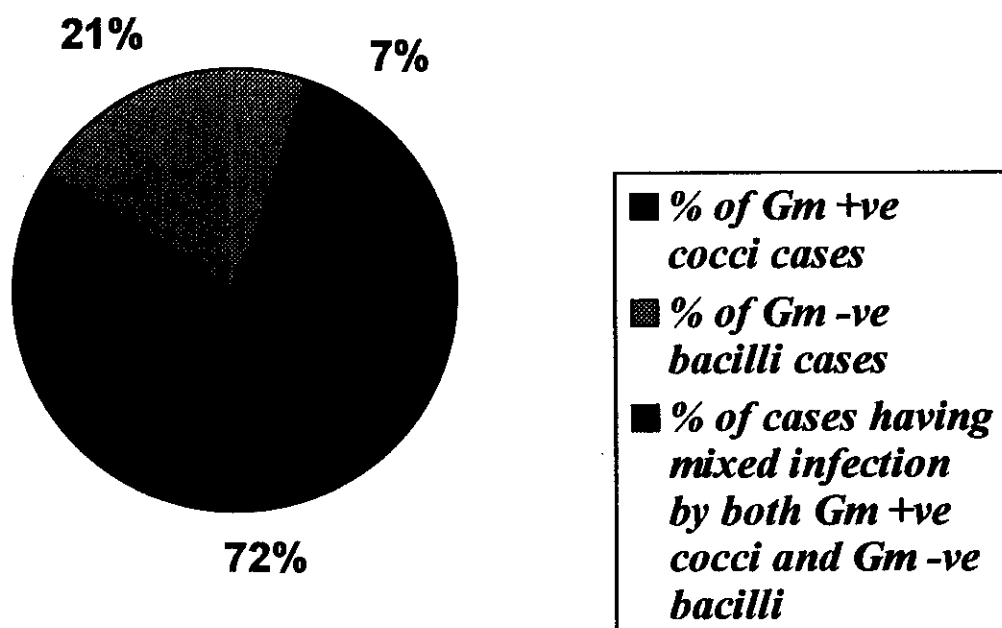|		Infertility		
		Fertile	Infertile	Total
Chronic bacterial prostatitis	Expected +ve	$\frac{55 \times 28}{72} = 21.4$	$\frac{17 \times 28}{72} = 6.6$	28
	Observed +ve	20	8	
	Expected -ve	$\frac{55 \times 44}{72} = 33.6$	$\frac{17 \times 44}{72} = 10.4$	44
	Observed -ve	35	9	
	Total	55	17	72

From table (R5b):

- Calculating X^2 value for comparing between the expected and observed frequencies of occurrence of infertility with chronic bacterial prostatitis:

  $X^2 = 0.631$ i.e. it is highly insignificant.

- So, the infertility and chronic bacterial prostatitis were highly independent with nearly 100% confidence.

Table (R6): **Different bacteria isolated from the examined prostatic secretions.**

	Gm +ve cocci				Gm -ve bacilli				Mixed Gm+ve cocci and Gm -ve bacilli	Total
	Staph. epider-midis	*Staph. aureus*	*Strept. fecalis*	Total	*Kleb. pneu-moniae*	*E.coli*	*Proteus mira-bilis*	Total		
No.of cases	16	2	4	22	2	4	2	8	2	28

Data in this table are demonstrated in Figs. (R1 a,b,c).

Fig(R.1).A: Percentages of the isolated Gm +ve Cocci and Gm -ve bacilli cases

21%

7%

72%

- ■ % of Gm +ve cocci cases
- ▨ % of Gm -ve bacilli cases
- ■ % of cases having mixed infection by both Gm +ve cocci and Gm -ve bacilli

Fig(R.1).B: Percentages of different types of isolated Gm +ve Cocci :

18%

9%

73%

■	% of Staph. epidermidis
▨	% of Strept. fecalis
■	% of Staph. aureus
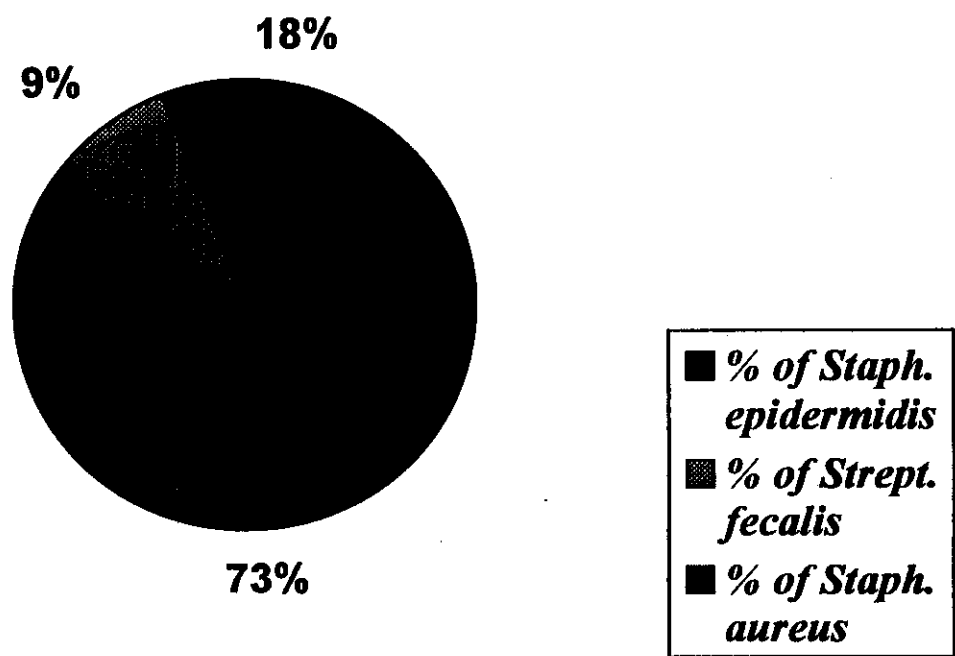
Table (R7a):   Association of urinary symptoms with urethral *U.urealyticum*.

		Urinary symptoms		
		+ve	-ve	Total
Urethral *U.urealyticum*	+ve	21	10	31
	-ve	32	9	41
	Total	53	19	72

From table (R7a):

-       Among 72 patients 53 were suffering from urinary symptoms (73.6%).

-       Among 72 patients 31 had urethral *U.urealyticum* (43.05%).

-       The number of patients having urethral *U.urealyticum* and were suffering from urinary symptoms was 21 cases (67.7%) of *U.urealyticum* infected patients.

-       The number of patients who were suffering from urinary symptoms and free from urethral *U.urealyticum* was 32 (78% of non *U.urealyticum* infected patients).

-       The test value t = 0.982 < 1.96 i.e. insignificant at less than 5% level.

-       So, the rate of occurrence of urinary symptoms was statistically equal in the presence or absence of urethral *U.urealyticum* infection.

Table (R7b):   Expected and observed frequencies of occurrence of urinary symptoms with urethral *U.urealyticum* infection.

		Urinary symptoms		
		+ve	-ve	Total
Urethral *U.urealyticum*	Expected +ve	$\frac{53 \times 31}{72}=27.1$	$\frac{19 \times 31}{72}=8.2$	31
	Observed +ve	21	10	
	Expected -ve	$\frac{53 \times 41}{72}=30.2$	$\frac{19 \times 41}{72}=10.8$	41
	Observed -ve	32	9	
	Total	53	19	72

From table (R7b):

- Calculating the X^2 value for comparing between the expected and observed frequencies of occurrence of urinary symptoms with urethral *U.urealyticum* infection:

X^2 = 0.944 i.e. insignificant at less than 5% level.

- Thus, the urethral *U.urealyticum* infection and urinary symptoms were highly independent with confidence higher than 95%.the presence or absence of urethral *U.urealyticum* infection.

Table (R8a): Association of sexual symptoms with urethral *U.urealyticum* infection.

		Sexual symptoms		
		+ve	-ve	Total
Urethral *U.urealyticum*	+ve	25	6	31
	-ve	26	15	41
	Total	51	21	72

From table (R8a):

- Among 72 patients 51 had sexual symptoms (70.8%).

- Among 72 patients 31 had urethral *U.urealyticum* (43.06%).

- The number of patients having urethral *U.urealyticum* and were suffering from sexual symptoms was 25 (80.6% of *U.urealyticum* infected patients). While the number of patients having sexual symptoms and proved to be free from urethral *U.urealyticum* infection was 26 (63.4% of those non *U.urealyticum* infected patients).

- Therefore, the percentage of occurrence of sexual symptoms amongst positive urethral *U.urealyticum* cases was statistically higher than its occurrence amongst negative cases with confidence 93.5%.

Table (R8b):   Expected and observed frequencies of occurrence of sexual symptoms with urethral *U.urealyticum* infection.

		Sexual symptoms		
		+ve	-ve	Total
Urethral *U.urealyticum*	Expected +ve	$\frac{51\times31}{72}=22$	$\frac{21\times31}{72}=9$	31
	Observed +ve	25	6	
	Expected -ve	$\frac{51\times41}{72}=29.04$	$\frac{21\times41}{72}=12$	41
	Observed -ve	26	15	
	Total	51	21	72

From table (R8b):

- Calculating the X^2 value for comparing between the expected and observed frequencies of occurrence of sexual symptoms with urethral *U.urealyticum* infection:

$X^2 = 2.469$, this value is less than 2.71 i.e. not significant at 10% level.

- Therefore, the sexual symptoms and urethral *U.urealyticum* infection were independent at level of confidence higher than 90%.

Table (R9a):   Association of infertility with urethral *U.urealyticum* infection.

			Infertility		Total
			Fertile	Infertile	
Urethral *U.urealyticum*		+ve	22	9	31
		-ve	33	8	41
		Total	55	17	72

From table (R9a):

- Among 72 patients 17 were infertile (23.61%).

- Among 72 patients 31 had urethral *U.urealyticum* (43%).

- The number of infertile patients among those having urethral *U.urealyticum* infection was 9 (29%).

- The number of infertile patients among those who were free from urethral *U.urealyticum* infection was 8 (19.5%).

- By testing whether these 2 values are indifferent, the test value:

  $t = 0.941 < 1.9$ which is not significant.

- So, the infertility can occur with the same incidence among those having or not having urethral *U.urealyticum* infection.

Table (R9b): Expected and observed frequencies of occurrence of infertility with urethral *U.urealyticum* infection.

		Infertility		
		Fertile	Infertile	Total
Urethral *U.urealyticum*	Expected +ve	$\frac{55 \times 31}{72} = 23.7$	$\frac{17 \times 31}{72} = 7.3$	31
	Observed +ve	22	9	
	Expected -ve	$\frac{55 \times 41}{72} = 31.3$	$\frac{17 \times 41}{72} = 9.7$	41
	Observed -ve	33	8	
	Total	55	17	72

From table (R9b):

- Calculating X^2 value for comparing between the expected and observed frequencies of occurrence of infertility with urethral *U.urealyticum* infection:

  $X^2 = 0.9080$ which is very small and highly insignificant.

- So, the infertility was independent on urethral *U.urealyticum* infection.

Table (R10a):   Association of urinary symptoms with prostatic *M.hominis* infection.

		Urinary symptoms		
		+ve	-ve	Total
Prostatic	+ve	38	10	48
	-ve	15	9	24
M.hominis	Total	53	19	72

From table (R10a):

- Among 72 patients 53 were suffering from urinary symptoms (73.6%).

- 48 out of these 72 patients had prostatic *M.hominis* (66.6%).

- The number of patients having prostatic *M.hominis* and were suffering from urinary symptoms was 38 (79% of those mycoplasma infected patients).

- The number of patients who were suffering from urinary symptoms and proved to be free from prostatic *M.hominis* infection was 15 (62.5% of those free from mycoplasma infection).

- The test value $t = 1.513$ i.e. insignificant at 5% level.

- Therefore, the rate of occurrence of urinary symptoms in prostatic *M.hominis* infection was statistically insignificant i.e. equal in the presence or absence of prostatic *M.hominis* infection.

Table (R10b):   Expected and observed frequencies of occurrence of urinary symptoms with prostatic *M.hominis* infection.

		Urinary symptoms		
		+ve	-ve	Total
Prostatic *M.hominis*	Expected +ve	$\frac{53 \times 48}{72} = 35.3$	$\frac{19 \times 48}{72} = 12.7$	48
	Observed +ve	38	10	
	Expected -ve	$\frac{53 \times 24}{72} = 10.7$	$\frac{14 \times 24}{72} = 6.3$	24
	Observed -ve	15	9	
	Total	53	19	72

From table (R10b):

- Calculating X^2 value for comparing between the expected and observed frequencies of occurrence of urinary symptoms with prostatic *M.hominis* infection:

  $X^2 = 2.349$. This value was found to be insignificant.

- Therefore, the urinary symptoms and prostatic *M.hominis* infection were independent with statistical confidence about 95%.

Table (R11a):   Association of sexual symptoms with prostatic *M.hominis* infection.

		Sexual symptoms		
		+ve	-ve	Total
Prostatic *M.hominis*	+ve	34	14	48
	-ve	17	7	24
	Total	51	21	72

From table (R11a):

- Among 72 patients, 51 had sexual symptoms (70.83%).

- Among these 72 patients 48 had prostatic *M.hominis* infection (66.67%).

- The number of patients having prostatic *M.hominis* infection and were suffering from sexual symptoms was 34 (70.83% of those mycoplasma infected patients), while the number of patients having sexual symptoms and proved to be free from mycoplasma infection was 17 (70.80% of those free from mycoplasma infection). The previous two values are exactly the same. Therefore, the rate of occurrence of sexual symptoms was exactly the same whether the patient having mycoplasma infection or not.

Table (R11b):   Expected and observed frequencies of occurrence of sexual symptoms with prostatic *M.hominis* infection.

		Sexual symptoms		
		+ve	-ve	Total
Prostatic *M.hominis*	Expected +ve	$\frac{51 \times 48}{72}=34$	$\frac{21 \times 48}{72}=14$	48
	Observed +ve	34	14	
	Expected -ve	$\frac{51 \times 24}{72}=17$	$\frac{21 \times 24}{72}=7$	24
	Observed -ve	17	7	
	Total	51	21	72

From table (R11b):

- The observed frequency of occurrence of sexual symptoms with prostatic mycoplasma infection agree completely with the expected values under the hypothesis of independence.

- Therefore, the sexual symptoms and prostatic *M.hominis* infection were independent with statistical confidence 100%.

Table (R12):   Number of patients having pus cells/HPF of fresh smear of the expressed prostatic secretion in cases of prostatic *M.hominis* infection.

		-	< 10/HPF	> 10/HPF	Total
			Number of patients having pus cells/HPF		
Prostatic	+	16	11	21	48
M.hominis	-	2	5	17	24
	Total	18	16	38	72

From table (R12):

-   Among 72 cases the total number of patients having pus cells is 54 (75%).

-   48 out of these 72 studied cases had prostatic *M.hominis* infection (66.7%).

-   The number of patients who were suffering from prostatic *M.hominis* infection and had pus cell > 10 was 21 (43.7% of total Mycoplasma hominis infected patients), while the number of patients having pus cells > 10 and were proved to be free from prostatic mycoplasma infection was 17 (70.8% of non *M.hominis* infected patients).

From the above data it was found that:

$t = 2.170.$

-   So, the presence of pus cells was higher among non mycoplasma infected patients than those who were infected with it with confidence 98.5%.

Table (R13a):   Association of infertility with prostatic *M.hominis* infection.

			Infertility		Total
			Fertile	Infertile	
Prostatic *M.hominis*		+ve	43	5	48
		-ve	12	12	24
		Total	55	17	72

From table (R13a):

-    Among 72 cases 17 were found to be infertile (23.61%).

-    Among 72 patients 48 had prostatic *M.hominis* infection (66.67%).

-    The number of infertile patients among those having prostatic *M.hominis* infection was 5 (10.42%).

-    The number of infertile patients who were proved by culture to be free from prostatic *M.hominis* infection was 12 (50% of non mycoplasma infected patients).

-    By comparing the previous 2 data statistically, it was found that:

     t =   3.726 > 3.29, this means significance at level less than 0.001.

-    Thus, the occurrence of infertility amongst mycoplasma negative cases was higher than its occurrence amongst mycoplasma positive cases (about 4.8 times).

Table (R13b):   Expected and observed frequencies of occurrence of infertility with prostatic *M.hominis* infection.

		Infertility		
		Fertile	Infertile	Total
Prostatic *M.hominis*	Expected +ve	$\frac{55x48}{72}=36.7$	$\frac{17x48}{72}=7$	48
	Observed +ve	43	5	
	Expected -ve	$\frac{55x24}{72}=18.3$	$\frac{17x24}{72}=5.7$	24
	Observed -ve	12	12	
	Total	55	17	72

From table (R13b):

- By comparing the expected and observed frequencies of occurrence of infertility with prostatic *M.hominis* infection by X^2 test.

It was found that:

$X^2 = 13.72 > 10.8$ at the significance level < 0.001.

- So, the incidence of occurrence of infertility in prostatic *M.hominis* infected patients was insignificant with statistical confidence more than 99%.

Table (R14a):   Association of urinary symptoms with chlamydial urethritis.

		Urinary symptoms		
		+ve	-ve	Total
Urethral C.trachomatis	+ve	16	9	25
	-ve	27	9	36
	Total	43	18	61

From table (R14a):

- Among 61 cases 43 were suffering from urinary symptoms (70%).

- Among 61 cases 25 had chlamydial urethritis (41%).

- The number of patients had chlamydial urethritis and were suffering from urinary symptoms was 16 i.e. (64% of total chlamydial urethritis cases). While those who were suffering from urinary symptoms and free from chlamydial urethritis were 27 i.e. (75% of those who were free from chlamydial urethritis).

- The test value $t = 0.926$ i.e. insignificant at 5% level.

- So, the rate of occurrence of urinary symptoms was statistically equal in the presence of absence of urethral chlamydial infection.

Table (R14b):   Expected and observed frequencies of occurrence of urinary symptoms with chlamydial urethritis.

		Urinary symptoms		
		+ve	-ve	Total
Urethral *C.trachomatis*	Expected +ve	$\frac{43 \times 25}{61} = 17.6$	$\frac{18 \times 25}{61} = 7.4$	25
	Observed +ve	16	9	
	Expected -ve	$\frac{43 \times 36}{61} = 25.4$	$\frac{18 \times 36}{61} = 10.4$	36
	Observed -ve	27	9	
	Total	43	18	61

From table (R14b):

- Calculating the X^2 value for comparing between the expected and observed frequencies of occurrence of urinary symptoms with chlamydial urethritis it was found that:

  $X^2 = 0.833$ i.e. insignificant at 5% level.

- So, chlamydial urethritis and urinary symptoms were highly independent with confidence higher than 95%.

Table (R15a):   Association of sexual symptoms with chlamydial urethritis.

		Sexual symptoms		
		+ve	-ve	Total
Urethral C.*trachomatis*	+ve	18	7	25
	-ve	29	7	36
	Total	47	14	61

From table (R15a):

- Among 61 patients 47 were having sexual symptoms (77%).

- Among these 61 patients 25 had chlamydial urethritis (41%).

- The number of patients who were suffering from sexual symptoms and had chlamydial urethritis was 18 (72% of total chlamydial urethritis patients). While the number of patients who were suffering from sexual symptoms and free from chlamydial urethritis was 29 (80% of those who were free from chlamydial urethritis).

- The test value t = 0.7819 < 1.96 i.e. insignificant.

- So, the presence of sexual symptoms was statistically equal in the presence or absence of chlamydial urethral infection.

Table (R15b): Expected and observed frequencies of occurrence of sexual symptoms with chlamydial urethritis.

		Sexual symptoms		.
		+ve	-ve	Total
Urethral C.trachomatis	Expected +ve	$\frac{47 \times 25}{61} = 19.3$	$\frac{14 \times 25}{61} = 5.7$	25
	Observed +ve	18	7	
	Expected -ve	$\frac{47 \times 36}{61} = 27.7$	$\frac{14 \times 36}{61} = 8.3$	36
	Observed -ve	29	7	
	Total	47	14	61

From table (R15b):

- Calculating the X^2 value for comparing the expected and observed frequencies of occurrence of sexual symptoms with chlamydial urethritis, it was found that:

$X^2 = 0.648$ i.e. highly insignificant at 1% level.

- So, chlamydial urethritis and sexual symptoms were highly independent with confidence 99%.

Table (R16):   Number of patients having pus cells/HPF in the fresh smear of expressed prostatic secretion in cases of prostatic *C.trachomatis* infection.

| | | Number of patients having pus cells/HPF | | | |
		-	< 10/HPF	> 10/HPF	Total
Prostatic	+	6	3	7	16
C.trachomatis	-	12	13	20	45
	Total	18	16	27	61

From table (R16):

- Among 61 studied cases the number of patients having pus cells in the fresh smear of the expressed prostatic secretion > 10/HPF was 27 (44.2%).

- The number of patients who were diagnosed as chlamydial prostatitis and had pus cells > 10/HPF was 7 (43.75% of those having chlamydial prostatitis).

- The number of patients having pus cells > 10 and were free from chlamydial prostatitis was 20 (44.4% of those free from chlamydial prostatitis).

- So, the elevation in the number of pus cells to > 10/HPF was statistically equally distributed among chlamydial prostatitis patients i.e. the number of pus cells was independent on the chlamydial infection of the prostate.

Table (R17a):   Relation of infertility with chlamydial urethritis.

| | | Infertility | | Total |
		Fertile	Infertile	
Urethral C.trachomatis	+ve	20	5	25
	-ve	26	10	36
	Total	46	15	61

From table (R17a):

- Among 61 chronic prostatitis patients 15 were suffering from infertility (24.59%).

- Among these 61 patients 25 had chlamydial urethritis (41%).

- The number of infertile patients among those having chlamydial urethritis was 5 (20%). While the number of infertile patients who were free from chlamydial urethritis was 10 (27.78% of non chlamydial urethritis cases).

- Testing whether these two values are different or not. It was found that the test value:

t = 0.6940 , 1.96 i.e. not significant.

- So, the infertility was statistically proved to be independent on the presence or absence of urethral chlamydial infection with confidence >95%.

Table (R17b):   Expected and observed frequencies of occurrence of infertility with chlamydial urethritis.

		Sexual symptoms		
		+ve	-ve	Total
Urethral *C.trachomatis*	Expected +ve	$\frac{46 \times 25}{61} = 18.9$	$\frac{15 \times 25}{61} = 6.1$	25
	Observed +ve	20	5	
	Expected -ve	$\frac{46 \times 36}{61} = 27.1$	$\frac{15 \times 36}{61} = 8.9$	36
	Observed -ve	26	10	
	Total	46	15	61

From table (R17b):

- Calculating X^2 value for comparing between the expected and observed frequencies of occurrence of infertility with chlamydial urethritis:

$X^2 = 0.4310$ i.e. it is very small and highly insignificant.

- Thus, chlamydial urethritis and infertility were highly independent with confidence higher than 99%.

Table (R18):   Evaluation of chlamydial DIMF test (urethral) as a diagnostic test in chlamydial urethritis.

| | Chlamydial DIMF test on prostatic secretion | Chlamydial DIMF test on prostatic secretion | Total |
	+ve	-ve	
DIMF test on urethral smear +	TP 16	FP 9	25
DIMF test on urethral smear -	FN -	TN 36	36
Total	16	45	61

From table (R18):

$$\text{Sensitivity} = \frac{16}{16} \times 100 = 100\%$$

$$\text{Specificity} = \frac{36}{45} \times 100 = 80\%$$

$$\text{Positive predictive value (PPV)} = \frac{16}{25} \times 100 = 64\%$$

$$\text{Negative predictive value (NPV)} = \frac{36}{36} \times 100 = 100\%$$

Table (R19):   Number of urethral and prostatic chlamydial cases diagnosed by DIMF test.

		Urethral Chlamydia		
		+ve	-ve	Total
Prostatic Chlamydia	+ve	16	-	16
	-ve	9	36	45
	Total	25	36	61

From Table (R19):

$X^2 = 31.2$ very significant.

- There is statistical relation between the occurrence of urethral and prostatic chlamydial infection together in which the presence of positive prostatic chlamydial infection necessitates the presence of positive urethral chlamydial infection.

- Data in this table are demonstrated in Fig. (R2).

Fig(R.2).Percentages of possible combinations of urethral and prostatic C.trachomatis infections
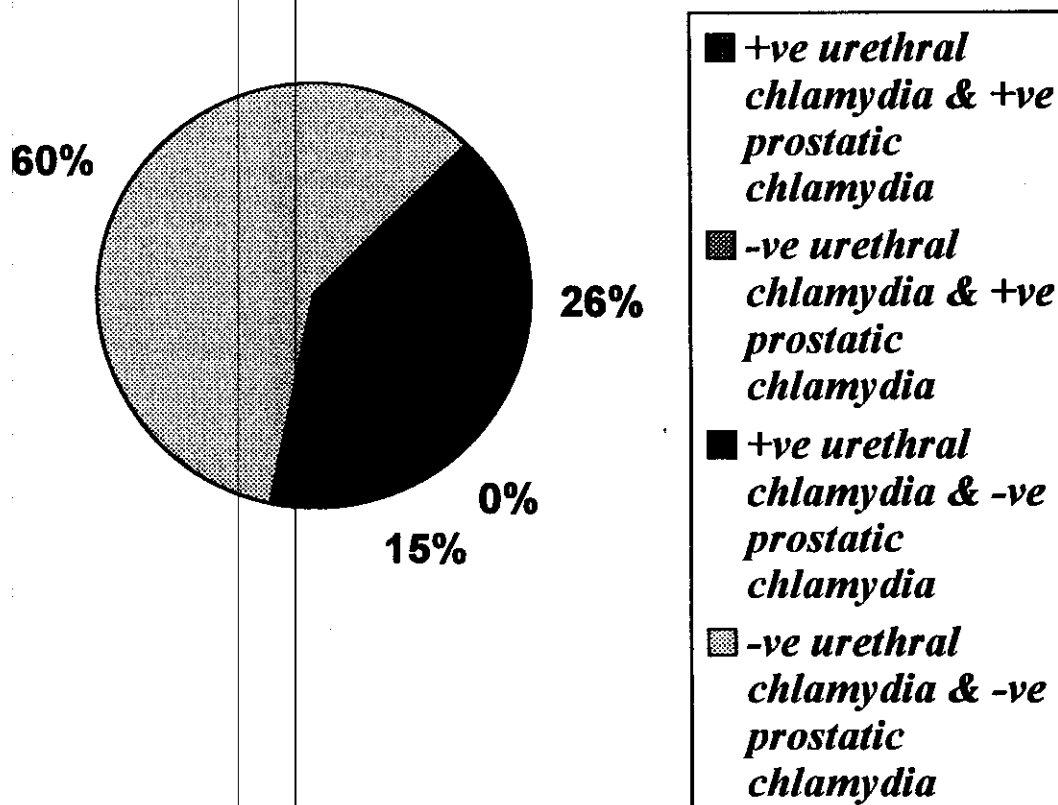

60%

26%

0%

15%

- ■ +ve urethral chlamydia & +ve prostatic chlamydia
- ▦ -ve urethral chlamydia & +ve prostatic chlamydia
- ■ +ve urethral chlamydia & -ve prostatic chlamydia
- ▨ -ve urethral chlamydia & -ve prostatic chlamydia

Table (R20):   Evaluation of chlamydial DIMF test (prostatic) as a diagnostic test in chlamydial prostatitis.

	Chlamydial DIMF test on urethral smear	Chlamydial DIMF test on urethral smear	Total
	+ve	-ve	
Chlamydial DIMF test on prostatic secretion +	TP 16	FP -	16
Chlamydial DIMF test on prostatic secretion -	FN 9	TN 36	45
Total	25	36	61

From table (R20):

Sensitivity $= \frac{16}{25} \times 100 = 64\%$

Specificity $= \frac{36}{36} \times 100 = 100\%$

PPV $= \frac{16}{16} \times 100 = 100\%$

NPV $= \frac{36}{45} \times 100 = 80\%$

Table (R21): Urethral and prostatic microbial infections in the first 61 studied cases.

	Number of microbial infections					
	None	One	Two	Three	Four	Total
Number of cases	3	16	22	15	5	61
Percentage (%)	4.9	26.2	36.1	24.6	8.2	100

- This table was applied on the first 61 studied patients in whom the 4 types of infections: bacteria, *C.trachomatis*, *U.urealyticum and M.hominis* were searched for.

From table (R21):

- 95.1% of all cases (61 cases) had at least one type of infection.

- 68.9% of all cases had at least two types of infection.

- So, in this study mixed microbial infections of the urethra and prostate were found with high incidence.

Table (R22):   Number of urethral *U.urealyticum* and prostatic *M.hominis* cases.

		Urethral *U.urealyticum*		
		+ve	-ve	Total
Prostatic *M.hominis*	+ve	20	28	48
	-ve	11	13	24
	Total	31	41	72

From table (R22):

$X^2 = 0.11$ not significant.

- The percentage of occurrence of positive urethral *U.urealyticum* amongst positive prostatic *M.hominis* cases (41.67%) is statistically the same as the percentage of occurrence of positive urethral *U.urealyticum* amongst negative prostatic *M.hominis* cases (45.83%).

- So, the presence of urethral *U.urealyticum* was independent on the presence of prostatic *M.hominis*.

- Data in this table are demonstrated in Fig. (R3).

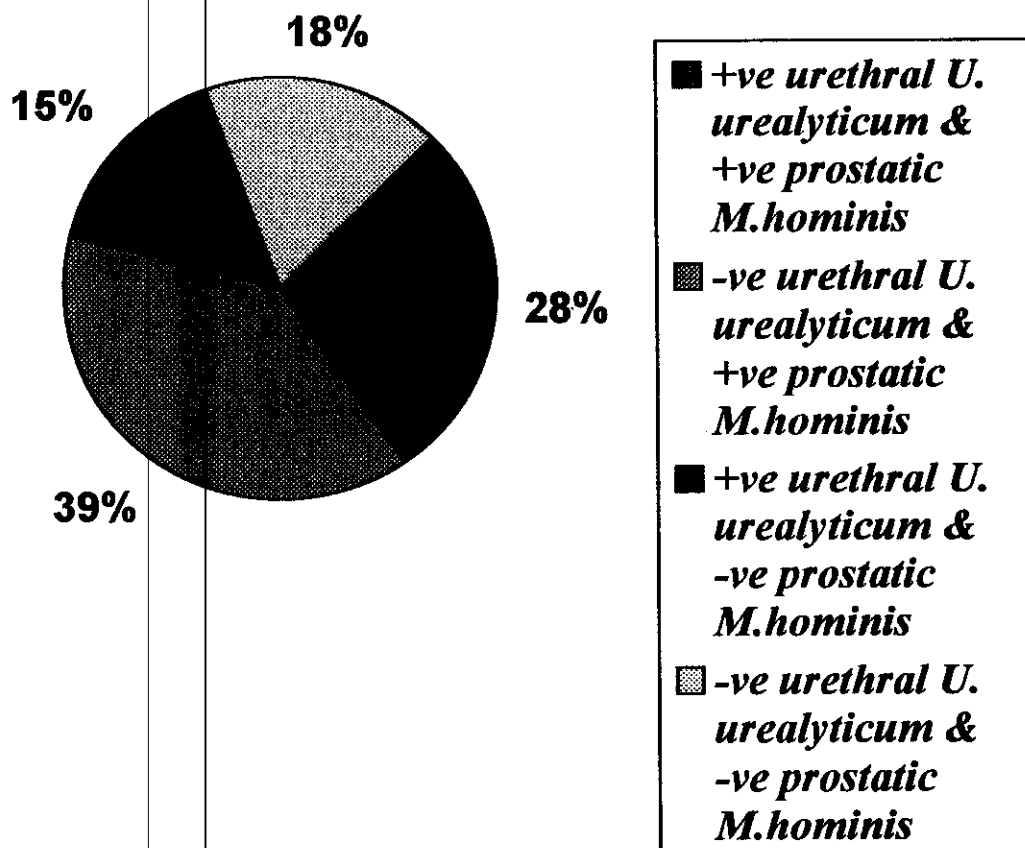# Fig(R.3).Percentages of possible combinations of urethral u.urealyticum and prostatic M.hominis infections

18%

15%

28%

39%

■ +ve urethral U. urealyticum & +ve prostatic M.hominis

▨ -ve urethral U. urealyticum & +ve prostatic M.hominis

■ +ve urethral U. urealyticum & -ve prostatic M.hominis

▨ -ve urethral U. urealyticum & -ve prostatic M.hominis

Table (R23): Urethral infection by *C.trachomatis and U.urealyticum.*

		Urethral *U.urealyticum*		
		+ve	-ve	Total
Urethral *C.trachomatis*	+ve	14	11	25
	-ve	15	21	36
	Total	29	32	61

From table (R23):

$X^2 = 1.20 < 3.84$ not significant.

- The percentage of occurrence of positive urethral *U.urealyticum* amongst positive urethral chlamydial cases (56%) is statistically indifferent to the percentage of occurrence of positive urethral *U.urealyticum* amongst negative urethral chlamydial cases (41.7%) and the average percentage is 47.5%.

- So, the presence of urethral *U.urealyticum* was independent on the presence of urethral *C.trachomatis.*

- Data in this table are demonstrated in Fig. (R4).

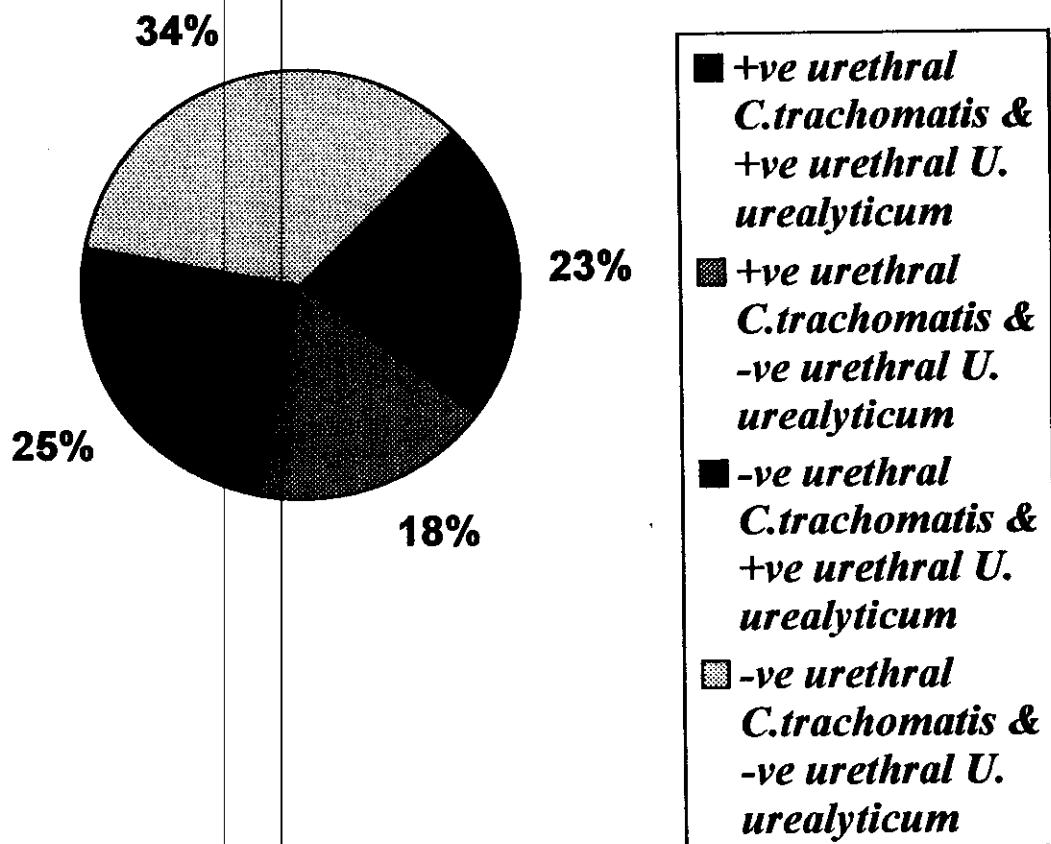Fig(R.4).Percentages of possible combinations of urethral infection by C.trachomatis and u.urealyticum

34%

23%

25%

18%

- ■ +ve urethral C.trachomatis & +ve urethral U. urealyticum
- ▨ +ve urethral C.trachomatis & -ve urethral U. urealyticum
- ■ -ve urethral C.trachomatis & +ve urethral U. urealyticum
- ▤ -ve urethral C.trachomatis & -ve urethral U. urealyticum

Table (R24):   Prostatic infection by bacteria and *M.hominis*.

		Prostatic bacteria		
		+ve	-ve	Total
Prostatic *M.hominis*	+ve	18	30	48
	-ve	10	14	24
	Total	28	44	72

From table (R24):

$X^2 = 0.128 < 3.84$ i.e. not significant.

- The percentage of occurrence of positive bacterial prostatitis amongst the positive prostatic *M.hominis* cases (37.5%) is statistically not different from the percentage of occurrence of positive bacterial prostatitis amongst negative prostatic *M.hominis* cases (41.7%) and the average percentage is 38.8%.

- Data in this table are demonstrated in Fig. (R5 a,b).

Fig(R.5)A: Percentages of possible
combinations of prostatic infection by
bacteria and M.hominis:

■ +ve prostatic
bacteria & +ve
prostatic
M.hominis

▨ -ve prostatic
bacteria & +ve
prostatic
M.hominis

■ +ve prostatic
bacteria & -ve
prostatic
M.hominis

▢ -ve prostatic
bacteria & -ve
prostatic
M.hominis
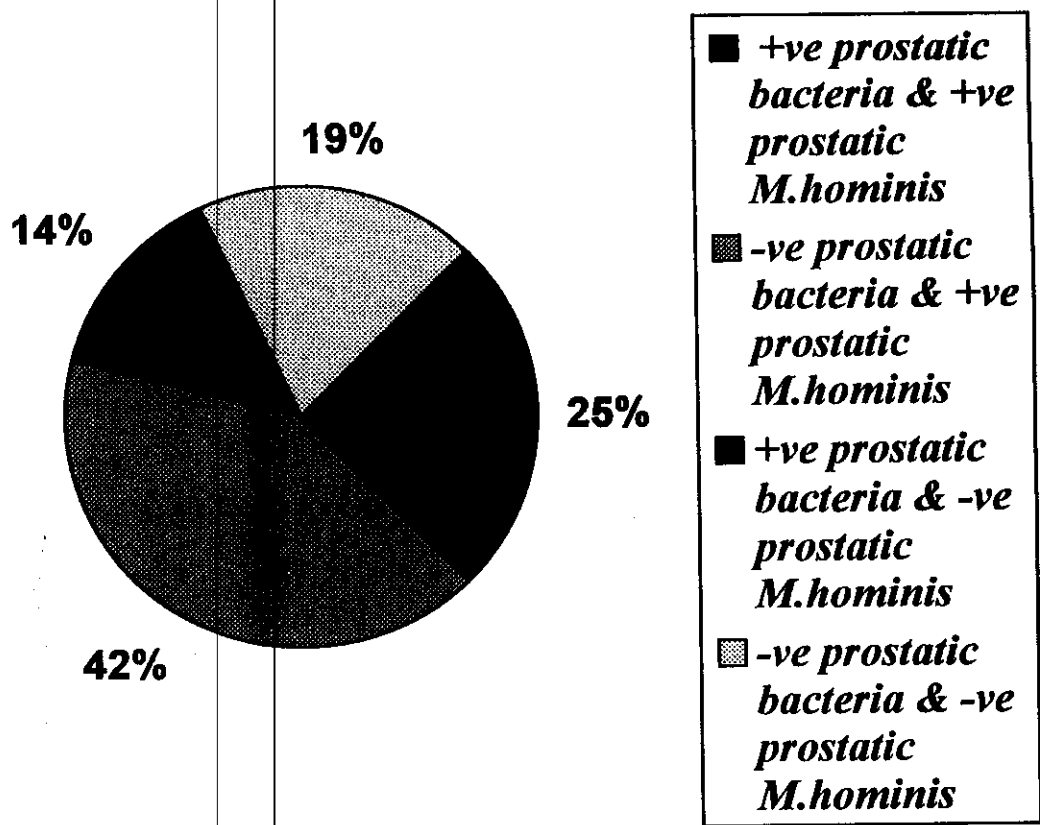
ig(R.5)B.Percentages of cases having both
rostatic M.hominis and bacterial infections
y different types of bacteria :

49%

6%

6%

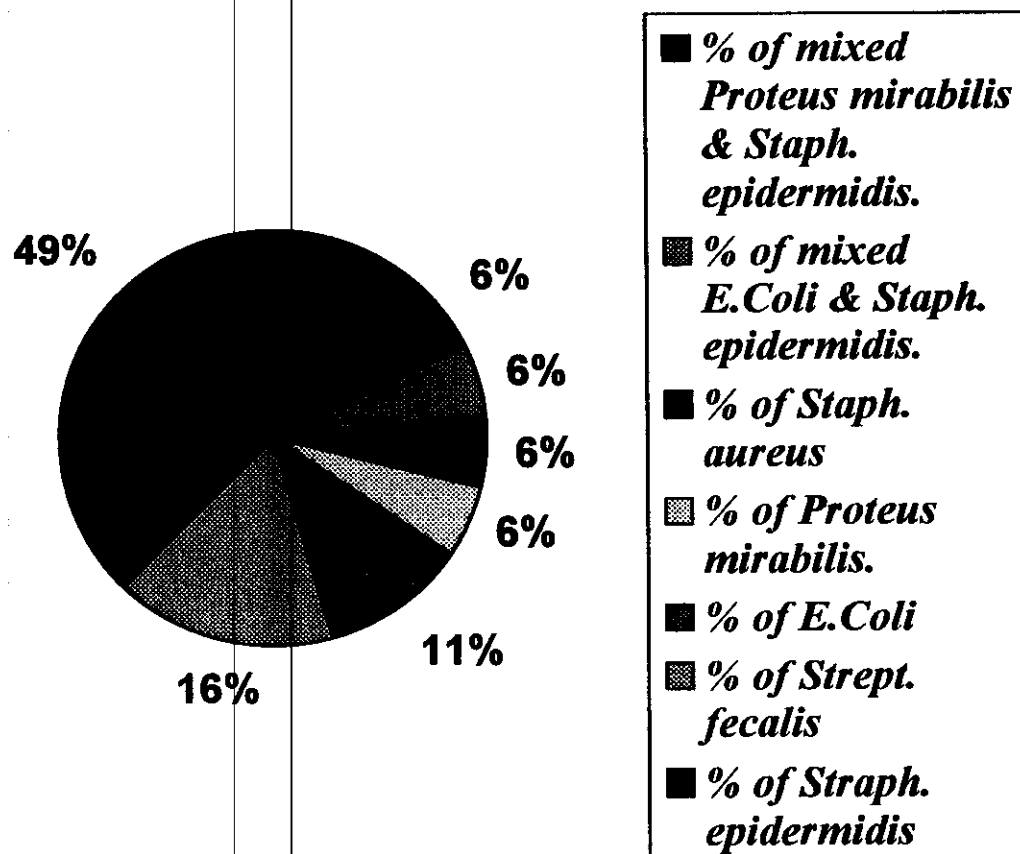6%

6%

11%

16%

■ % of mixed
*Proteus mirabilis
& Staph.
epidermidis.*

▨ % of mixed
*E.Coli & Staph.
epidermidis.*

■ % of Staph.
aureus

▨ % of Proteus
mirabilis.

■ % of E.Coli

▨ % of Strept.
fecalis

■ % of Straph.
epidermidis

Table (R25):   Prostatic infection by bacteria and *C.trachomatis*.

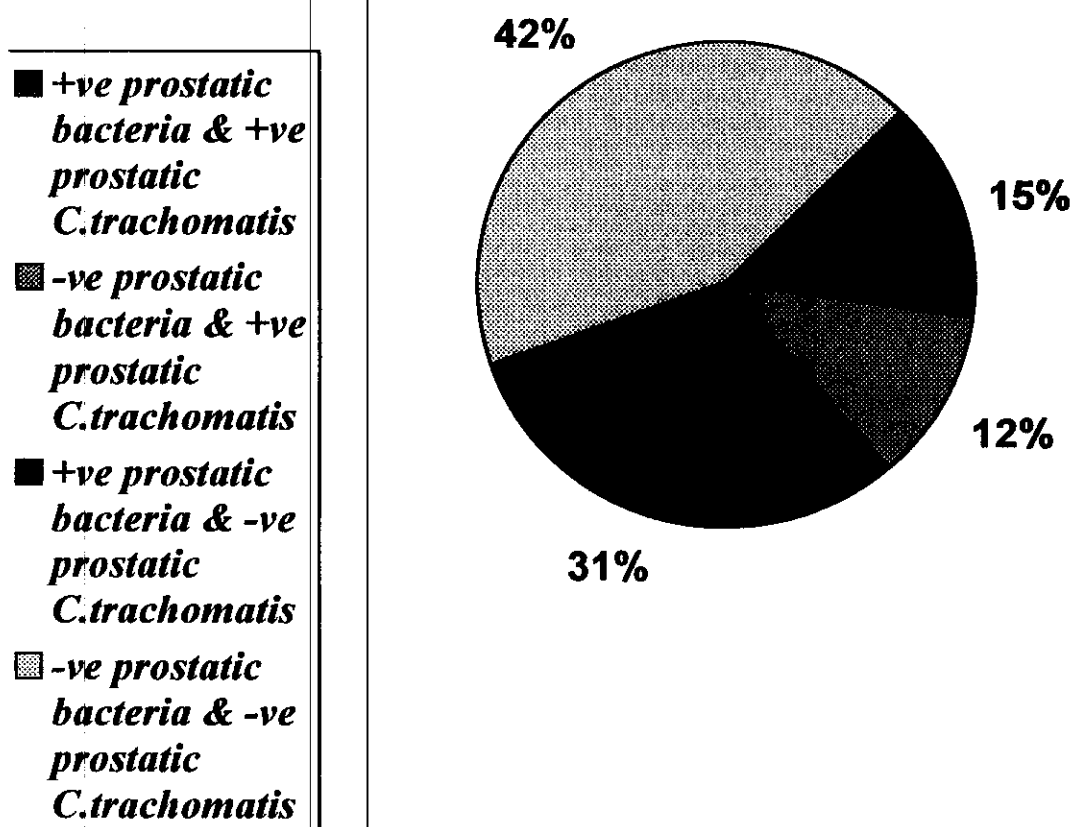|		Prostatic bacteria		
		+ve	-ve	Total
Prostatic *C.trachomatis*	+ve	9	7	16
	-ve	19	26	45
	Total	28	33	61

From table (R25):

$X^2 = 0.94 < 3.84$ not significant.

- The percentage of occurrence of positive bacterial amongst positive chlamydial prostatitis cases (56.25%) is statistically indifferent to occurrence of positive bacterial amongst negative chlamydial prostatitis cases (42.2%) and the average percentage is 45.9%.

- So, there is statistical independence between the occurrence of chlamydial and bacterial prostatitis.

- Data in this table are demonstrated in Fig. (R6 a,b).

Fig(R.6)A.Percentages of possible combinations of prostatic infection by bacteria and C.trachomatis:

■ +ve prostatic bacteria & +ve prostatic C.trachomatis

▓ -ve prostatic bacteria & +ve prostatic C.trachomatis

■ +ve prostatic bacteria & -ve prostatic C.trachomatis

▒ -ve prostatic bacteria & -ve prostatic C.trachomatis

42%

15%

12%

31%

Fig(R.6)B.Percentages of cases having both prostatic chlamydial and bacterial infections by different types of bacteria :

Legend:
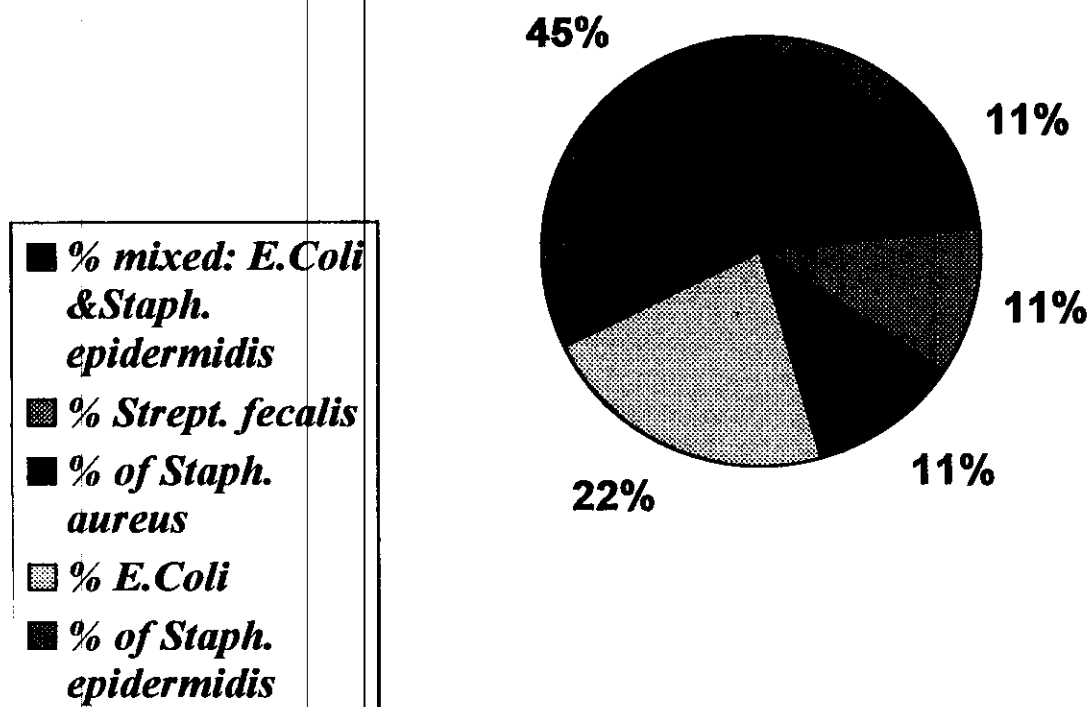- ■ % mixed: E.Coli &Staph. epidermidis
- ▦ % Strept. fecalis
- ■ % of Staph. aureus
- ▦ % E.Coli
- ▦ % of Staph. epidermidis

45%   11%

11%

22%   11%

Table (R26): Prostatic infection by *C.trachomatis* and *M.hominis*.

		Prostatic *M.hominis*		
		+ve	-ve	Total
Prostatic *C.trachomatis*	+ve	15	1	16
	-ve	28	17	45
	Total	43	18	61

From table (R26):

$X^2 = 5.6 > 5.41$ i.e. very significant on 1% level.

- The independence between both prostatic *M.hominis* and prostatic *C.trachomatis* infection is rejected since the occurrence of positive prostatic *M.hominis* amongst positive prostatic chlamydial cases is most probable than the occurrence of positive prostatic *M.hominis* amongst negative chlamydial cases.

- Data in this table are demonstrated in Fig. (R7).

Fig(R.7):Percentages of possible combinations of prostatic infection by M.hominis and C.trachomatis :

■ +ve prostatic M. hominis & +ve prostatic C.trachomatis.

▨ -ve prostatic M. hominis & +ve prostatic C.trachomatis.

■ +ve prostatic M. hominis & -ve prostatic C.trachomatis.

▨ -ve prostatic M. hominis & -ve prostatic C.trachomatis.

28%

25%

45%

2%
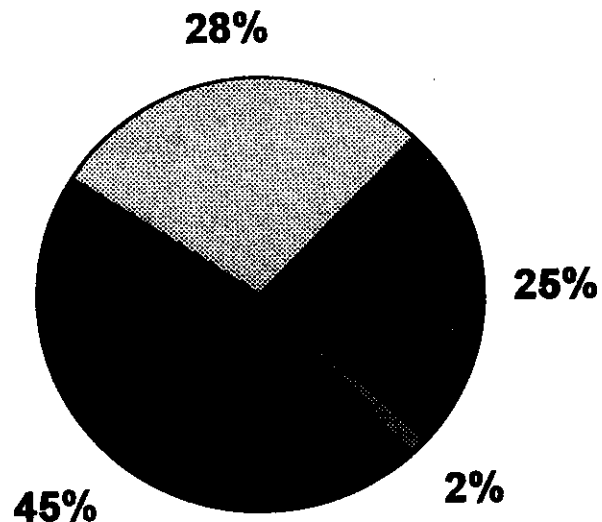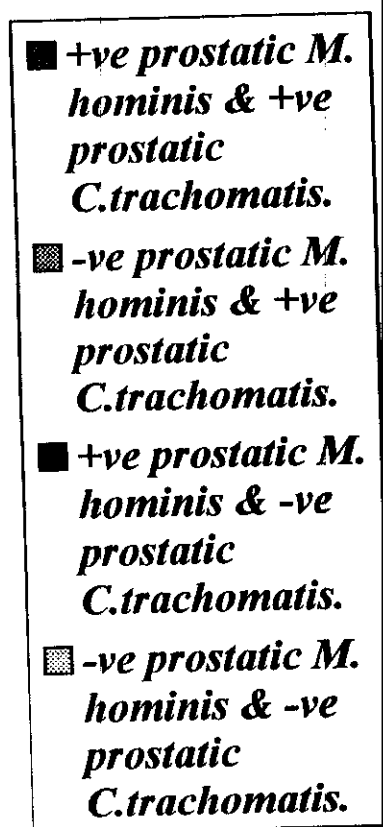
DISCUSSION

Urethritis is a very common disease, it is generally considered as a sexually transmitted disease (STD), although acute urethral syndrome (AUS) (Sterile pyuria, dysuria, frequency and urgency) is not usually placed in STD category **(Finegold and Baron, 1986)**.

Chronic prostatitis is a common condition which causes a variety of symptoms or may even be asymptomatic. It's aetiology is still a matter of controversy. A major problem in the diagnosis of chronic prostatitis lies in identifying a microorganism, since very few pathogens are actually associated with the disease **(Childs, 1990)**.

The present study showed that the most common symptoms were the urinary symptoms: 53 patients out of 72 (73.6%) were suffering from the following symptoms: dysuria (73.5%), terminal dribbling (54.7%), frequency of micturition (52.8%), urgency (26.4%) and urethral discharge (3.71%). These results are in agreement with that reported by **Meares (1980); Thin and Simmons (1983); Hussain (1984); Orland et al. (1985) and Anderson (1988)** who found that most of patients with chronic prostatitis have irritative voiding symptoms; frequency, urgency and dysuria. These symptoms are attributed most probably to the presence