RESULTS

Table (1): **Blood urea nitrogen (BUN) (mg/dl) and serum creatinine (mg/dl) in control group (group I).**

	BUN (mg/dl)	Creatinine (mg/dl)
1	15	0.8
2	13.6	0.6
3	14	0.7
4	15.2	0.9
5	11.4	0.5
6	10.2	0.4
M	13.23	0.65
SD	2.01	0.18
SE	0.82	0.07

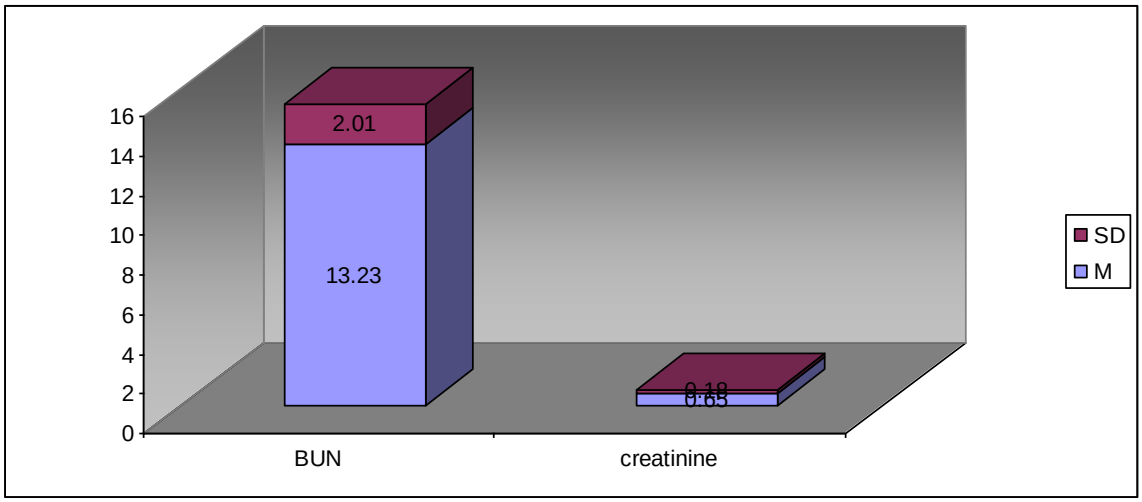

Chart (1)

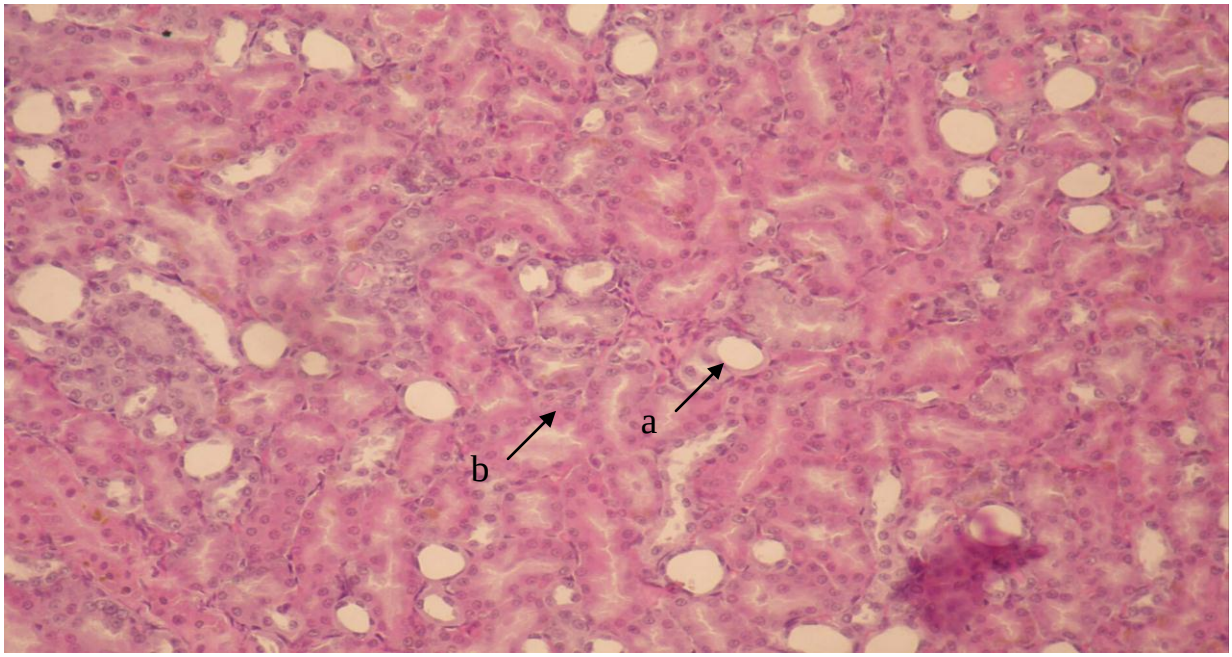

Fig. (1): A photomicrograph of renal biopsy of group I (control group) shows (a) normal tubular structure and (b) normal interstitium. (H & E, X 200)

Table (1), chart (1) and fig. (1)

It is clear from table (1) and chart (1) that the BUN is ranged between 10.2 – 15.2 mg/dl, with a mean value of 13.23 mg/dl ± 2.01, and the serum creatinine is ranged between 0.4 – 0.9 mg/dl, with a mean value of 0.65 mg/dl ± 0.18. Also, fig. (1) shows normal tubular structure with normal interstitium in the renal biopsy of the control group.

Table (2): **Blood urea nitrogen (BUN) (mg/dl) and serum creatinine (mg/dl) in rats injected with gentamicin in a dose of 80 mg/kg/day for one week (group II).**

	BUN (mg/dl)	Creatinine(mg/dl)
1	35.4	2.1
2	32.9	1.8
3	36.8	2.2
4	34.9	2.1
5	37.8	2.3
6	34	1.9
M	35.30	2.06
SD	1.79	0.18
SE	0.73	0.07

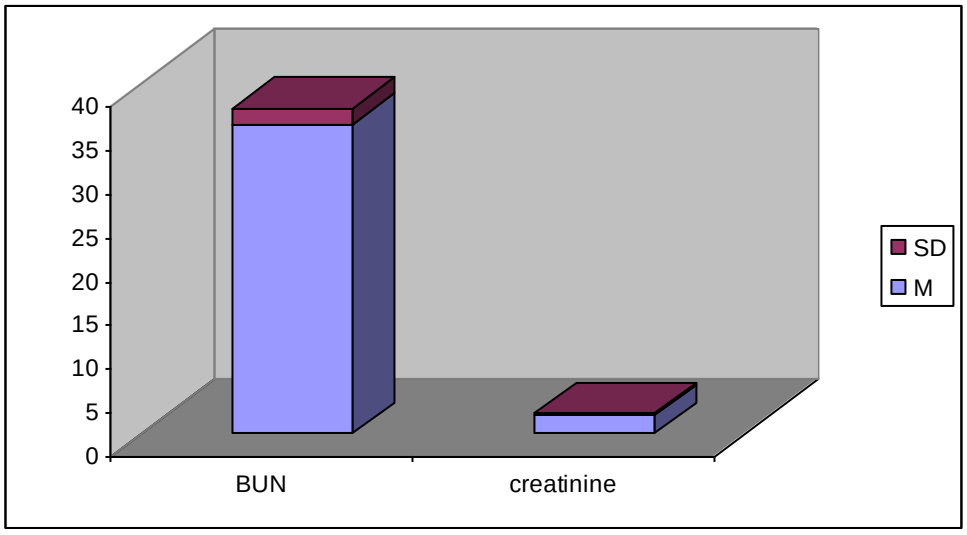

Chart (2)

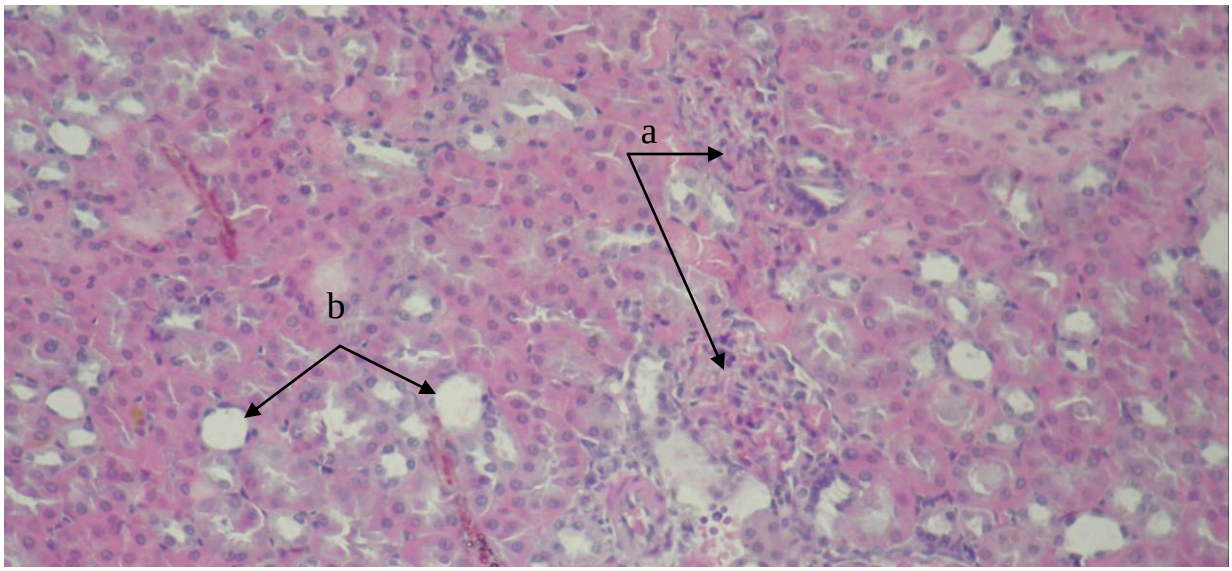

Fig. (2A): A photomicrograph of renal biopsy of group II (gentamicin injected group) shows (a) inflammatory cell infiltrate and (b) massive tubular necrosis. (H & E, X 400)

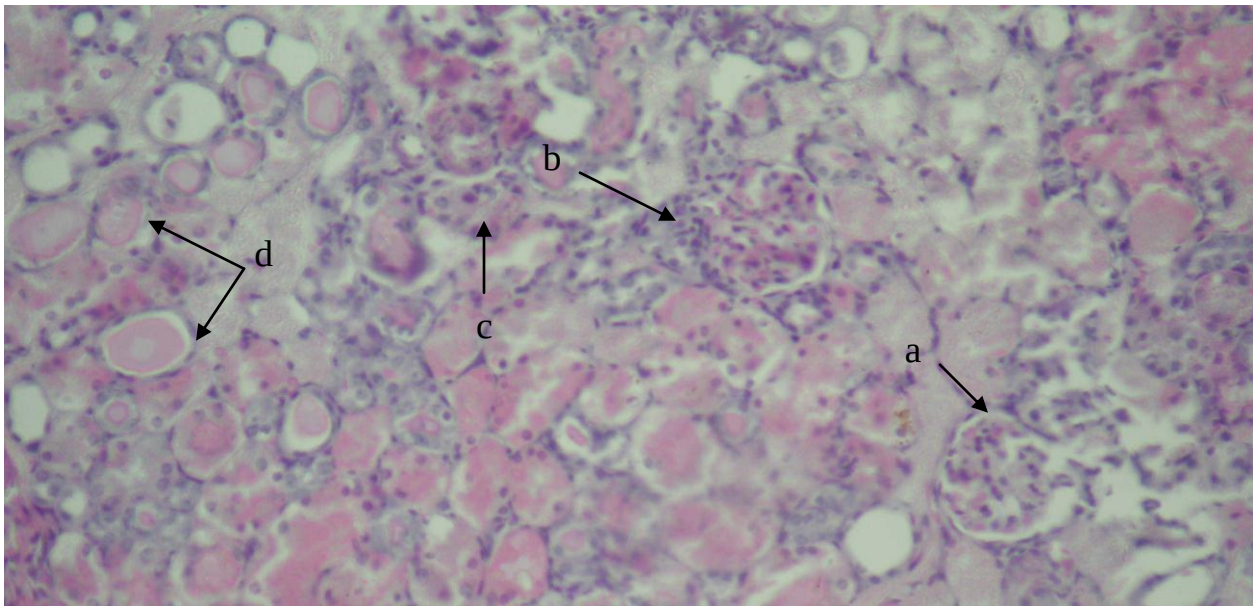

Fig. (2B): A photomicrograph of renal biopsy of group II (gentamicin injected group) shows (a) glomerular edema (b) inflammatory cell infiltrate (c) massive tubular necrosis and (d) intraluminal cast formation. (H & E, X 400)

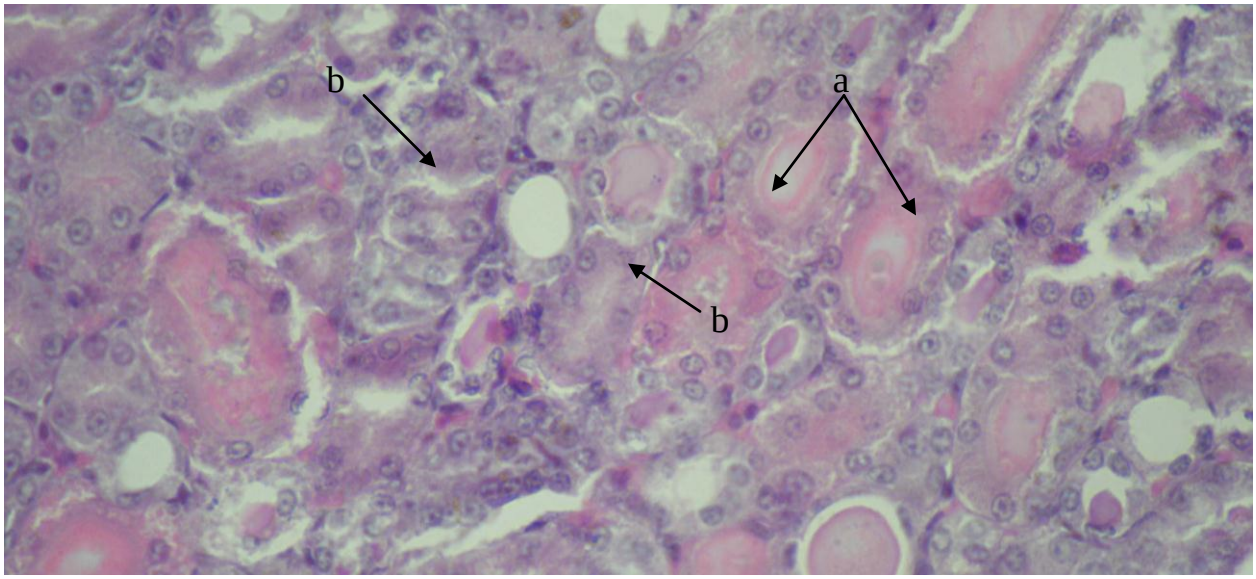

Fig. (2C): A photomicrograph of renal biopsy of group II (gentamicin injected group) shows (a) intraluminal cast formation and (b) interstitial tissue edema. (H & E, X 400)

Table (2), chart (2) and fig. (2A, 2B, 2C)

It is clear from table (2) and chart (2) that the BUN is ranged between 34-37.8 mg/dl, with a mean value of 35.30 mg/dl ± 1.79, and the serum creatinine is ranged between 1.8 – 2.3 mg/dl, with a mean value of 2.06 mg/dl ± 0.18. Also, it is clear from fig. (2A, 2B and 2C) that the histopathological changes in renal biopsy is sever in the form of massive glomerular edema, massive tubular necrosis with intraluminal cast formation and inflammatory cell infiltrate.

Table (3): **Blood urea nitrogen (BUN) (mg/dl) and serum creatinine (mg/dl) in rats injected with gentamicin in a dose 80mg /kg/day and taurine in a dose 4 ml/kg/day for one week (group III a).**

	BUN(mg/dl)	creatinine(mg/dl)
1	23.8	1.4
2	21.4	1.3
3	25.2	1.5
4	26.1	1.8
5	20.5	1.1
6	22.4	1.2
M	23.23	1.38
SD	2.18	0.24
SE	0.89	0.10

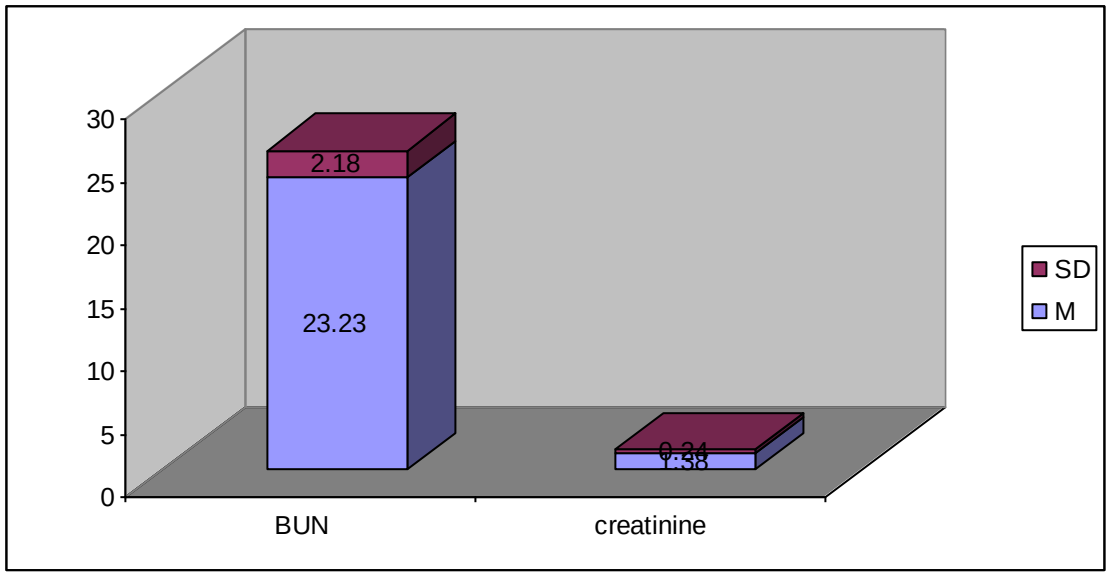

Chart (3)

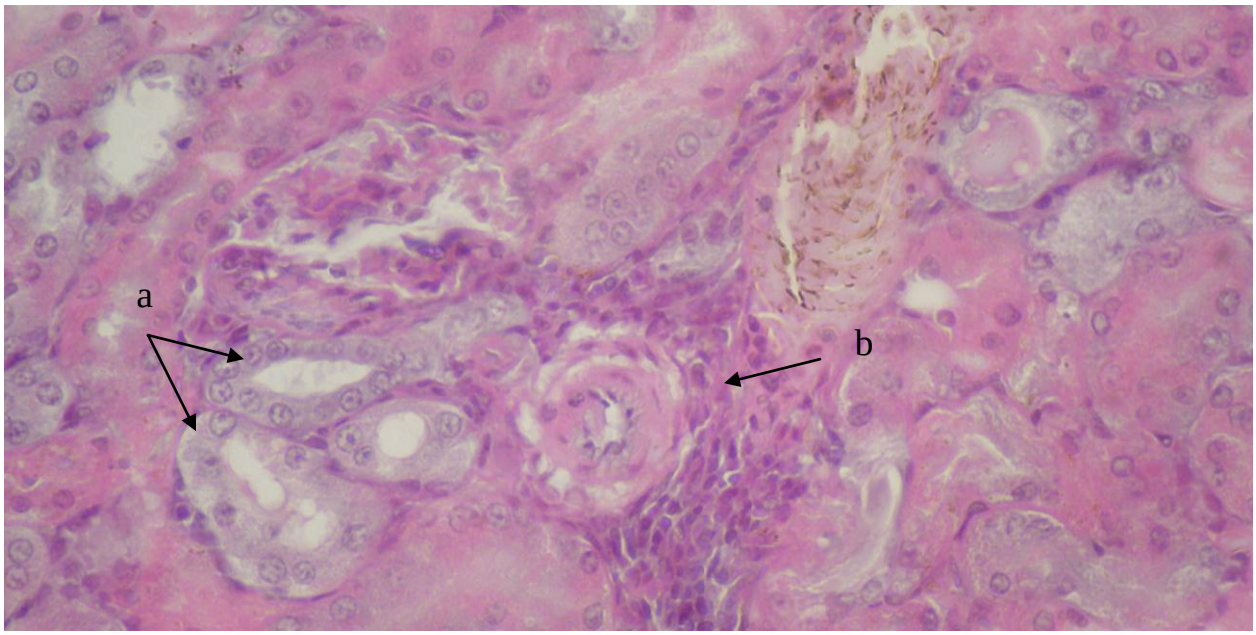

Fig. (3): A photomicrograph of renal biopsy of group III a shows (a) regeneration of tubular epithelium and (b) mild cellular infiltrate. (H & E, X 400)

Table (3), chart (3) and fig. (3)

It is clear from table (3) and chart (3) that the BUN is raged between 20.5 – 26.1 mg/dl with a mean value of 23.23 mg/dl ± 2.18, and the serum creatinine is ranged between 1.1- 1.8 mg/dl with a mean value of 1.38 mg/dl ± 0.24. Also, it is clear from fig. (3) that there is mild correction in the renal biopsy of this group in the form of tubular epithelial regeneration with decrease in interstitial tissue edema and inflammatory cell infiltrate.

Table (4): **Blood urea nitrogen (BUN) (mg/dl) and serum creatinine (mg/dl) in rats injected with gentamicin in a dose of 80 mg/kg/day and taurine in a dose of 7.5 ml/kg/day for one week (group III b).**

	BUN(mg/dl)	Creatinine(mg/dl)
1	16.8	0.8
2	13.2	0.5
3	14.9	0.6
4	15.8	0.7
5	16.3	0.8
6	12.1	0.4
M	14.85	0.63
SD	1.84	0.16
SE	0.75	0.06

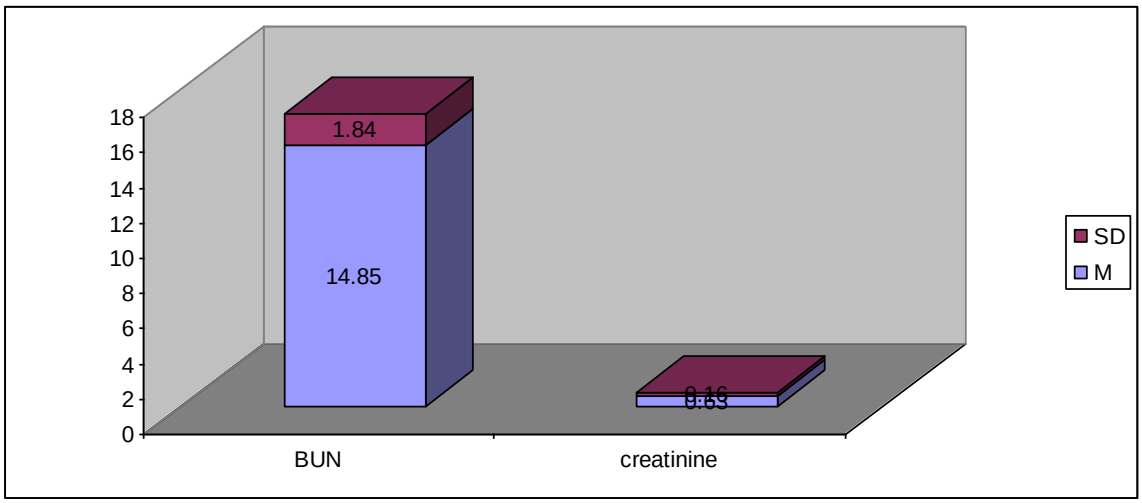

Chart (4)

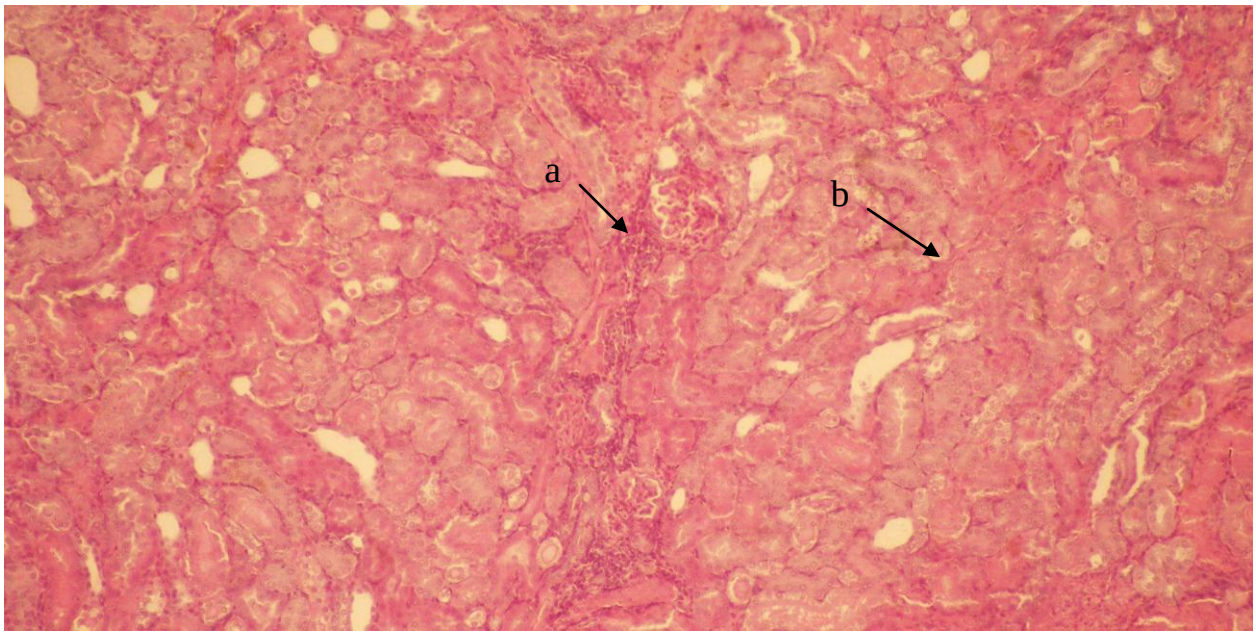

Fig. (4A): A photomicrograph of renal biopsy of group III b shows (a) absence of inflammatory cell infiltrate and (b) decrease in interstitial edema. (H & E, X 200)

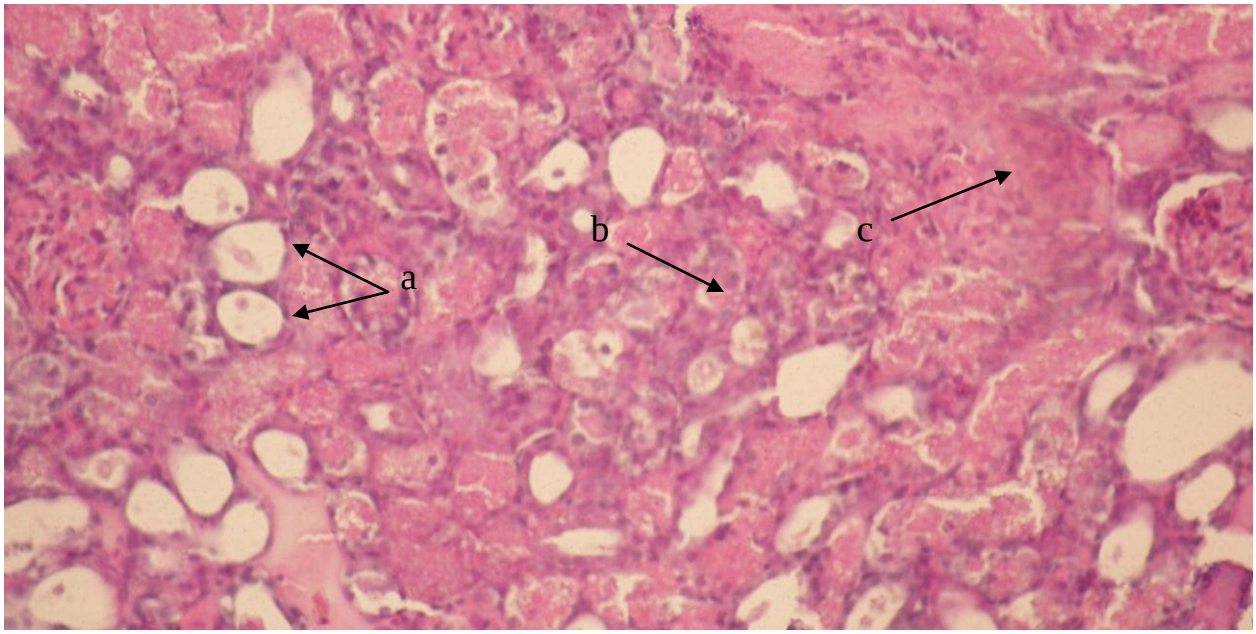

Fig. (4B): A photomicrograph of renal biopsy of group III b shows (a) tubular regeneration (b) absence of inflammatory cell infiltrate and (c) decrease in interstitial edema. (H & E, X 400)

Table (4), chart (4) and fig. (4A, 4B)

It is clear from table (4) and chart (4) that the BUN is ranged between 12.1 – 16.8 mg/dl, with a mean value of 14.85 mg/dl ± 1.84, and the serum creatinine is ranged between o.4 – 0.8 mg/dl, with a mean value of 0.63 mg/dl ± 0.16. Also, the histopathological finding shown in fig. (4A, 4B) determine several correction in the renal biopsy of this group as there is no inflammatory cell infiltrate with marked decrease in interstitial hemorrhage and interstitial edema.

Table (5): **Blood urea nitrogen (BUN) (mg/dl) and serum creatinine (mg/dl) in rats injected with gentamicin in a dose of 80 mg/kg/day and taurine in a dose 10 ml/kg/day for one week (group III c).**

	BUN(mg/dl)	Creatinine(mg/dl)
1	15.2	0.7
2	12.5	0.4
3	15.5	0.7
4	14.6	0.5
5	16.1	0.8
6	15.8	0.6
M	14.95	0.61
SD	1.30	0.14
SE	0.53	0.06

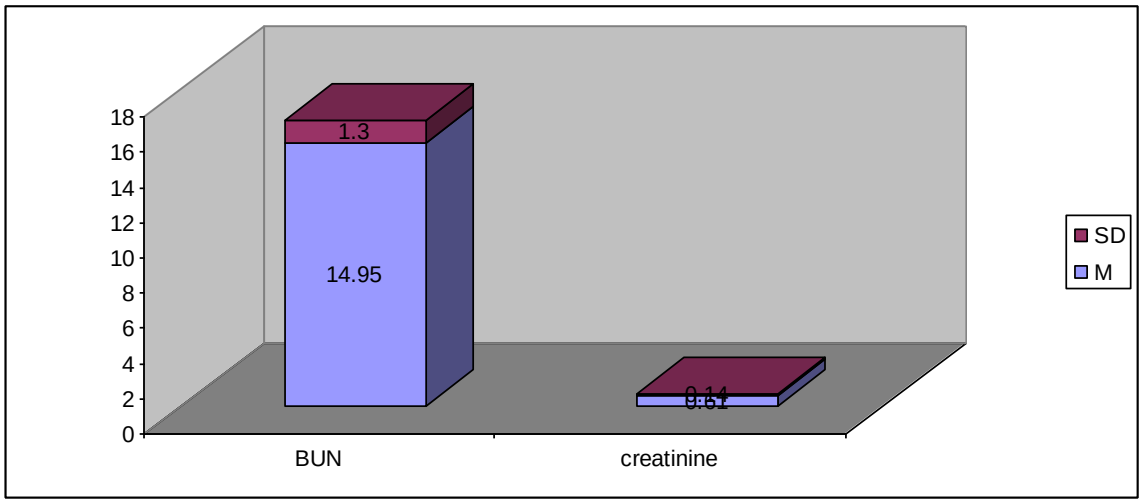

Chart (5)

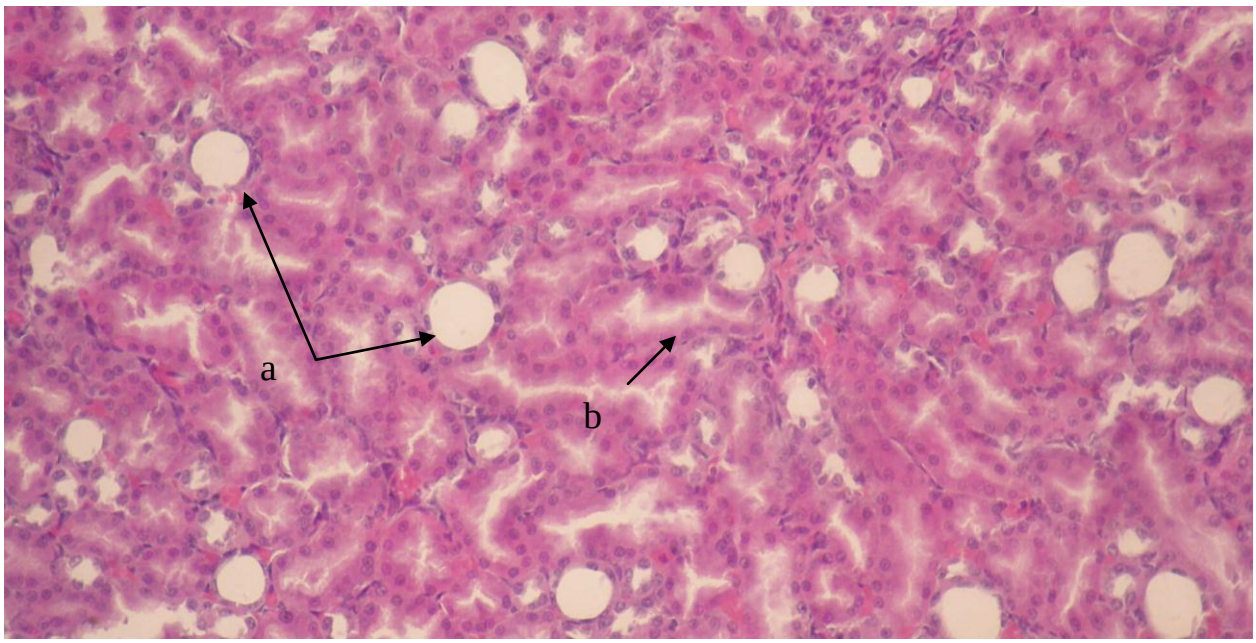

Fig. (5): A photomicrograph of renal biopsy of group III c shows (a) patent tubular lumen and (b) marked decrease in interstitial tissue edema. (H & E, X 400)

Table (5), chart (5) and fig. (5)

It is clear from table (5) and chart (5) that the BUN is ranged between 12.5 – 16.1 mg/dl, with a mean value of 14.95 mg/dl ± 1.30, and the serum creatinine is ranged between o.4 – 0.8 mg/dl, with a mean value of 0.61 mg/dl ± 0.14. On the other hand, the histopathological changes seen in fig. (5) shows patent tubular lumen i.e. no intraluminal cast formation, absence of inflammatory cell infiltrate and marked decrease in interstitial tissue edema.

Table (6): **Effect of gentamicin injection in a dose of 80 mg/kg/day for one week (group II) on BUN and serum creatinine level in comparison with the control group (group I).**

	BUN		creatinine	
	Group I	**Group II**	**Group I**	**Group II**
M	13.23	35.3*	0.65	2.06**
S.D.	2.01	1.79	0.18	0.18
S.E.	0.82	0.73	0.07	0.07
t	20		13.1	
p	<0.001		<0.001	

****, **Significant change compared with corresponding group (P < 0.001).***

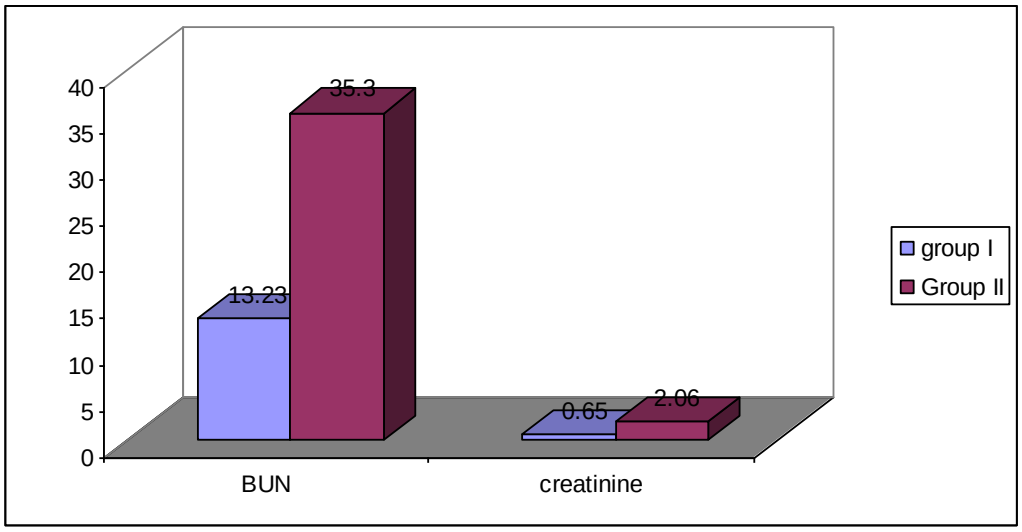

Chart (6)

Table (6) and chart (6)

It is clear from table (6) and chart (6) that injection of gentamicin in a dose of 80 mg/kg/day for one week caused significant increase in BUN and serum creatinine as they were changed from 13.23 mg/dl ± 2.01 and 0.65 mg/dl ± 0.18 in control group to 35.30 mg/dl ± 1.79 and 2.06 mg/dl ± 0.18 after gentamicin injection respectively ($P < 0.001$).

Table (7): **Effect of taurine injection in a dose of 4 ml/kg/day plus gentamicin injection in a dose of 80 mg/kg/day for one week (Group III a) on BUN and serum creatinine level in comparison with control group.**

	BUN(mg/dl)		Creatinine(mg/dl)	
	Group I	**Group III a**	**Group I**	**Group III a**
M	13.23	23.23*	0.65	1.38**
S.D.	2.01	2.18	0.18	0.24
S.E.	0.82	0.89	0.07	0.10
t	8.23		5.77	
p	<0.01		<0.01	

, **Significant change compared with corresponding group (P < 0.01).

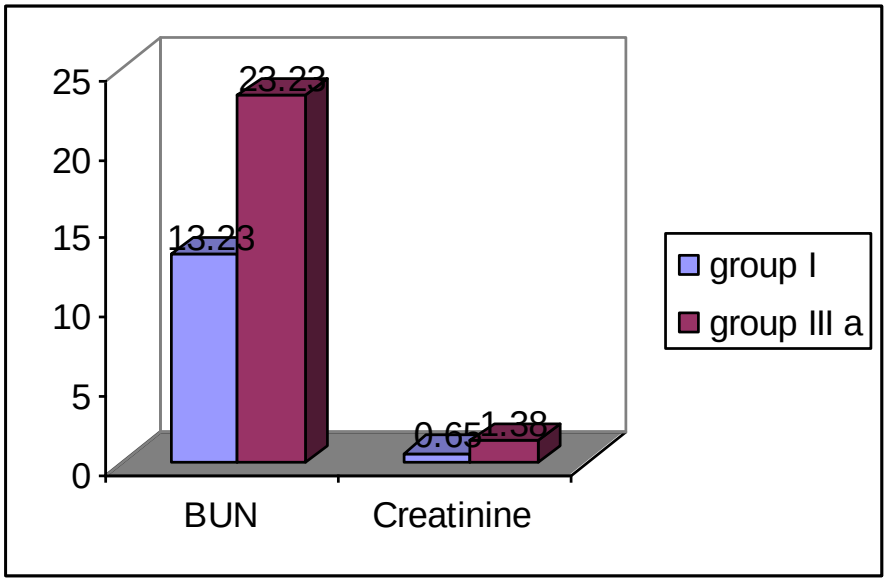

Chart (7)

Table (7) and chart (7)

It is clear from table (7) and chart (7) that injection of taurine in a dose of 4 ml/kg/day with gentamicin in a dose of 80 mg/kg/day for one week caused significant increase in BUN and serum creatinine as they were changed from 13.23 mg/dl ± 2.01 and 0.65 mg/dl ± 0.18 in control group to 23.23 mg/dl ± 2.18 and 1.38 mg/dl ± 0.24 in group III a respectively ($P < 0.01$).

Table (8): **Effect of taurine injection in a dose of 7.5 ml/kg/day plus gentamicin injection in a dose of 80 mg/kg/day (group III b) for one week on BUN and serum creatinine level in comparison with control group.**

	BUN(mg/dl)		creatinine(mg/dl)	
	Group I	**Group III b**	**Group I**	**Group III b**
M	13.23	14.85	.65	.63
S.D.	2.01	1.84	0.18	0.16
S.E.	0.82	0.75	0.07	0.06
t	1.4		0.16	
p	----		----	

No significant change between both groups.

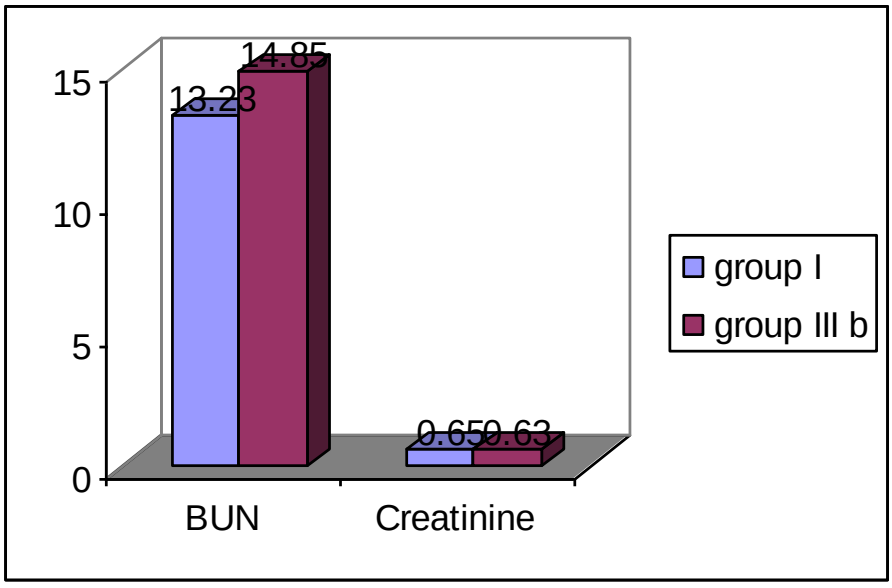

Chart (8)

Table (8), chart (8)

It is clear from this table and chart that injection of taurine in a dose of 7.5 ml/kg/day with gentamicin in a dose of 80 mg/kg/day for one week caused non significant changes in BUN and serum creatinine level as they were changed from 13.23 mg/dl ± 2.01 and 0.65 mg/dl ± 0.18 in control group (group I) to 14.85 mg/dl ± 1.84 and 0.63 mg/dl ± 0.16 in group III b respectively.

Table (9): **Effect of taurine injection in a dose of 10ml/kg/day plus gentamicin injection in a dose of 80 mg/kg/day (group III c) for one week on BUN and serum creatinine level in comparison with control group.**

	BUN(mg/dl)		creatinine(mg/dl)	
	Group I	**Group III c**	**Group I**	**Group III c**
M	13.23	14.95	0.65	0.61
S.D.	2.01	1.30	0.18	0.14
S.E.	0.82	0.53	0.07	0.06
t	1.75		0.34	
p	----		----	

No significant change between both groups.

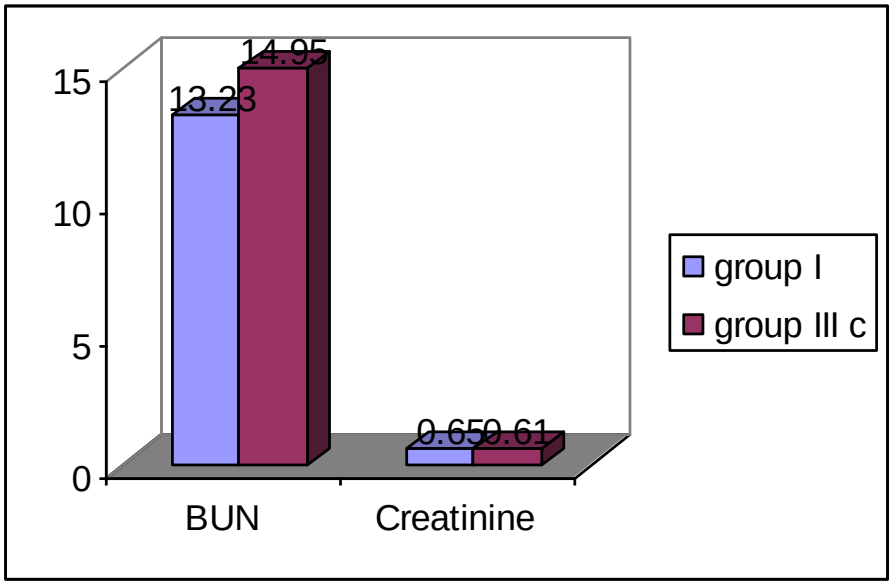

Chart (8)

Table (9), chart (9)

It is clear from this table and chart that injection of taurine in a dose of 10 ml/kg/day with gentamicin in a dose of 80 mg/kg/day for one week caused non significant changes in BUN and serum creatinine level as they were changed from 13.23 mg/dl ± 2.01 and 0.65 mg/dl ± 0.18 in control group (group I) to14.95 mg/dl ±1.30 and 0.61mg/dl ± 0.06 in group III c respectively.

Table (10): **Effect of taurine injection in a dose of 4ml/kg/day plus gentamicin injection in a dose of 80 mg/kg/day for one week (group III a) on BUN and serum creatinine level in comparison with gentamicin injected group (group II).**

	BUN(mg/dl)		Creatinine(mg/dl)	
	Group II	Group III a	Group II	Group III a
M	35.30	23.23*	2.06	1.38**
S.D.	1.79	2.18	0.18	0.24
S.E.	0.73	0.89	0.07	0.10
t	10.4		5.3	
p	<0.01		<0.01	

, **Significant change compared with corresponding group (P < 0.01).

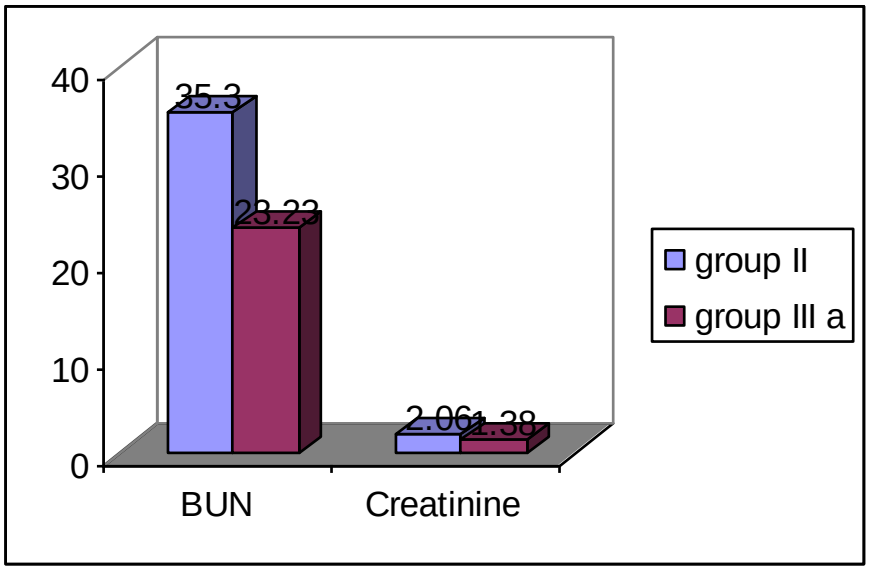

Chart (10)

Table (10), chart (10)

It is clear from this table and chart that injection of taurine in a dose of 4 ml/kg/day together with gentamicin in a dose of 80 mg/kg/day for one week caused significant decrease in BUN and serum creatinine level as they were changed from 35.30 mg/dl ± 1.79 and 2.06 mg/dl ± 0.18 in gentamicin injected group (group II) to 23.23 mg/dl ± 2.18 and 1.38 mg/dl ± 0.24 in group III a respectively ($P < 0.01$).

Table (11): **Effect of taurine injection in a dose of 7.5 ml/kg/day plus gentamicin injection in a dose of 80 mg/kg/day for one week (group III b) on BUN and serum creatinine level in comparison with gentamicin injected group (group II).**

	BUN(mg/dl)		Creatinine(mg/dl)	
	Group II	**Group III b**	**Group II**	**Group III b**
M	35.30	14.85*	2.06	0.63**
S.D.	1.79	1.84	0.18	0.16
S.E.	0.73	0.75	0.07	0.06
t	19.4		14.1	
p	<0.001		<0.001	

****, **Significant change compared with corresponding group (P < 0.001).***

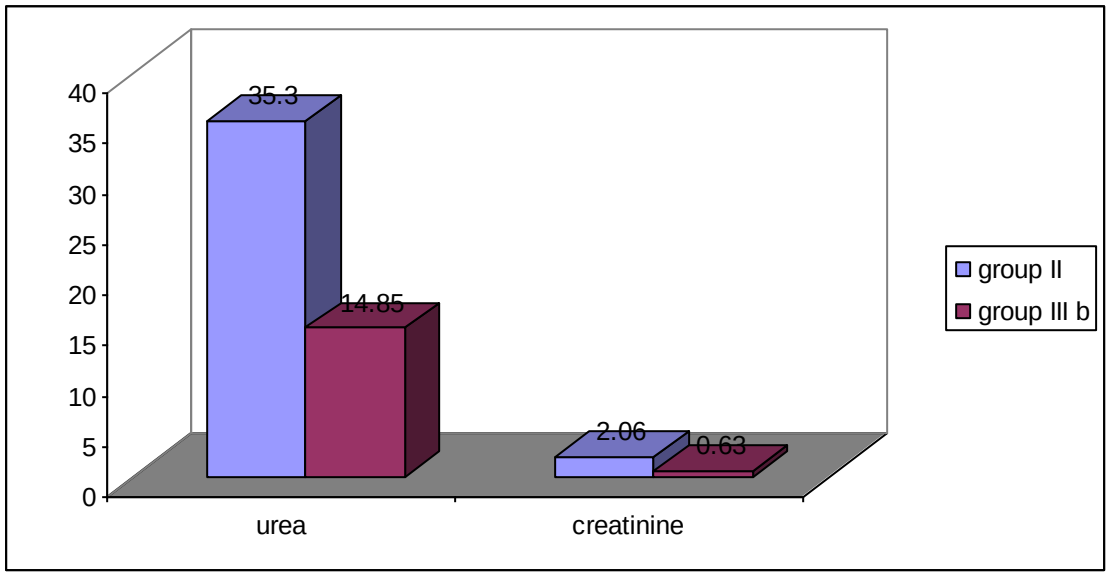

Chart (11)

Table (11), chart (11)

It is clear that injection of taurine in a dose of 7.5 ml/kg/day with gentamicin in a dose of 80 mg/kg/day for one week caused highly significant decrease in BUN and serum creatinine level as they were changed from 35.30 mg/dl ± 1.79 and 2.06 mg/dl ± 0.18 in gentamicin injected group (group II) to 14.85 mg/dl ± 1.84 and 0.63 mg/dl ± 0.16 in group III b respectively ($P < 0.001$).

Table (12): **Effect of taurine injection in a dose of 10 ml/kg/day plus gentamicin injection in a dose of 80 mg/kg/day for one week (group III c) on BUN and serum creatinine level in comparison with gentamicin injected group (group II).**

	BUN(mg/dl)		Creatinine(mg/dl)	
	Group II	**Group III c**	**Group II**	**Group III c**
M	35.30	14.95*	2.06	0.61**
S.D.	1.79	1.30	0.18	0.14
S.E.	0.73	0.53	0.07	0.06
t	22.4		14.9	
p	<0.001		<0.001	

, **Significant change compared with corresponding group (P < 0.001).

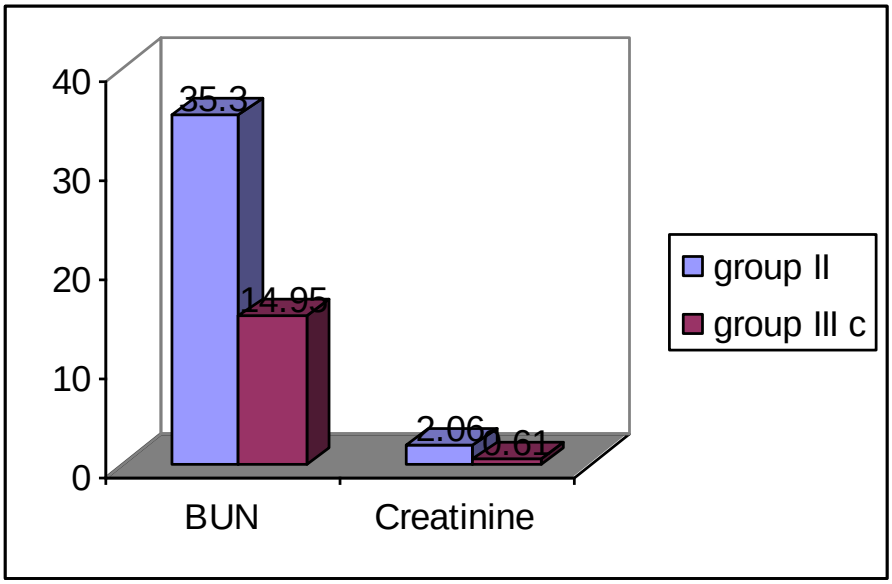

Chart (12)

Table (12), chart (12)

It is clear from this table and chart that injection of taurine in a dose of 10 ml/kg/day with gentamicin in a dose of 80 mg/kg/day for one week caused highly significant decrease in BUN and serum creatinine level as they were changed from 35.30 mg/dl ± 1.79 and 2.06 mg/dl ± 0.18 in gentamicin injected group (group II) to 14.95 mg/dl ± 1.30 and 0.61 mg/dl ± 0.14 in group III c respectively ($P < 0.001$).

Table (13): **Effect of taurine injection in two different doses of 4 and 7.5 ml/kg/day plus gentamicin in a dose of 80 mg/kg/day for one week (group III a, III b) on the level of BUN and serum creatinine.**

	BUN(mg/dl)		Creatinine(mg/dl)	
	Group III a	Group III b	Group III a	Group III b
M	23.23	14.85*	1.38**	0.63**
S.D.	2.18	1.84	0.24	0.16
S.E.	0.89	0.75	0.10	0.06
t	7.16		6.18	
p	<0.001		<0.001	

, ****Significant change compared with corresponding group (P < 0.001).

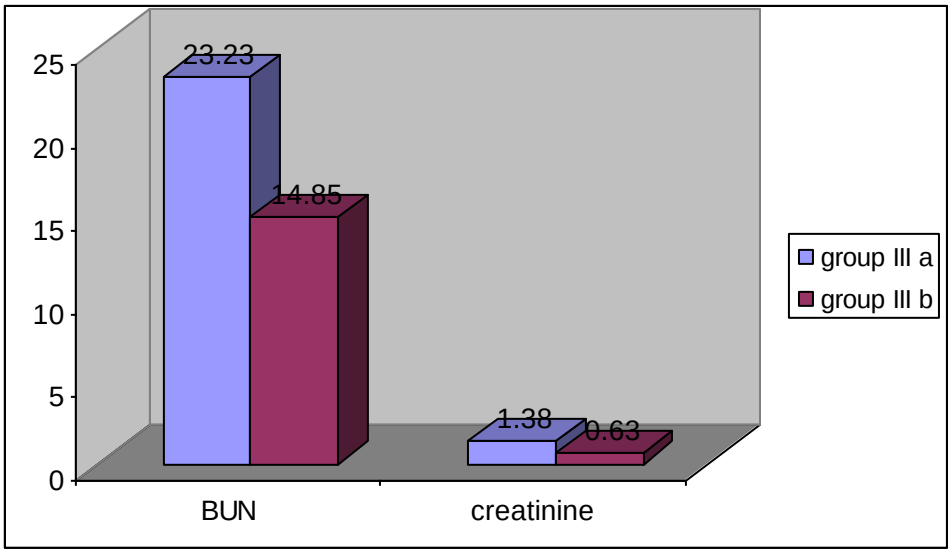

Chart (13)

Table (13), chart (13)

It is clear from this table and chart that injection of taurine in a dose of 7.5 ml/kg/day with gentamicin in a dose of 80 mg/kg/day for one week caused significant decrease in BUN and serum creatinine level as they were Changed from 23.23 mg/dl ± 2.18 and 1.38 mg/dl ± 0.24 in group III a to 14.85 mg/dl ± 1.84 and 0.63 mg/dl ± 0.16 in group III b respectively ($P < 0.001$).

Table (14): **Effect of taurine injection in two different doses of 4, and 10 ml/kg/day plus gentamicin in a dose of 80 mg/kg/day for one week (group III a, III c) on the level of BUN and serum creatinine.**

	BUN(mg/dl)		Creatinine(mg/dl)	
	Group III a	**Group III c**	**Group III a**	**Group III c**
M	23.23	14.95*	1.38	0.61**
S.D.	2.18	1.30	0.24	0.14
S.E.	0.89	0.53	0.10	0.06
t	7.96		6.50	
p	<0.001		<0.001	

, **Significant change compared with corresponding group (P < 0.001).

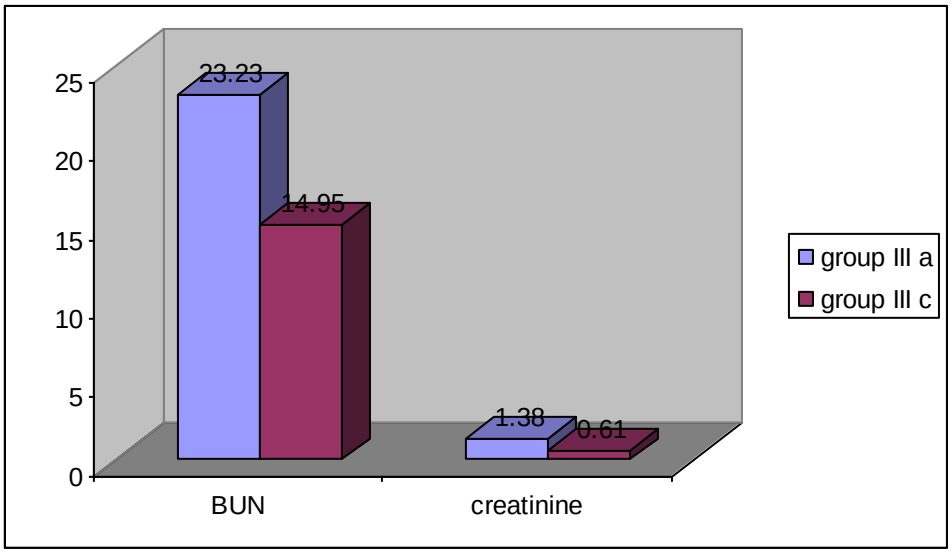

Chart (14)

Table (14), chart (14)

It is clear from this table and chart that injection of taurine in a dose of 10 ml/kg/day with gentamicin in a dose of 80 mg/kg/day for one week caused significant decrease in BUN and serum creatinine level as they were Changed from 23.23 mg/dl ± 2.18 and 0.61 mg/dl ± 0.24 in group III a to 14.95 mg/dl ± 1.30 and 0.63 mg/dl ± 0.14 in group III c respectively ($P < 0.001$).

Table (15): **Effect of taurine injection in two different doses of 7.5, and 10 ml/kg/day plus gentamicin in a dose of 80 mg/kg/day for one week (group III b, III c) on the level of BUN and serum creatinine.**

	BUN(mg/dl)		Creatinine(mg/dl)	
	Group III b	Group III c	Group III b	Group III c
M	14.85	14.95	0.63	0.61
S.D.	1.84	1.30	0.16	0.14
S.E.	0.75	0.53	0.06	0.06
t	0.10		0.18	
p	---		---	

No significant change between both groups.

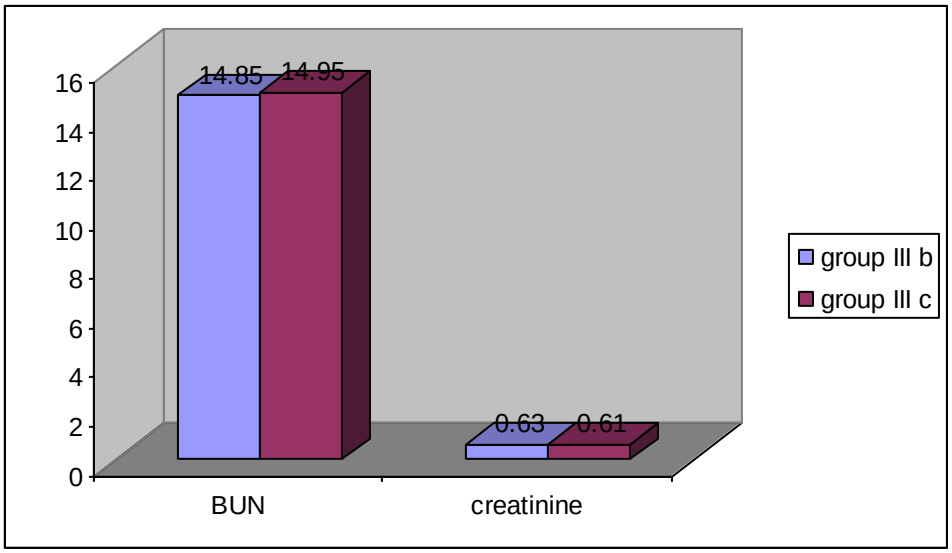

Chart (15)

Table (15), chart (15)

It is clear from this table and chart that injection of taurine in a dose of 10 ml/kg/day with gentamicin in a dose of 80 mg/kg/day for one week caused no significant changes in BUN and serum creatinine level as they were changed from 14.85 mg/dl ± 1.84 and 0.63 mg/dl ± 0.16 in group III b to 14.95 mg/dl ± 1.30 and 0.63 mg/dl ± 0.14 in group III c respectively.

Table (16): **Effect of taurine injection in different doses of 4, 7.5 and 10 ml/kg/day together with gentamicin in a dose of 80 mg/kg/day for one week (group III a, III b and III c) on the level of BUN and serum creatinine in comparison to each other.**

	BUN(mg/dl)			Creatinine (mg/dl)		
	Group III a	**Group III b**	**Group III c**	**Group III a**	**Group III b**	**Group III c**
M	23.23	14.85	14.95	1.38	0.63	0.61
S.D.	2.18	1.84	1.30	0.24	0.16	0.14
S.E.	0.89	0.75	0.53	0.10	0.06	0.06

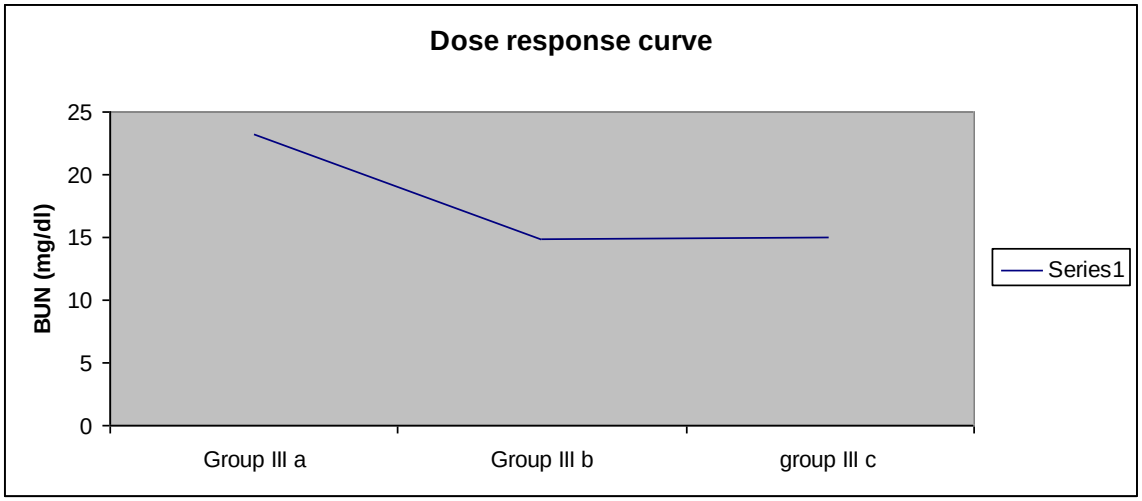

Chart (16A)

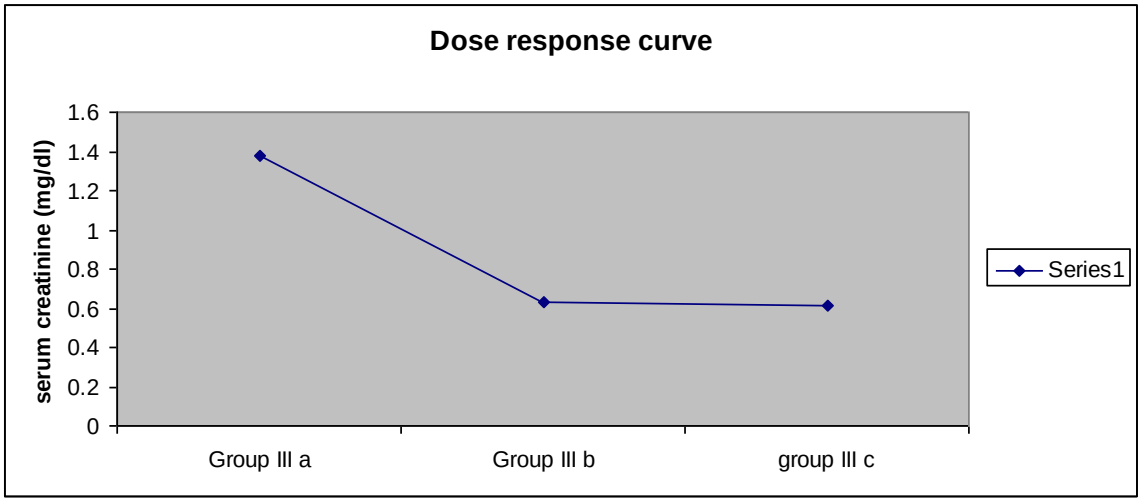

Chart (16B)

Table (16), chart (16A, B)

It is clear from that table and charts that there is significant decrease in the level of BUN and serum creatinine in rats of group III b and group IIIc in comparison with that of group III a; as they were changed from 23.23 mg/dl ± 2.18 and 1.38 mg/dl ± 0.14 in group III a to 14.85 mg/dl ± 1.84, 14.95 mg/dl ± 1.30 and 0.63 mg/dl ± 0.16, 0.61 mg/dl ± 0.14 in group III b and group III c respectively ($P < 0.001$). On the other hand, there are non significant changes in the level of BUN and serum creatinine between group III b and group III c.