RESULTS

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This study was carried out on 80 preterm infants divided into 2 equal group. Group I infants were supplied with antioxidants and those of group II didn't. They were flowed up for development of sepsis, diagnosed by clinical manifestations and confirmed by CBC, CRP and blood culture. Also the time of onset of sepsis, time of improvement and discharge and the fate are recorded with determination of TNF α serum level at birth, at time of onset of sepsis and at discharge.

These results are shown in the following tables and figures.

Table (1): Shows birth weight range of studied cases in relation to gestational age, Newborns of this study who aged from 28-30 wks gestational age were 58 cases (72.5%), 27 cases (33.75%) of them had birth weight 1100 to 1500 grams and 31 cases (38.75%) were with birth weight 1501 to 2000 grams, newborns with gestation age from 31 to 33 wks were 10 cases (12.5%) most of them 7 cases (8.75%) with birth weight from 1501 to 2000 grams and those more than 2000 grams were 3 (3.75%), while newborns with gestational age from 34 to 36 wks were 12 cases (15%), 4

cases of them lie in the birth weight range of 1501 to 2000 grams and 8 cases (10%) were more than 2000 grams.

Table (2): Shows gestational age and weight in the two groups. In group 1 (40 cases) who received antioxidants, 13 newborns (32.5%) had birth weight ranging from 1100 to 1500 grams, 23 newborns (57.5%) were with birth weigh range of 1501 to 2000 grams and 4 newborns (10%) were with birth weight range more than 2000 grams. On the other hand in group II (40 newborns) who did not receive antioxidant, there were 14 newborns (35%) with birth weight range from 1100 to 1500 grams, 19 newborns (47.5 %) with birth weight from 1501 to 2000 grams and 7 newborns (17.5%) with birth weight more than 2000 grams. As regard to gestation age, in newborns included in group I there were 31 newborns (77.5%) with gestational age from 28 to 30 wks, 5 newborns (12.5%) with gestational age of 31 to 33 wks and 4 newborns (10%) with gestational age from 34 to 36 wks. In group II there were 27 newborns (67.5%) with gestational age 28 to 30 wks, 5 newborns (12.5%) with gestational age from 31 to 33 wks and 8 newborns (20%) with gestational age of 34 to 36 wks.

Table (3) Shows sex distribution in relation to gestational age of studied cases. Newborns whose gestational age ranged from 28

to 30 wks were 58 cases (72.5%), males represented 27 cases (33.75%), females were 31 cases (38.75%), while newborns with gestational age ranged from 31 to 33 wks were 10 cases (12.5%), males were 6 cases (7.5%) and females were 4 cases (5%). Newborns aged 34 to 36 wks gestational age were 12 cases (15%) of equal sex. The overall sex distribution of studied cases were 39 male (48.75%) and 41 females 51.25%.

Table (4): This table shows the number of neonates developed sepsis in the two groups. The rate of sepsis was higher in group II (45%) who didn't receive antioxidant than in group I (30%) who received antioxidant but without statistical difference.

Table (5): Shows the onset of sepsis from birth in septic cases. In group I, the twelve neonates who developed sepsis, 10 (83.33%) of them developed early sepsis (0-7 days), while only 2, neonates (16.67%) developed late sepsis (> 7 days) with mean age of onset of sepsis at (4.8 ± 1.62 and 10.5 ± 0.7 days) respectively. In group II, eighteen neonates developed sepsis, 11 (61.1%) of them developed early sepsis (0-7 days) and 7 neonates (38.89%) developed late onset sepsis, with mean age of onset at (4.9 ± 1.51 and 10.14 ± 1.7 days) respectively.

Table (6): Illustrates the frequency of clinical findings in patients developed sepsis of both groups; poor feeding and temperature instability were the most frequent findings (100%) in both groups and tachycardia was the least frequent finding (1%).

Table (7) shows results of hematologic scoring system (HSS) in septic cases of studied groups, [HSS of 3 or more indicates sepsis]. In the twelve septic cases in-group I, 3 cases (25%), 8 cases (66.7%) and one case (8.3%) showed scores of 3, 4-5 and 6-7 respectively. In group II the eighteen cases developed sepsis out of them, 2 cases (11.1%), 10 cases (55.6%) and 6 cases (33.33%) had scores 3, 4-5 and 6-7 respectively.

Table (8): Shows results of CRP in septic cases in studied groups, in group I of the twelve neonates developed sepsis, 5 cases (41.7%), 6 cases (50%) and 1 case (8.3%) had CRP titer of ¼ - 1/16, 1/32 – 1/64 and more than 1/64 respectively. In group 2 the eighteen cases developed sepsis of them 4 cases (22.22%), 7 cases (38.9%) and also 7 cases (38.9%) had CRP of ¼ - 1/16, 1/32 – 1/64 and more than 1/64 respectively.

Table (9): Shows isolated organisms from blood cultures in septic cases of studied groups. The most common isolated

organism was E. coli and the frequency of isolated organisms in group 1 and group 2 were as follow; E.coli (50%, 66.66%), Streptococcus pyogeneus (25%, 16.66%), Staphylococcus pyogeneus (16.66%, 11.11%) and Klebsiella aerogenosa (8.33%, 5.5%) respectively.

Table (10) : Shows the fate of septic cases in our study, groups group 1, newborns who received antioxidants had a lower mortality rate (33.33%) and a high cure rate (66.66%) than those of group II (61.1%) and (38.9%) respectively.

Table (11): Shows mean time of improvement in days of septic cases in the studied groups. Group I newborns who received antioxidants had shorter mean time of improvement (12.88 $\pm$ 5.46 days) than those of group 2 (16 $\pm$ 5.97 days) but with no statistical difference.

Table (12 and 13): Shows serum TNF α level at birth, at time of sepsis and at time of discharge among studied groups. There is rising curve of TNF α serum level with sepsis and returning approximately to the level at birth at the time of discharge. In late sepsis of both groups the level is significantly higher than in early sepsis ($P< 0.01$), the level was (190 $\pm$ 18.53 , 146.8 $\pm$ 21.21 pg /

ml) in group I and was (482.2 ± 391.8 , 190.0 ± 17.18 pg / ml) in group 2 respectively.

Table (14): Shows TNF α serum level in relation to isolated organism in septic cases of studied groups. There were significantly higher TNF α serum level in Gram negative infection in both groups than infection with Gram positive organisms, the values were (166 ± 24.98 , 137 ± 10.37 pg / ml) in group I and (352 ± 313.7 , 179 ± 21.91 pg / ml) in group II receptively with $P < 0.005$.

Table (15): Shows mean TNF α serum level at birth and at time of discharge in aseptic cases in the studied groups. There was no apparent difference in TNF α serum level in aseptic newborns of both groups at time of birth and that of discharge.

Fig. (1) : Illustrate birth weight range of studied cases in relation to gestational age .

Fig. (2) : Demonstrate sex distribution in relation to gestational age of studied cases.

Fig. (3) : Shows number of cases developed sepsis in studied cases.

Fig. (4) : Shows mean time of onset of sepsis in days from birth in septic cases.

Fig. (5) : Illustrate results of CRP titre in septic cases.

Fig.(6) : Illustrate, isolated organisms from blood culture in septic cases.

Fig. (7) : Shows fate of septic cases in studied groups.

Fig. (8) : Demonstrate mean time of improvement in days of septic cases in studied groups.

Fig.(9) : Shows mean serum TNF α level in studied groups at birth, at time of sepsis and at time of discharge.

Fig. (10) : Illustrate mean serum TNF α level in relation to isolated organism in septic cases.

Fig. (11) : Shows mean serum TNF α level at birth and at time of discharge in aseptic cases.

Table (1): Birth weight range of studied cases in relation to gestational age

Gestational Age (WK)	No. of cases	Birth weight					
		1100-1500 gm		1501-2000 gm		More than 2000 gm	
		No.	%	No.	%	No.	%
28 – 30	58	27	33.75	31	38.75	0	0.00
31 – 33	10	0	00.00	7	8.75	3	3.75
34 - 36	12	0	00.0	4	5.00	8	10.0
Total	80	27	33.75	42	52.5	11	13.75

Table (2): Gestational age and weight in the studied groups

Item	Total	Group I (no= 40)		Group II (no= 40)	
		No.	%	No.	%
Birth weight (gm)					
• 1100 – 1500	27	13	32.50	14	35.00
• 1501 - 2000	42	23	57.50	19	47.50
• >2000	11	4	10.00	7	17.50
Mean weight		1.672		1.652	
Gestational age (wks)					
• 28 - 30	58	31	77.50	27	67.50
• 31 - 33	10	5	12.50	5	12.50
• 34 - 36	12	4	10.00	8	20.00
Mean age		29.57		30.57	

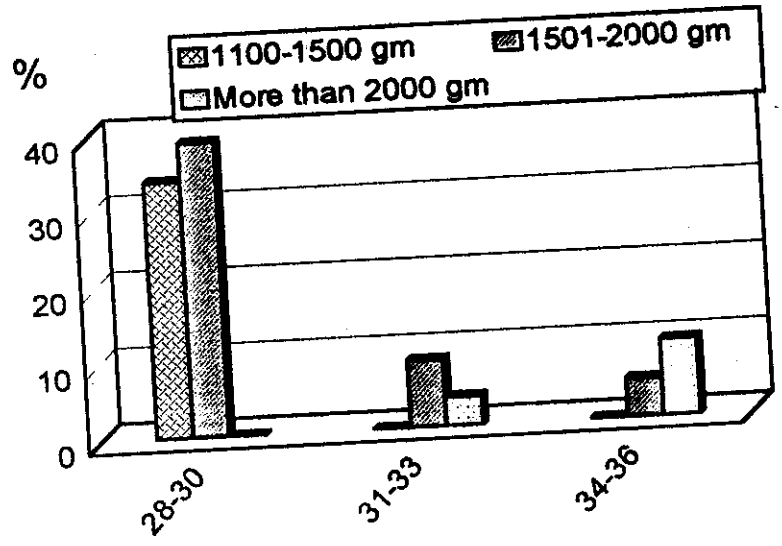

Fig. (1): Brith weight range of studied cases in relation to gestational age

Table (3): Sex distribution in relation to gestational age of studied cases

Gestational age (wks)	Total	Male		Female	
		No.	%	No.	%
28 – 30	58	27	33.75	31	38.75
31 – 33	10	6	7.50	4	5.00
34 – 36	12	6	7.50	6	7.50
Total	80	39	48.75	41	51.25
Chi^2	0.63				
p-value	0.73				

P-value > 0.05

Table (4): Number of cases developed sepsis in different studied groups

Groups	Total	Cases developed sepsis	
		No.	%
Group I	40	12	30
Group II	40	18	45
Chi^2	1.9		
p-value	0.17		

P-value > 0.05

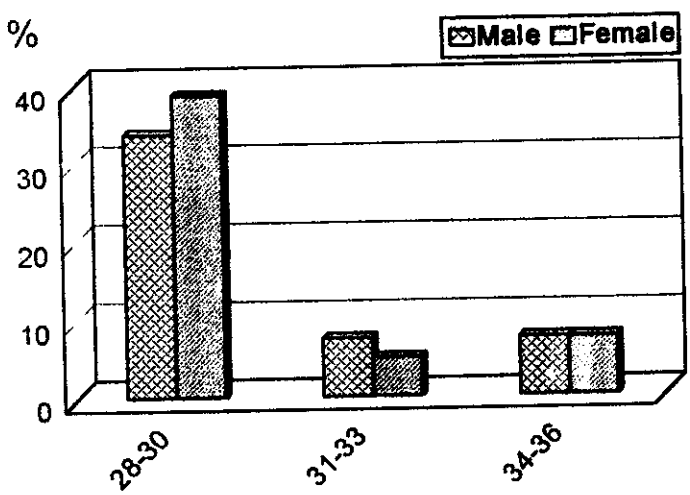

Fig. (2): Sex distribution in relation to gestational age of studied cases

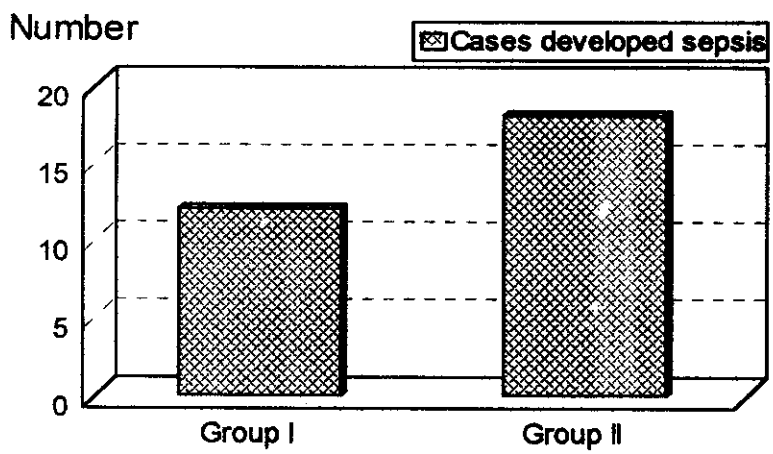

Fig. (3): Number of cases developed sepsis in studied groups

Table (5): Mean time of onset of sepsis dating from birth in septic cases of studied groups

	Total	0-7 days				> 7 days			
		No.	%	Mean	SD	No.	%	Mean	SD
Group I	12	10	83.3	4.8	1.62	2	16.67	10.5	0.71
Group II	18	11	61.1	4.9	1.51	7	38.89	10.14	1.68
Total	30	21	70.00			9	30.00		
Chi^2 p-value	1.69 0.19								

P-value > 0.05

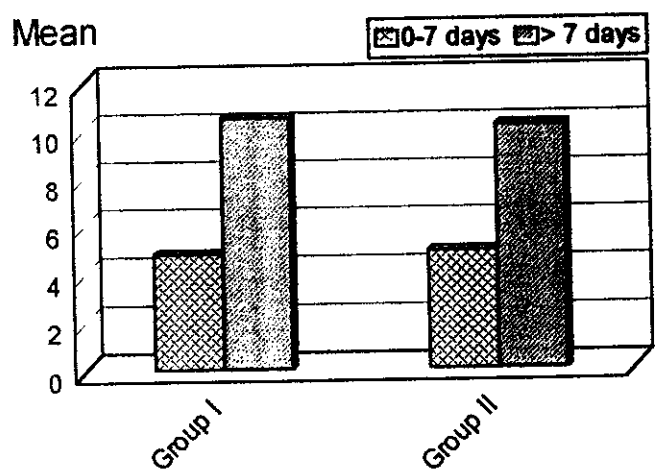

Fig. (4): Mean time of onset of sepsis dating from birth in septic cases of studied groups

Table (6): Clinical manifestation of sepsis in studied groups

Clinical signs	Group I (n= 12)		Group II (n= 18)	
	No.	%	No.	%
General :-				
1. Temperature instability	12	100.0	18	100.0
2. Poor feeding	12	100.0	18	100.0
3. Edema	4	33.33	11	61.11
GTT :-				
1. Abdominal distension	3	25.00	6	33.33
2. Vomiting	1	8.33	2	11.11
3. Hepatomegaly	1	8.33	3	16.67
4. Diarrhea	-	0.00	1	5.55
Respiratory :-				
1. Tachypnea	12	100.0	18	100.0
2. Apnea	4	33.33	11	61.11
3. Cyanosis	4	33.33	11	61.11
Cardiovascular :-				
1. Mottling	5	41.67	12	66.67
2. Bradycardia	4	33.33	11	61.11
3. Tachycardia	1	8.33	1	5.55
Central nervous syst.				
1. Lethargy	12	100.0	18	100.0
2. Abnormal Moro	12	100.0	18	100.0
3. Reduced suckling.	12	100.0	18	100.0
4. Bulging fontanel	2	16.67	3	16.67
5. Seizures	2	16.67	2	11.11
Hematological :-				
1. Jaundice	3	25.00	7	38.89
2. Pallor	1	8.33	3	16.67
3. Purpura	1	8.33	3	16.67
4. Bleeding	-	0.00	3	16.67

More than one manifestations usually were present in some cases

Table (7): Results of hematological scoring sys. HSS in septic cases of studied groups

Groups	Total	Score		
		3	4-5	6-7
Group I	12	3	8	1
Group II	18	2	10	6
Chi^2 p-value	2.91 0.23			

P-value > 0.05

N.B < 3 No sepsis

? 3 Sepsis

Table (8): Results of CRP titre in septic cases

Groups	Total	Moderate titre 1/4 - 1/16		High titre 1/32 – 1/64		Very high titre > 1/64	
		No.	%	No.	%	No.	%
Group I	12	5	41.67	6	50.00	1	8.33
Group II	18	4	22.22	7	38.39	7	38.4
Chi^2 p-value	3.63 0.16						

P-value > 0.05

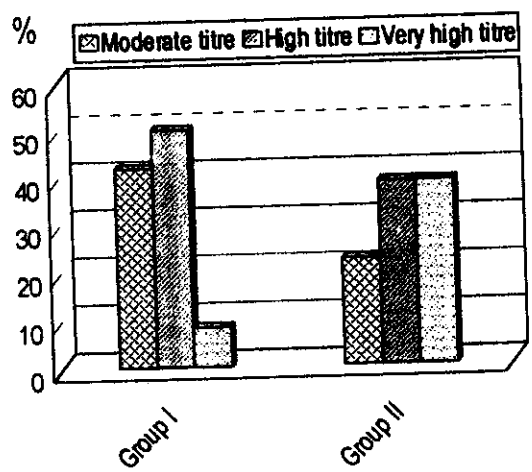

Fig. (5): Results of CRP titre in septic cases of studied groups

Table (9): Isolated organisms from blood cultures in septic cases of studied groups

Organisms	Group I		Group II	
	No.	%	No.	%
E-coli	6	50.0	12	66.66
Streptococcus pyogenus	3	25.0	3	16.66
Staphylococcus pyogenus	2	16.66	2	11.11
Klebsiella aerogenosa	1	8.33	1	5.50
Total	12	100	18	100

Table (10): Fate of septic cases in studied groups

Groups	Total	Cured		Dead	
		No.	%	No.	%
Group I	12	8	66.66	4	33.33
Group II	18	7	38.90	11	61.10
Chi^2	1.25				
p-value	0.21				

P-value > 0.05

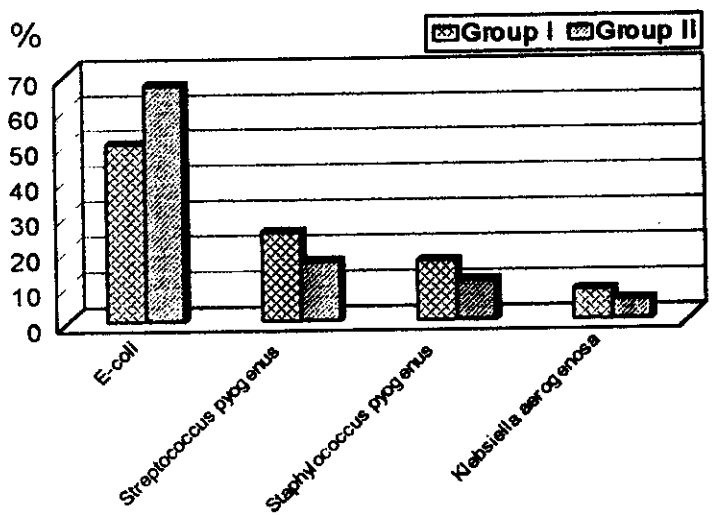

Fig. (6): Isolated organisms from blood culture in septic cases of studied groups

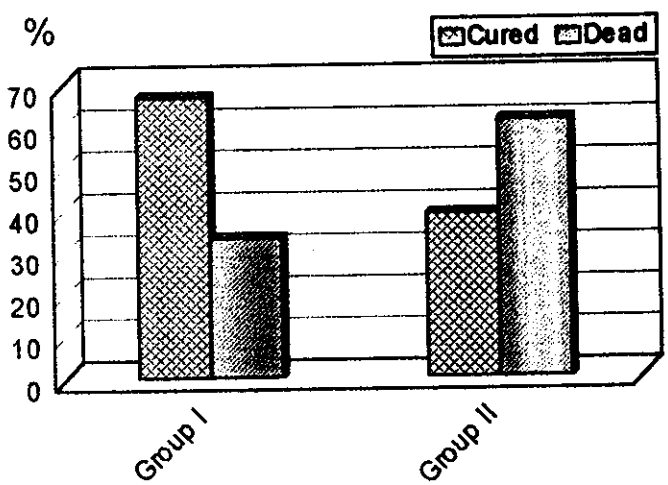

Fig. (7): Fate of septic cases in studied groups

Table (11): Mean time of improvement in days of septic cases in studied groups

Groups	No.	time of onset of sepsis		Time of improvement	
		Mean	SD	Mean	SD
Group I	8	6.00	1.89	12.88	5.46
Group II	7	7.00	3.23	16.00	5.97
p-value		0.470		0.310	

P-value > 0.05

Table (12): Mean serum TNF ∝ level in septic cases of studied groups [at birth, at time of sepsis and at time of discharge]

	Group I		Group II		p-value
	Mean	SD	Mean	SD	
TNF ∝ at birth	39.45	7.565	39.32	7.681	0.942
TNF ∝ at time of sepsis	154.0	24.59	248.3	142.0	0.031*
TNF ∝ at time release	51.22	27.22	67.93	51.36	0.097

* Significant
P-value < 0.05

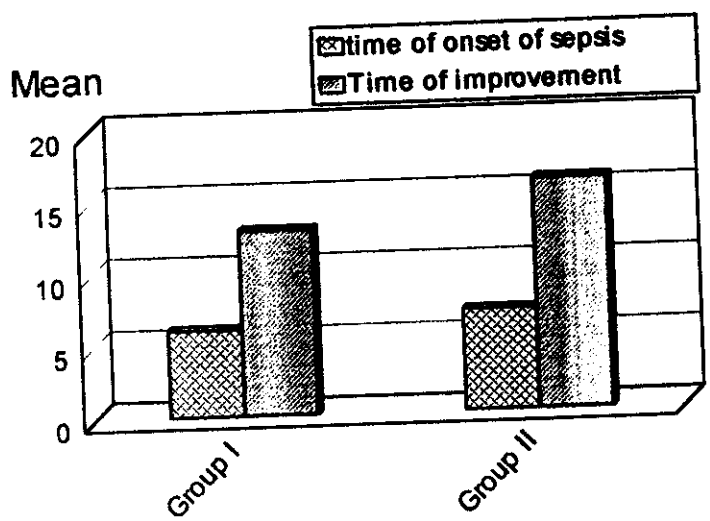

Fig. (8): Mean time of improvement in days of septic cases in studied groups

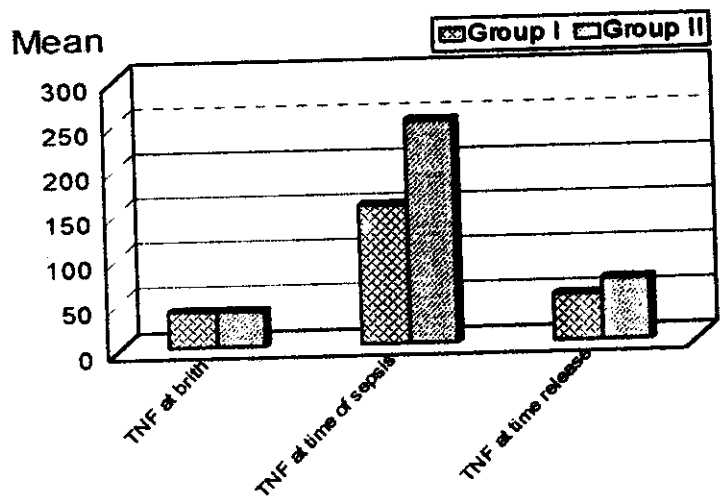

Fig. (9): Mean serum TNF alpha level in septic cases of both groups[at birth, at time of sepsis and at time of discharge]

Table (15): Mean serum TNF ∝ level at birth and at time of discharge in aseptic cases

Organisms	At birth			At discharge		
	No.	Mean	SD	No.	Mean	SD
Group I	28	39.07	6.72		41.75	9.83
Group II	22	38.90	8.28		43.40	7.30
p-value	0.32			0.26		

P-value > 0.05

Table (16) Results of sensitivity tests to isolated organisms from blood culture.

Antimicrobial	E.coli N = 18		Streptococci N = 6		Staphylococci N = 4		Kliebsilla N = 2	
	N	%	N	%	N	%	N	%
Tinam	12	66.66	2	33.3	2	50	2	100
Amikin	10	55.55	1	3	1	25	2	100
Garamycin	6	33.33	-	16.6	-	-	1	50
Pyopen	3	16.16	2	6	1	25	-	-
Augmentin	4	22.22	2	-	2	50	-	-
Claforan	7	58.33	3	33.3	3	75	-	-
Unasyn	5	27.77	3	3	3	75	-	-
Vancomycin	2	11.11	1	33.3	3	75	-	-
Lincomycin	2	11.11	2	3	1	25	-	-
Ampicillin	1	5.55	1	50	1	25	-	-

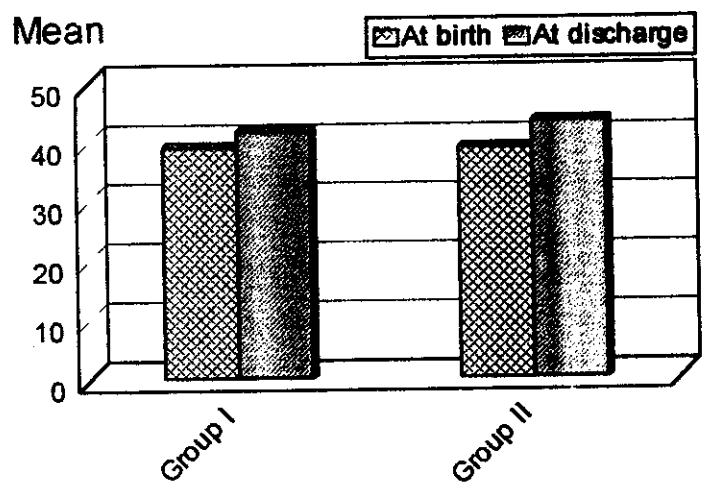

Fig. (11): Mean serum TNF alpha level at birth and at time of discharge in aseptic cases