

RESULTS

Fifty septicemic patients were studied. Twenty-five were full term neonates and twenty-five were preterm neonates.

Twenty neonates were studied as controls. Ten of them were full term and the remaining ten were preterm.

(A) CLINICAL STUDY:

Table no. (5) shows that:

- The birth weight of full term patients ranged from 1700-4700 grams and the mean was 2879 ± 771.03 .
- The gestational age of these patients ranged from 37-40 weeks and the mean was $38.44 \pm .99$.
- According to the classification of Lubchanon et al. (1986); 21 of full term patients were appropriate for gestational age (AGA) and the remaining were small for gestational age (SGA).
- Sex-distribution in full term patients was 15 males and 10 females.
- Age of onset of the disease ranged from 1-25 days and the mean was 9.44 ± 7.49 .
- The incidence of clinical manifestations were, poor feeding; 84%, lethargy; 64%, abdominal distension; 40%, Respiratory distress; 56%, Jaundice; 40%, scleredema; 20%, irritability; 8%, seizures; 16% and vomiting; 20%. (Table 7).

Table No. (5)

Septicemic Full Term Neonates and Clinical Manifestations

[illegible]

Table no. (6) shows that:

- The birth weight of preterm patients ranged from 1300-2300 grams with a mean 1744 ± 286.99 .
- The gestational age ranged from 28-35 weeks with a mean 32.2 ± 1.85
- According to the classification of lubchanon et al. (1986); twenty-one of preterm patients were appropriate for gestational age (AGA) and the remaining were small for gestational age (SGA).
- Sex-distribution in preterm patients was 13 males and 12 females.
- Age of onset of the disease ranged from 1-20 days with a mean of 3.16 ± 4.44 .
- The incidence of clinical manifestations were, poor feeding; 92%, lethargy; 80%, abdominal distension; 40%, respiratory distress; 76%, jaundice; 68%, scleredema; 28%, irritability; 4%, seizures; 8% and vomiting; 32%. (Table 7).

Table No. (6)

Septicemic Preterm Neonates and Clinical Manifestations

[illegible]

Table (7)

The incidence of clinical data in septicemic patients

Clinical data	Full Term		Preterm	
	no.of cases	%of total	no.of cases	%of total
Poor Feeding	21	84	23	92
Lethargy	16	64	20	80
Abdominal distension	10	40	10	40
Respiratory distress	14	56	19	76
Jaundice	10	40	17	68
Scleredema	5	20	7	28
Irritability	2	8	1	4
Seizures	4	16	2	8
Vomiting	5	20	8	32

Table no (8) shows that:

- The number of patients (Full term and preterm) with birth weight less than 1500 grams were 5 (10%). They were all of early onset of infection.
- The number of patients (full-term and preterm) with birth weight from 1500 to 2000 grams were 18 (36%), 13 cases were of early onset and 5 cases were of late onset.
- The number of patients with birth weight more than 2000 to 2500 were 10 (20%); 7 cases were of early onset and 3 cases were of late onset.
- The number of patients with birth weight more 2500 to 3000 grams were 10 (20%), 4 cases were of early onset and 6 cases were of late onset.
- The number of patients with birth weight more than 3000 grams were 7 cases (14%), one case only was of early onset and 7 cases were of late onset.
- The total number of patients of early onset were 30 (60%) and those of late onset were 20 (40%).

Table No. (8)

Birth Weight related to age of onset of disease
in septicemic neonates.

Birth weight (gram)	No. of cases	% of total	Age of onset of disease	
			early onset	Late onset
< 1500	5	10%	5	-
1500-2000	18	36%	13	5
> 2000-2500	10	20%	7	3
> 2500-3000	10	20%	4	6
> 3000	7	14%	1	6
Total cases	50		30	20

Table No. (9): Shows that:

- The number of patients (full term and preterm) with gestational age less than 32 weeks were 8 (16%); 7 cases were of early onset and one case of late onset.
- The number of patients with gestational age from 32 weeks to less than 37 weeks were 17 (34%); 15 cases were of early onset and 2 cases were of late onset.
- The number of patients with gestational age from 37 weeks to 40 weeks were 25 (50%); 8 cases were of early onset and 17 cases were of late onset.

Table No. (9)

Gestational age related to age of onset of disease in septicemic neonates.

Gestational age (gram)	no.of cases	% of total	Age of onset of disease	
			early onset	Late onset
<32 week	8	16%	7	1
32<37 week	17	34%	15	2
37-40 weeks	25	50%	8	17
Total cases	50	100%	30	20

(B) HEMATOLOGICAL STUDY:

Table No. (10): Shows that:-

- Total leucocytic count of full term patients ranged from 2500 to 26500/Cumm and the mean was $10584 \pm 7671.90/\text{Cumm}$.
- The total neutrophil count ranged from 936 to 16250 and the mean was $6023.44 \pm 4690.50/\text{Cumm}$.
- The immature neutrophil count ranged from 208 to 3980 and the mean was $1488.64 \pm 1148.04/\text{Cumm}$.
- The immature / total neutrophil ratio ranged from 0.11 to 0.37 and the mean was 0.25 ± 0.06 .
- The immature/mature neutrophil ratio ranged from 0.12 to 0.59 and the mean was 0.35 ± 0.07 .
- The platelet count ranged from 25000 to 170000 and the mean was $93880 \pm 40640 / \text{Cumm}$.

Table No. (10)

Hematological data and C reactive protein of septicemic

Full Term neonates

Pat- ient No.	Total leucocytic count/mm3	Total Neutrophil count/mm3	Immature Neutrophil count/mm3	Immature/ total neutrophil ratio	Immature/ mature neutrophil ratio	Platelet in thout- hands/mm3	C Reac- tive protien
1	3200	1604	572	.36	.55	93	+ ve
2	2800	1460	484	.33	.49	95	+ ve
3	3800	2128	616	.29	.4	100	+ ve
4	26500	13250	31800	.24	.31	91	+ ve
5	6200	3000	687	.23	.3	80	+ ve
6	23000	14160	3540	.25	.33	170	- ve
7	23500	16250	3980	.24	.32	90	+ ve
8	5800	3240	1196	.37	.59	75	+ ve
9	11500	4750	1380	.29	.41	25	+ ve
10	22800	9710	2299	.24	.31	150	+ ve
11	9100	6552	728	.11	.12	120	+ ve
12	9200	6256	1680	.27	.38	65	+ ve
13	6100	4148	976	.23	.3	80	+ ve
14	8900	4488	1013	.23	.3	150	- ve
15	10200	4386	1122	.25	.34	160	+ ve
16	24500	14575	3445	.23	.3	155	+ ve
17	9400	4760	1658	.34	.53	93	+ ve
18	7300	4329	1141	.26	.36	60	+ ve
19	2600	936	208	.22	.33	170	+ ve
20	9100	4942	637	.13	.15	85	+ ve
21	2500	1350	325	.24	.32	40	+ ve
22	16400	12956	3296	.25	.34	55	+ ve
23	3500	1380	395	.24	.40	55	+ ve
24	4700	2726	515	.19	.23	40	+ ve
25	12000	7250	2000	.27	.38	150	+ ve
Mean	10584.0	6023.44	1488.64	0.25	0.35	93.88	
Range	2500-26500	936-16250	208-3980	0.11-0.37	0.12-0.59	25-170	
S.D.	7671.90	4690.50	1148.04	0.06	0.07	40.64	

Table No. (11): Shows that:-

- Total leucocytic count of preterm patients ranged from 2500 to 21300 and the mean was 6240.0 ± 4265.75 / Cumm.
- Total neutrophil count ranged from 1230 to 12400 and the mean was 3432.0 ± 2499.69 / Cumm.
- The immature neutrophil count ranged from 340 to 3770 and the mean was 942.0 ± 721.16 / Cumm.
- The immature / total neutrophil ratio ranged from 0.13 to 0.39 and the mean was 0.27 ± 0.05 .
- The immature/mature neutrophil ratio ranged from 0.24 to 0.63 and the mean was 0.38 ± 0.08 .
- The platelet count ranged from 25000 to 170000 and the mean was 82400 ± 45340 / Cumm.

Table No. (11)

Hematological data and C reactive protein of
septicemic preterm neonates

Pat- ient No.	Total leucocytic count/mm ³	Total Neutrophil count/mm ³	Immature Neutrophil count/mm ³	Immature/ total neutrophil ratio	Immature/ mature neutrophil ratio	Platelet in thout- hands/mm ³	C Reac- tive protien
1	2500	1500	380	.22	.34	58	- ve
2	6100	4000	980	.24	.32	40	+ ve
3	3000	1680	650	.39	.63	50	+ ve
4	9200	5600	1280	.23	.3	55	+ ve
5	3700	1680	440	.26	.36	25	- ve
6	2800	1550	620	.34	.50	50	+ ve
7	7300	4700	1450	.25	.34	60	+ ve
8	3600	1550	450	.29	.41	65	+ ve
9	3200	1630	450	.28	.38	50	+ ve
10	10200	5900	1500	.25	.34	170	+ ve
11	3800	2060	670	.37	.48	45	+ ve
12	9400	4500	690	.13	.24	155	+ ve
13	5800	3420	820	.24	.32	70	+ ve
14	3800	1400	340	.24	.32	55	- ve
15	21300	12400	3770	.3	.44	150	+ ve
16	7300	4700	1450	.25	.34	60	+ ve
17	3700	2650	660	.26	.33	60	+ ve
18	8600	1850	350	.19	.23	75	- ve
19	3500	2520	680	.27	.37	82	+ ve
20	13000	6800	1550	.22	.3	160	+ ve
21	3300	1560	480	.31	.44	60	+ ve
22	3200	1450	440	.3	.44	80	+ ve
23	4700	2520	680	.27	.37	70	+ ve
24	9100	4600	1500	.33	.48	150	- ve
25	8900	4200	1250	.29	.42	165	+ ve
<hr/>							
Mean	6240.0	3432.0	942.0	0.27	0.38	82.4	
Range	2500-21300	1230-12400	340-3770	0.13-0.39	0.24-0.63	25-170	
S.D.	4265.76	2499.70	721.16	0.05	0.08	45.34	

Table No. (12): shows that:-

- The total leucocytic count of full term controls ranged from 4500 to 19000 and the mean was 9340 ± 4241.9 / Cumm.
- The total neutrophil count ranged from 2610 to 8550 and the mean was 5373 ± 1856.37 / Cumm.
- The immature neutrophil count ranged from 210 to 950 and the mean was 456 ± 426.68 / Cumm.
- The immature / total neutrophil ratio ranged from 0.05 to 0.11 and the mean was 0.08 ± 0.02 .
- The immature/mature neutrophil ratio ranged from 0.06 to 0.13 and the mean was 0.10 ± 0.02 .
- The platelet count ranged from 50000 to 23000 and the mean was 134000 ± 67160 / Cumm.

Table No. (12)

Hematological results and CRP in Full Term

Control Neonates

No.	G.A.	Total leucocytic count/mm3	Total Neutrophil count/mm3	Immature Neutrophil count/mm3	Immature/ total Neutrophil ratio	Immature/ mature Neutrophil ratio	Platelet in thout- hands/mm3	CRP
1	37	8500	5525	340	.06	.07	95	-ve
2	39	6500	4810	260	.05	.06	75	-ve
3	38	6300	3465	315	.09	.1	200	-ve
4	37	11900	8550	950	.11	.13	150	+ve
5	38	4500	2610	270	.1	.12	220	-ve
6	37	11000	4950	550	.11	.13	160	-ve
7	38	9000	5850	450	.08	.09	230	-ve
8	37	8100	5670	405	.07	.08	60	-ve
9	40	7000	4200	210	.05	.06	100	-ve
10	39	13500	8100	810	.1	.11	50	-ve
Mean	38	9340	5373	456	.08	.10	134	
Rang	37-40	4500- 19000	2610- 8550	210-950	0.05-0.11	0.06-0.13	50-230	
S.D.	1.05	4241.90	1856.37	246.68	0.02	0.02	67.16	

Table No. (13) shows that:

- The total leucocytic count of preterm control neonates ranged from 3200 to 10500 and the mean was 5410 ± 2063.14 / Cumm.
- The total neutrophil count ranged from 1120 to 4200 and the mean was 2549.80 ± 999.21 / Cumm.
- The immature neutrophil count ranged from 160-670 and the mean was 334.6 ± 155.51 / Cumm.
- The immature / total neutrophil ratio ranged from 0.05 to 0.21 and the mean was 0.14 ± 0.05 .
- The immature / mature neutrophil ratio ranged from 0.06 to 0.27 and the mean was 0.17 ± 0.07 .
- The platelet count ranged from 50000 to 180000 and the mean was 118000 ± 55094 / Cumm.

Table No. (13)

Hematological results and CRP in Preterm

Control Neonates

No.	G.A.	Total leucocytic count/mm ³	Total Neutrophil count/mm ³	Immature Neutrophil count/mm ³	Immature/ total Neutrophil ratio	Immature/ mature Neutrophil ratio	Platelet in thout- hands/mm ³	CRP
1	34	10500	4200	525	.13	.14	160	+ve
2	32	4600	2668	276	.1	.12	170	-ve
3	30	3500	1330	280	.2	.26	100	-ve
4	33	5400	2106	270	.13	.15	110	-ve
5	28	4200	2016	336	.17	.2	100	-ve
6	29	5800	3190	670	.21	.27	80	-ve
7	33	6500	3380	325	.1	.11	180	-ve
8	32	5600	3472	168	.05	.06	50	-ve
9	32	4800	2016	336	.16	.2	80	-ve
10	28	3200	1120	160	.14	.16	150	-ve
Mean	31	5410	2549.80	334.6	0.14	0.17	118	
Range	28-34	3200- 10500	1120- 4200	160-670	0.05-0.21	0.06-0.27	50-180	
S.D.	2.16	2063.14	999.21	155.51	0.05	0.07	55.09	

Individual abnormalities of the complete blood count were determined according to the following:

- Abnormalities of the total leucocytic count.
- Abnormalities of the total neutrophil count.
- Abnormalities of the immature neutrophil count.
- Abnormalities of the immature / total neutrophil ratio.
- Abnormalities of the immature / mature neutrophil ratio.
- Abnormalities of the platelet count (Rodwell et al; 1988 and Manoroe et al., 1979).

Haematological Scoring System (H.S.S.)

According to Rodwell et al. (1988), one point was given for each of the following:-

- Leucocytosis (>21000) or leucopenia (<5000).
- Neutrophilia (>5400) or neutropenia (<1750).
- Increased immature neutrophil count (>600).
- Increased immature / total neutrophil count (>0.2).
- Increased immature / mature neutrophil ratio (>0.3).
- Platelet count ($<150.000/\text{cumm}$).

If infants with score ≥ 3 the likelihood that sepsis is present (Rodwell et al., 1988).

Table No. (14) shows that the frequency of abnormal leucocytic count, platelets and CRP in septicemic full term neonates was as follows:-

- Leucocytosis was found in 5 cases (20%) and leucopenia in 7 cases (28%).
- Neutrophilia was found in 9 cases (36%) and neutropenia in 5 cases (20%).
- Elevated immature / total neutrophil ratio was found in 22 cases (88%).
- Elevated immature / mature neutrophil ratio was found in 22 cases (88%).
- Increased immature neutrophil count was found in 20 (80%).
- Thrombocytopenia was found in 18 cases (72%).
- The H.S.S. more \geq 3 points were 23 cases (92%).

Table No. (14)

Frequency of abnormal leucocytic count, platelets
and CRP in septicemic F.T. Neonates

Abnormality	No. of cases	Per- cent
* Abnormal leucocytic count:		
- Leucocytosis > 21000	5	20%
- Leucopenia < 5000	7	28%
* Abnormal neutrophil count:		
- Neutrophilia > 5400	9	36%
- Neutropenia < 1750	5	20%
* Elevated immature/total neutrophil ratio > 0.2	22	88%
* Elevated immature/mature neutrophil ratio > 0.3	22	88%
* Increased immature neutrophil count > 600	20	80%
* Abnormal platelet count < 150.000	18	72%
* CRP	23	92%
* H.S.S. > 3 points	23	92%

H.S.S: Haematological Scoring System.

F.T. : Full term

Table No. (15) Shows the frequency of abnormal leucocytic count, platelets count and CRP in septicemic preterm neonates as follows:

- Leucocytosis was found in 1 case (4%) and leucopenia in 14 cases (56%).
- Neutrophilia was found in 4 cases (16%), neutropenia in 10 cases (40%).
- Elevated immature / total neutrophil ratio was found in 22 cases (88%).
- Elevated immature / mature neutrophil ratio was found in 22 cases (88%).
- Increased immature neutrophil count was found in 17 cases (68%).
- Thrombocytopenia was found in 20 cases (80%).
- The H.S.S. > 3 points were found in 22 cases (88%).

Table No. (15)

Frequency of abnormal leucocytic count, platelets and CRP
in septicemic preterm neonates

Abnormality	No. of cases	Per- cent
* Abnormal leucocytic count:		
- Leucocytosis > 21000	1	4%
- Leucopenia < 5000	14	56%
* Abnormal neutrophil count:		
- Neutrophilia > 5400	4	16%
- Neutropenia < 1750	10	40%
* Elevated immature/total neutrophil ratio > 0.2	22	88%
* Elevated immature/mature neutrophil ratio > 0.3	22	88%
* Increased immature neutrophil count > 600	17	68%
* Abnormal platelet count < 150.000	20	80%
* CRP	20	80%
* H.S.S. > 3 points	22	88%

H.S.S: Haematological Scoring System.

CRP : C-reactive protein

Table No. (16) Shows the frequency of abnormal leucocytic count, platelets in full-term control neonates as follow:

- Leucocytosis was not found in any case (0%) and leucopenia in 1 case (10%).
- Neutrophilia was found in 5 cases (50%) and neutropenia was not found in any case (0%).
- Elevated immature/total neutrophil ratio and immature / mature neutrophil ratio were not found in any case (0%).
- Increased immature neutrophil count was found in 2 cases (20%).
- Thrombocytopenia was found in 5 cases (50%).
- * The H.S.S. > 3 points was found in one case (10%).

Table No. (16)

Frequency of abnormal leucocytic count, platelets and CRP
in full term control neonates

Abnormality	No. of cases	Per- cent
* Abnormal leucocytic count:		
- Leucocytosis > 21000	0	0%
- Leucopenia < 5000	1	10%
* Abnormal neutrophil count:		
- Neutrophilia > 5400	5	50%
- Neutropenia < 1750	0	0%
* Elevated immature/total neutrophil ratio > 0.2	0	0%
* Elevated immature/mature neutrophil ratio > 0.3	0	0%
* Increased immature neutrophil count > 600	2	20%
* Abnormal platelet count < 150.000	5	50%
* CRP	1	10%
* H.S.S. > 3 points	1	10%

H.S.S: Haematological Scoring System.

CRP : C-reactive protein.

Table No. (17) shows the frequency of abnormal leucocytic count and platelets and CRP in preterm control neonates as follow:-

- Leucocytosis was not found in any case and leucopenia in 5 cases (50%).
- Neutrophilia was not found in any case and neutropenia in 2 cases (20%).
- Elevated immature / total neutrophil ratio was found in 2 cases (20%).
- Elevated immature / mature neutrophil ratio was not found in any case.
- Increased immature neutrophil was found in 1 case (10%).
- Thrombocytopenia was found in 6 cases (60%).
- * The H.S.S. > 3 points was found in one case (10%).

C- Reactive Protein (CRP):

- CRP in septicemic full term neonates was positive in 23 cases (92%); Table (14).
- CRP in septicemic preterm neonates was positive in 20 cases (80%); table (15).
- CRP in control full term neonates was positive in 1 case (10%); Table (16).
- CRP in preterm control neonates was positive in 1 case (10%); Table (17).

Table No. (17)

Frequency of abnormal leucocytic count, platelets and CRP
in Preterm control neonates

Abnormality	No. of cases	Per- cent
* Abnormal leucocytic count:		
- Leucocytosis > 21000	0	0%
- Leucopenia < 5000	5	50%
* Abnormal neutrophil count:		
- Neutrophilia > 5400	0	0%
- Neutropenia < 17500	2	20%
* Elevated immature/total neutrophil ratio > 0.2	2	20%
* Elevated immature/mature neutrophil ratio > 0.3	0	0%
* Increased Immature neutrophil count > 600	1	10%
* Abnormal platelet count < 150.000	6	60%
* CRP	1	10%
* H.S.S. > 3 points	2	20%

H.S.S: Haematological Scoring System.

CRP : C-reactive protein.

(C) BACTERIOLOGICAL RESULTS:

1- Table No. (18) shows that:

- Enterobacter cloacae organism predominated the etiology of neonatal septicemia in full term patients and caused the disease in 40% of cases. 20% of cases of Enterobacter presented early (in the first 3 days of birth) and 80% of cases presented late (after 3 days of birth).
- Pseudomonas species organism caused the disease in 32% of cases; 37.5% of cases of Pseudomonas presented early and 62.5% of cases presented late.
- Staph. aureus caused the disease in 20% of cases; 60% of cases of Staph. aureus presented early and 40% of the cases presented late.
- One case is caused by Salmonella species with late presentation.
- One case is caused by Serratia marcescens with late presentation.

Table No. (18)

Causative organisms related to age of onset
of the disease in full term patients

Causative organism	No. of cases	Onset of disease		%
		early	Late	
Enterobacter cloacae	10	2	8	40%
Pseudomonas species	8	3	5	32%
Staphhylococcus aureus	5	3	2	20%
Salmonella species	1	-	1	4%
Serratia marcesenes	1	-	1	4%
Total cases	25	8	17	100%

Table No. (19): Shows that:

- Enterobacter cloacae organism predominated the etiology of neonatal septicemia in preterm patients (48%), 75% of the cases of Enterobacter presented early and 25% of the cases presented late.
- Staphylococcus aureus caused the disease in 28% of the total cases and all presented early.
- Pseudomonas caused the disease in 24% of the total cases; 50% of cases presented early and the other 50% of cases presented late.

Table No. (19)

Causative organisms related to age of onset
of the disease in Preterm patients

Causative organism	No. of cases	Onset of disease		%
		early	Late	
Pseudomonas species	6	3	3	24%
Enterobacter cloacae	12	9	3	48%
Staphylococcus aureus	7	7	-	28%
Total cases	25	19	6	100%

Table No. (20) shows that:-

- Enterobacter cloacae organism predominated the etiology of neonatal septicemia in both full term and preterm (44% of the total cases), 50% presented early and 50% presented late.
- Pseudomonas caused the disease in 28% of the total cases; 42.85% presented early and the remaining 57.15% presented late.
- Staphylococcus aureus caused the disease in 24% of the total cases; 83.33% presented early and 16.66% presented late.
- Salmonella species caused the disease in 2% of the total cases and presented late.
- Seratia marcesenes caused the disease in 2% of the total cases and presented late.

Table No. (20

Causative organisms related to age of onset
of the disease in septicemic neonates

Causative organism	No. of cases	Onset of disease		%
		early	Late	
Enterobacter cloacae	22	11	11	44%
Pseudomonas species	14	6	8	28%
Staphylococcus aureus	12	10	2	24%
Salmonella species	1	-	1	2%
Serratia marcesenes	1	-	1	2%
Total cases	50	27	23	100%

(D) IMMUNOLOGICAL RESULTS:
~~~~~

Table No. (21) shows that:-

- C3 of septicemic full term neonates ranged from 22 to 129 mg/dl with a mean  $63.36 \pm 29.15$  mg/dl.
- C4 ranged from 4.2 to 18 mg/dl with a mean  $10.27 \pm 3.08$  mg/dl.
- Plasma fibronectin ranged from 4.25 to 80 ug/ml with a mean  $38.60 \pm 24.89$  ug/ml.
- Neutrophil fibronectin score ranged from 70 -- 300 with a mean  $131.78 \pm 61.43$ .

Table No. (21)

## Immunological results of Septicemic Full Term Neonates

| No.   | C3<br>mg/dl | C4<br>mg/dl | Fibronectin     |           |
|-------|-------------|-------------|-----------------|-----------|
|       |             |             | Plasma Fn ug/ml | NFn Score |
| 1     | 46          | 9.2         | 50              | 113       |
| 2     | 69          | 10.9        | 50              | 100       |
| 3     | 94          | 12.8        | 60              | 98        |
| 4     | 74          | 13.7        | 60              | 94        |
| 5     | 82          | 10.8        | 50              | 116       |
| 6     | 129         | 13.9        | 70              | 70        |
| 7     | 109         | 10.3        | 50              | 95        |
| 8     | 65          | 18.7        | 40              | 104       |
| 9     | 63          | 8.2         | 45              | 111       |
| 10    | 90          | 6.3         | 10              | 144       |
| 11    | 31          | 7.9         | 4.25            | 300       |
| 12    | 29          | 7.8         | 21              | 232       |
| 13    | 37          | 7.4         | 45              | 132       |
| 14    | 46          | 8.2         | 31              | 136       |
| 15    | 31          | 9.8         | 7               |           |
| 16    | 94          | 11.7        | 40              |           |
| 17    | 78          | 9.4         | 42              |           |
| 18    | 107         | 13.3        | 4.25            |           |
| 19    | 53          | 11.8        | 29              |           |
| 20    | 46          | 4.2         | 7               |           |
| 21    | 53          | 10.7        | 80              |           |
| 22    | 22          | 7.9         | 50              |           |
| 23    | 40          | 10.7        | 4.25            |           |
| 24    | 78          | 13.0        | 70              |           |
| 25    | 22          | 7.9         | 60              |           |
| <hr/> |             |             |                 |           |
| Mean  | 63-36       | 10.27       | 38.60           | 131-78    |
| S.D.  | 29.15       | 3.08        | 24-89           | 61-43     |
| Range | 22-129      | 4.2-18      | 4.25-80         | 70-300    |

PFn : Plasma fibronectin.

NFN Score : Neutrophil Fibronectin Score.

Table No. (22): Shows that:-

- C3 of septicemic preterm neonates ranged from 10 to 109 with a mean  $57.48 \pm 16.93$  mg/dl.
- C4 ranged from 4.4 to 17.4 with a mean  $9.88 \pm 3.13$  mg/dl.
- Plasma fibronectin ranged from 7 to 92 with a mean  $40.8 \pm 3.87$  ug/ml.
- Neutrophil fibronectin score ranged from 52-181 with a mean  $90.63 \pm 37.14$ .

Table No. (22)

## Immunological Results of Septicemic Preterm Neonates

| No.   | C3<br>mg/dl | C4<br>mg/dl | Fibronectin |           |
|-------|-------------|-------------|-------------|-----------|
|       |             |             | PFn ug/ml   | NFn Score |
| 1     | 83          | 11.4        | 52          | 67        |
| 2     | 45          | 10.2        | 62          | 54        |
| 3     | 71          | 14.0        | 72          | 52        |
| 4     | 109         | 8.4         | 62          | 78        |
| 5     | 48          | 10.0        | 42          | 82        |
| 6     | 105         | 12.2        | 7           | 114       |
| 7     | 48          | 7.1         | 37          | 118       |
| 8     | 17          | 7           | 62          | 181.8     |
| 9     | 31          | 5.4         | 25          | 64        |
| 10    | 48          | 7           | 32          | 96        |
| 11    | 68          | 11.3        | 20          | 82        |
| 12    | 48          | 12.1        | 20          | 144       |
| 13    | 88          | 14.3        | 32          | 71        |
| 14    | 109         | 11.9        | 52          | 65        |
| 15    | 59          | 17.4        | 37          |           |
| 16    | 87          | 8.4         | 92          |           |
| 17    | 31          | 5.1         | 10          |           |
| 18    | 49          | 9.2         | 32          |           |
| 19    | 49          | 4.4         | 64          |           |
| 20    | 25          | 13.1        | 10          |           |
| 21    | 56          | 10.2        | 52          |           |
| 22    | 67          | 7.4         | 32          |           |
| 23    | 40          | 7.9         | 82          |           |
| 24    | 71          | 11.2        | 42          |           |
| 25    | 45          | 10.2        | 10          |           |
| <hr/> |             |             |             |           |
| Mean  | 57.48       | 9.88        | 40.8        | 90.63     |
| S.D.  | 16.93       | 3.13        | 3.87        | 37.14     |
| Range | 10-109      | 4.4-17.4    | 7-92        | 52-181    |

PFn : Plasma fibronectin.

NFN Score : Neutrophil Fibronectin Score.

Table No. (23): shhows that:--

- C3 of control full term neonates ranged from 50 to 163 with a mean  $101.2 \pm 31.80$  mg/dl.
- C4 ranged from 18.2 to 39.3 with a mean  $25.9 \pm 6.55$  mg/dl.
- Plasma fibronectin ranged from 29-100 with a mean  $70.32 \pm 19.85$  ug/ml.
- Neutrophil fibronectin score ranged from 12.5 to 64 with a mean  $41.94 \pm 17.42$ .

Table No. (23)

## Immunological Results of Control Full Term Neonates

| No.   | C3<br>mg/dl | C4<br>mg/dl | Fibronectin |           |
|-------|-------------|-------------|-------------|-----------|
|       |             |             | PFn ug/ml   | NFn Score |
| 1     | 90          | 20.2        | 80          | 12.5      |
| 2     | 163         | 25.5        | 70          | 58.3      |
| 3     | 82          | 23.5        | 80          | 40.0      |
| 4     | 107         | 34.9        | 80          | 38.4      |
| 5     | 78          | 27.5        | 70          | 64        |
| 6     | 134         | 32.1        | 50          | 31.8      |
| 7     | 82          | 19.3        | 90          | 5.7       |
| 8     | 50          | 18.2        | 80          | 31.8      |
| 9     | 78          | 39.3        | 90          | 45        |
| 10    | 148         | 20.2        | 92          | 35        |
| Mean  | 101.2       | 25.90       | 70.32       | 41.94     |
| S.D.  | 31.80       | 6.55        | 19.85       | 17.42     |
| Range | 50-163      | 18.2-39.3   | 29-100      | 12.5-64   |

PFn : Plasma fibronectin.

NFN Score : Neutrophil Fibronectin Score.

Table No. (24): Shows that:-

- C3 of control preterm neonates ranged from 40 to 120 with a mean  $72.4 \pm 30.84$  mg/dl.
- C4 ranged from 7.9 to 22.9 with a mean  $11.94 \pm 4.328$  mg/dl.
- Plasma fibronectin ranged from 30-100 with a mean  $49.4 \pm 17.66$  ug/ml.
- Neutrophil fibronectin score ranged from 25.8 to 95.5 with a mean  $40.99 \pm 22.38$ .

Table No. (24)

## Immunological data of Control Preterm Neonates

| No.   | C3<br>mg/dl | C4<br>mg/dl | Fibronectin |           |
|-------|-------------|-------------|-------------|-----------|
|       |             |             | PFn ug/ml   | NFn Score |
| 1     | 120         | 22.9        | 100         | 37        |
| 2     | 80          | 12.9        | 50          | 30.4      |
| 3     | 60          | 11.8        | 50          | 34.2      |
| 4     | 90          | 13.2        | 55          | 95.5      |
| 5     | 45          | 7.9         | 30          | 31.5      |
| 6     | 60          | 8.8         | 45          | 54.4      |
| 7     | 90          | 12.8        | 60          | 34.8      |
| 8     | 80          | 11.0        | 31          | 42.9      |
| 9     | 60          | 9.9         | 40          | 44.1      |
| 10    | 40          | 8.2         | 35          | 38.0      |
| Mean  | 72.4        | 11.94       | 49.4        | 40.99     |
| S.D.  | 30.84       | 4.33        | 17.66       | 22.38     |
| Range | 40-120      | 7.9-22.9    | 30-100      | 25.8-95.9 |

PFn : Plasma fibronectin.

NFN Score : Neutrophil Fibronectin Score.



Table No. (25): Shows that:-

- A highly significant decrease of C3, C4 and plasma fibronectin in septicemic full term neonates compared to control full term neonates.
- A highly significant increase of neutrophil fibronectin in septicemic full term neonates compared to control full term neonates.

Table (25): Statistical analysis of C3, C4, PFn and NFn  
Score of septicemic Full Term Neonates and  
control Full Term Neonates

|              | C3                              | C4     | PFn    | NFn Sc. |
|--------------|---------------------------------|--------|--------|---------|
| Group 1      |                                 |        |        |         |
| Mean         | 63.36                           | 10.29  | 38.60  | 131.79  |
| S.D.         | 29.15                           | 3.02   | 24.89  | 61.43   |
| Group 2      |                                 |        |        |         |
| Mean         | 101.20                          | 25.90  | 70.32  | 41.94   |
| S.D.         | 31.86                           | 6.55   | 19.85  | 17.42   |
| t            | 4.35                            | 10.61  | 4.98   | 5.39    |
| P            | <0.001                          | <0.001 | <0.001 | <0.001  |
| Significance | H.S.↓                           | H.S.↓  | H.S.↓  | H.S.↑   |
| H.S.         | : High significance             |        |        |         |
| PFn          | : Plasma fibronectin            |        |        |         |
| NFn score    | : Neutrophil Fibronectin score. |        |        |         |

Table No. (26): Shows that:-

- A mild significant decrease of C3 and C4 in septicemic preterm neonates compared to control preterm neonates.
- No significant difference between plasma fibronectin in septicemic preterm neonates compared to control preterm neonates.
- ~~A~~ highly significant increase of neutrophil fibronectin in septicemic preterm neonates compared to control preterm neonates.

Table (26): Statistical analysis of C3, C4, PFn and NFn Score of Septicemic Preterm Neonates and Control Preterm Neonates.

|                                           | C3     | C4     | PFn    | NFn Score |
|-------------------------------------------|--------|--------|--------|-----------|
| Group 1                                   |        |        |        |           |
| Mean                                      | 57.48  | 9.88   | 40.08  | 90.63     |
| S.D.                                      | 16.93  | 3.13   | 23.87  | 37.14     |
| Group 2                                   |        |        |        |           |
| Mean                                      | 72.40  | 11.94  | 49.40  | 40.99     |
| S.D.                                      | 30.84  | 4.33   | 17.66  | 22.83     |
| t                                         | 2.1208 | 1.97   | .11    | 2.83      |
| P                                         | < 0.05 | < 0.05 | > 0.05 | <0.001    |
| Significance                              | M.S.↓  | M.S.↓  | N.S.   | N.S.↑     |
| M.S. : Mild significance                  |        |        |        |           |
| N.S. : No significance                    |        |        |        |           |
| PFn : Plasma fibronectin                  |        |        |        |           |
| NFn Score : Neutrophil fibronectin score. |        |        |        |           |

Table No. (27) shows that:

- No significant difference between C3, C4 and plasma fibronectin in septicemic full term neonates compared to septicemic preterm neonates.
- A mild significant increase of neutrophil fibronectin in septicemic full term neonates compared to septicemic preterm neonates.

Table (27): Statistical analysis of C3, C4, PFn and NFn  
Score of Septicemic Full Term Neonates and  
Septicemic Preterm Neonates.

|              | C3     | C4     | PFn    | NFn Sc. |
|--------------|--------|--------|--------|---------|
| Group 1      |        |        |        |         |
| Mean         | 63.36  | 10.29  | 38.60  | 131.79  |
| S.D.         | 29.15  | 3.02   | 24.89  | 61.43   |
| Group 2      |        |        |        |         |
| Mean         | 57.48  | 9.88   | 40.08  | 90.63   |
| S.D.         | 16.93  | 3.13   | 23.87  | 37.14   |
| t            | 1.06   | 0.45   | 0.39   | 2.15    |
| P            | > 0.05 | > 0.05 | > 0.05 | < 0.05  |
| Significance | N.S.   | N.S.   | N. s.  | M. s. ↑ |

N.S. : No significance

M. s. : Mild significance

Table No. (28) shows that:-

- A highly significant increase of C3, C4 and plasma fibronectin in control full term neonates compared to control preterm neonates.
- No significant difference between neutrophil fibronectin in control full term neonates compared to control preterm neonates.

Table (28): Statistical analysis of C3, C4, PFn and NFn  
Score of control full Term and control preterm  
Neonates.

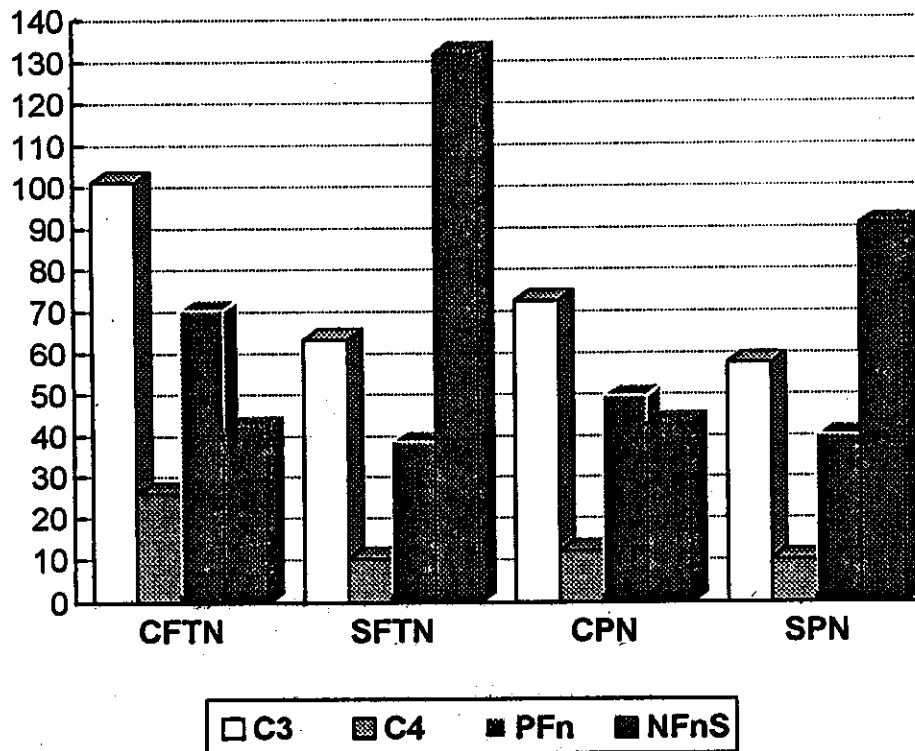
|              | C3     | C4     | PFn    | NFn Sc. |
|--------------|--------|--------|--------|---------|
| Group 1      |        |        |        |         |
| Mean         | 101.2  | 25.90  | 70.32  | 41.94   |
| S.D.         | 31.86  | 6.55   | 19.85  | 17.42   |
| Group 2      |        |        |        |         |
| Mean         | 72.40  | 11.94  | 49.40  | 40.99   |
| S.D.         | 30.84  | 4.33   | 17.66  | 22.83   |
| t            | 4.0256 | 9.110  | 3.94   | .38     |
| P            | <0.001 | <0.001 | <0.001 | > 0.05  |
| Significance | H.S.↑  | H.S.↑  | H.S.↑  | N.S.    |

H.S. : High significance

N.S. : No significance



***C3, C4, PFn and NFn Score in CFTN,  
SFTN, CPN and SPN***



PFn : Plasma Fibronectin

NFn Score : Neutrophil Fibronectin Score

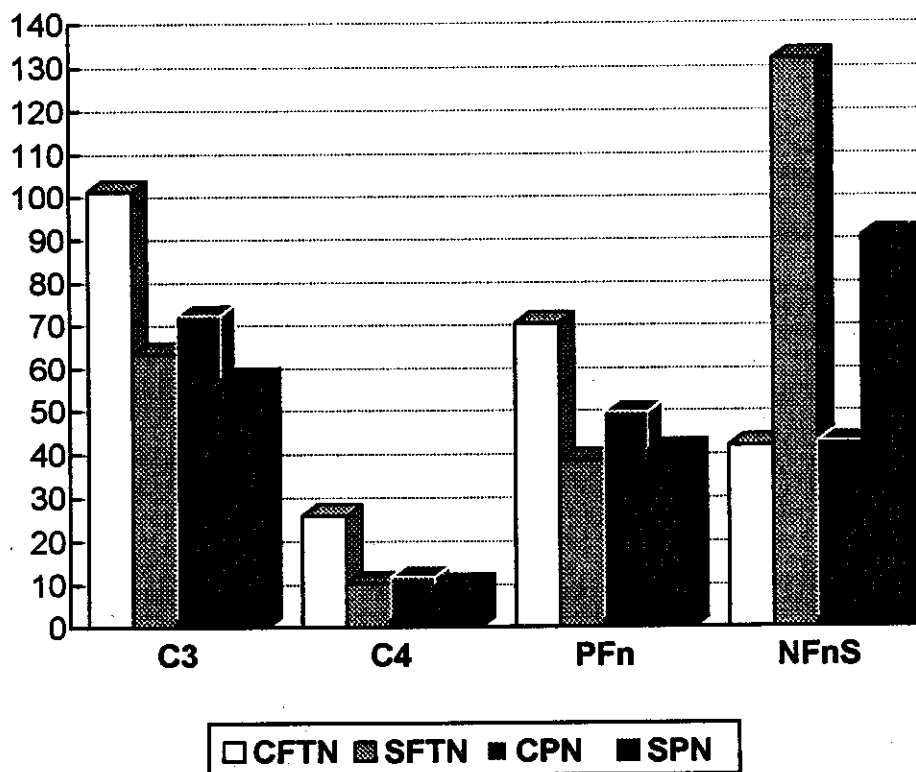
CFTN : Control Full Term Neonates

SFTN : Septicemic Full Term Neonates

CPN : Control Preterm Neonates

SPN : Septicemic Preterm Neonates

***C3, C4, PFn and NFn Score in CFTN,  
SFTN, CPN and SPN***



***C3, C4, PFn and NFn Score in CFTN,  
SFTN, CPN and SPN***

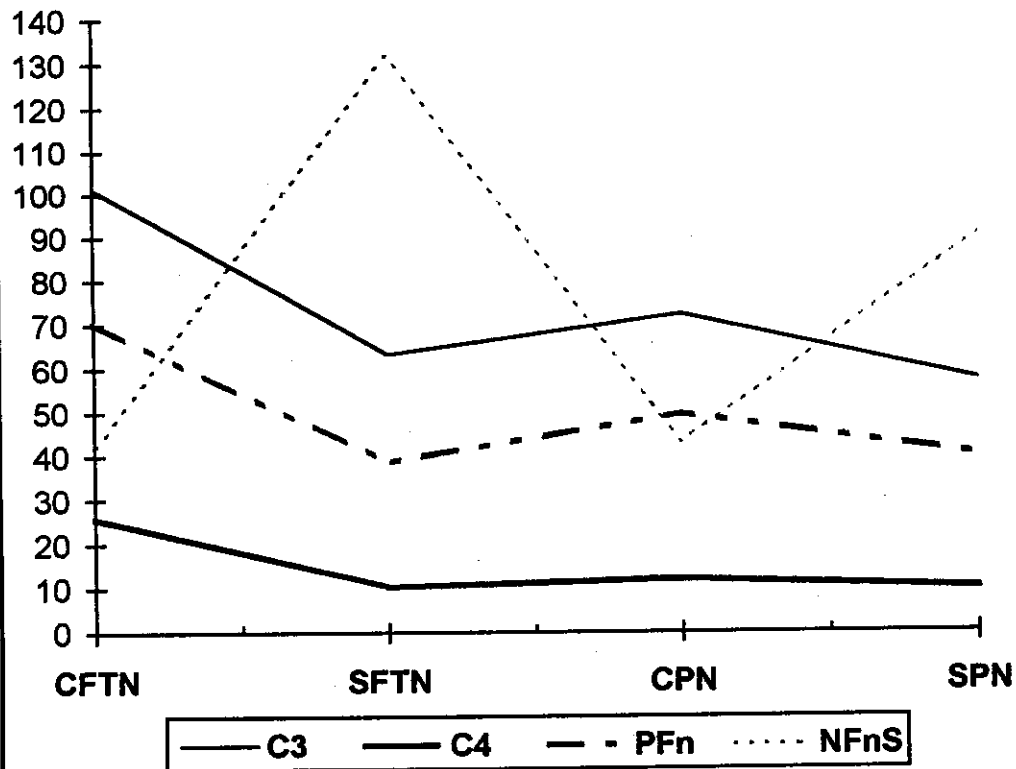


Table No. (29): Shows that:

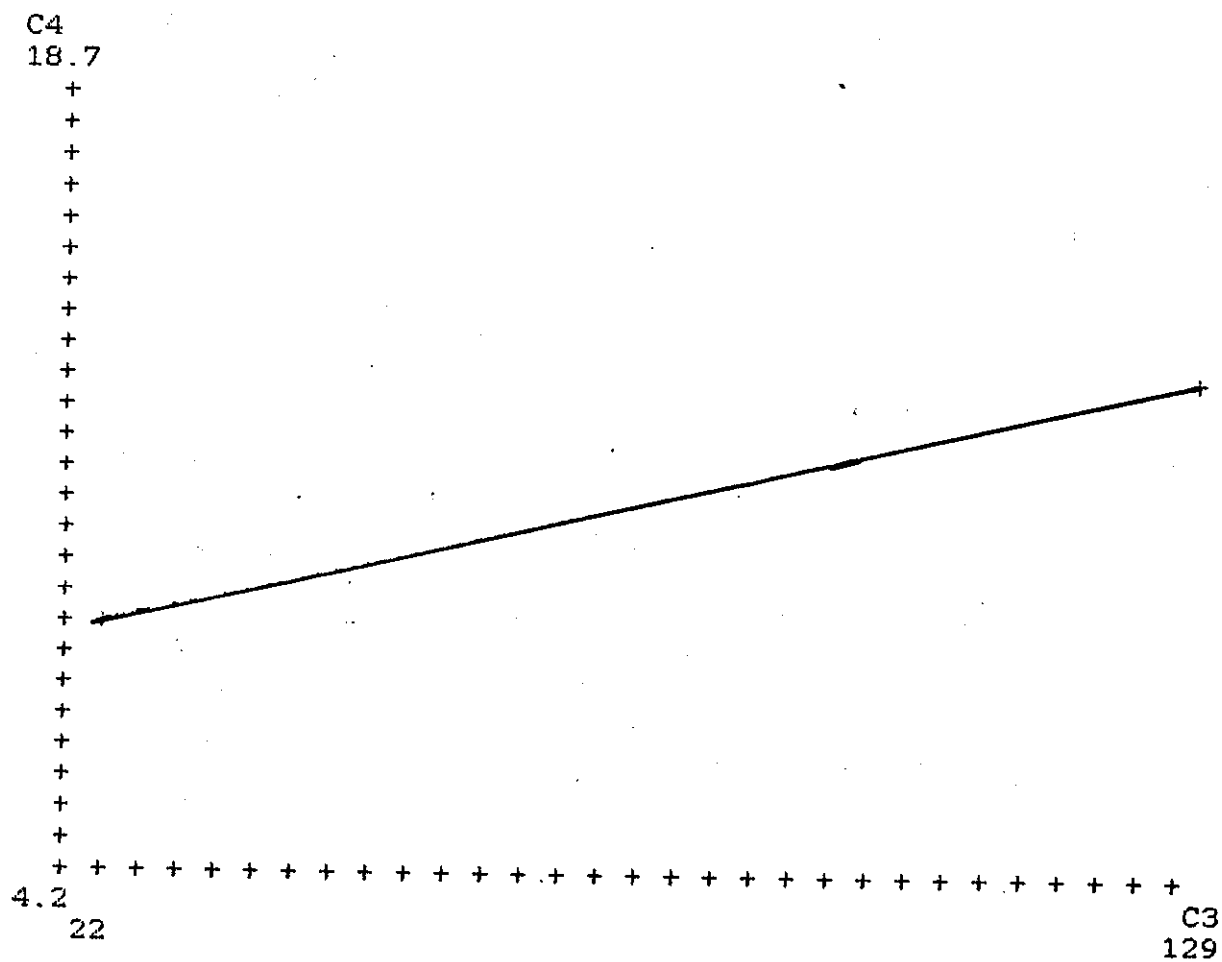
- There was a mild correlation between age of onset of disease in septicemic full term neonates and gestational age.
- There was a perfect correlation between C3 and C4.
- There was a strong correlation between plasma fibronectin and C4 and age of onset of the disease.
- There were moderate correlations between C3 and between each of these; birth weight, plasma fibronectin and the age of onset of the disease.
- There were mild correlations between birth weight and between each of these; C4, plasma fibronectin, the age of onset of the disease and gestational age.
- There were mild correlations between gestational age and between birth weight and plasma fibronectin.

Table No. (29)

Correlation between Immunological Data of Septicemic  
Full Term and Gestational Age, Birth Weight and Age  
of Onset of the Disease

|                                   | G.A. | B.W. | C3   | C4   | PFn  |
|-----------------------------------|------|------|------|------|------|
| Birth weight                      | 0.17 |      |      |      |      |
| C3                                | 0.01 | 0.22 |      |      |      |
| C4                                | 0.01 | 0.14 | 0.49 |      |      |
| PFn                               | 0.10 | 0.14 | 0.21 | 0.35 |      |
| Age of Onset<br>of the<br>disease | 0.21 | 0.18 | 0.25 | 0.46 | 0.35 |

N.B.:      More than 0.4      :      Perfect Correlation  
          > 0.3 - 0.4          :      Strong Correlation  
          > 0.2 - 0.3          :      Moderate Correlation  
          > 0.1 - 0.2          :      Mild Correlation  
          > 0 - 0.1            :      Negligable Correlation



Perfect correlation between C3 & C4 in septicemic  
full term neonates

Table No. (30) shows that:-

- There were a negative perfect correlation between neutrophil fibronectin score and between each of these; C3, C4 and plasma fibronectin in septicemic full term neonates.

Table No. (30)

Correlation between Neutrophil Fibronectin of Septicemic  
Full Term Neonates and Gestational age, Birth  
Weight, C3, C4, and Plasma Fibronectin

|           | G.A. | B.W. | C3   | C4    | PFn   |
|-----------|------|------|------|-------|-------|
| NFn Score | 0.16 | 0.09 | -.67 | -0.49 | -0.83 |

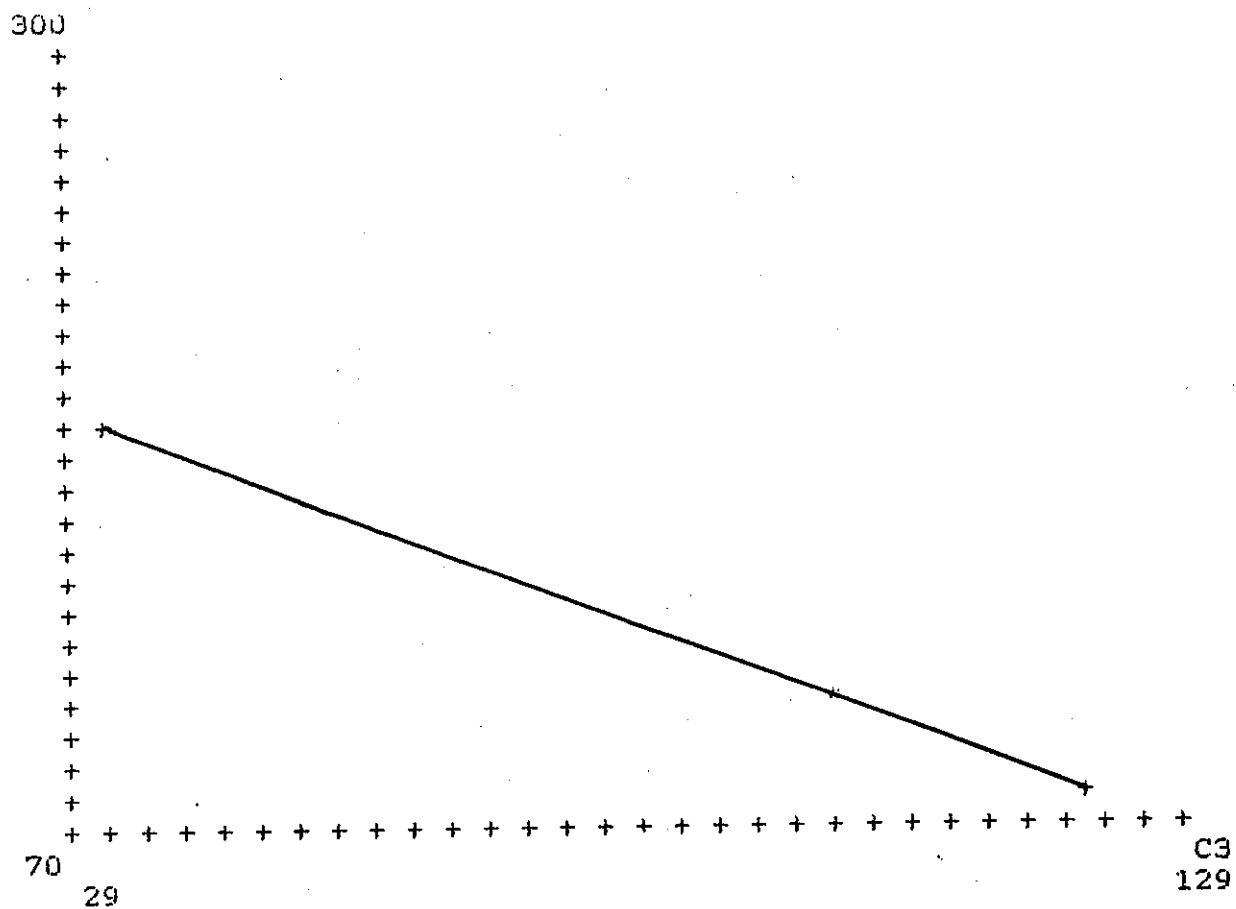
|       |                |   |                        |
|-------|----------------|---|------------------------|
| N.B.: | More than 0.53 | : | Perfect Correlation    |
|       | > 0.4 - 0.53   | : | Strong Correlation     |
|       | > 0.27 - 0.4   | : | Moderate Correlation   |
|       | > 0.14 - 0.27  | : | Mild Correlation       |
|       | > 0 - 0.14     | : | Negligable Correlation |

B.W. : Birth weight

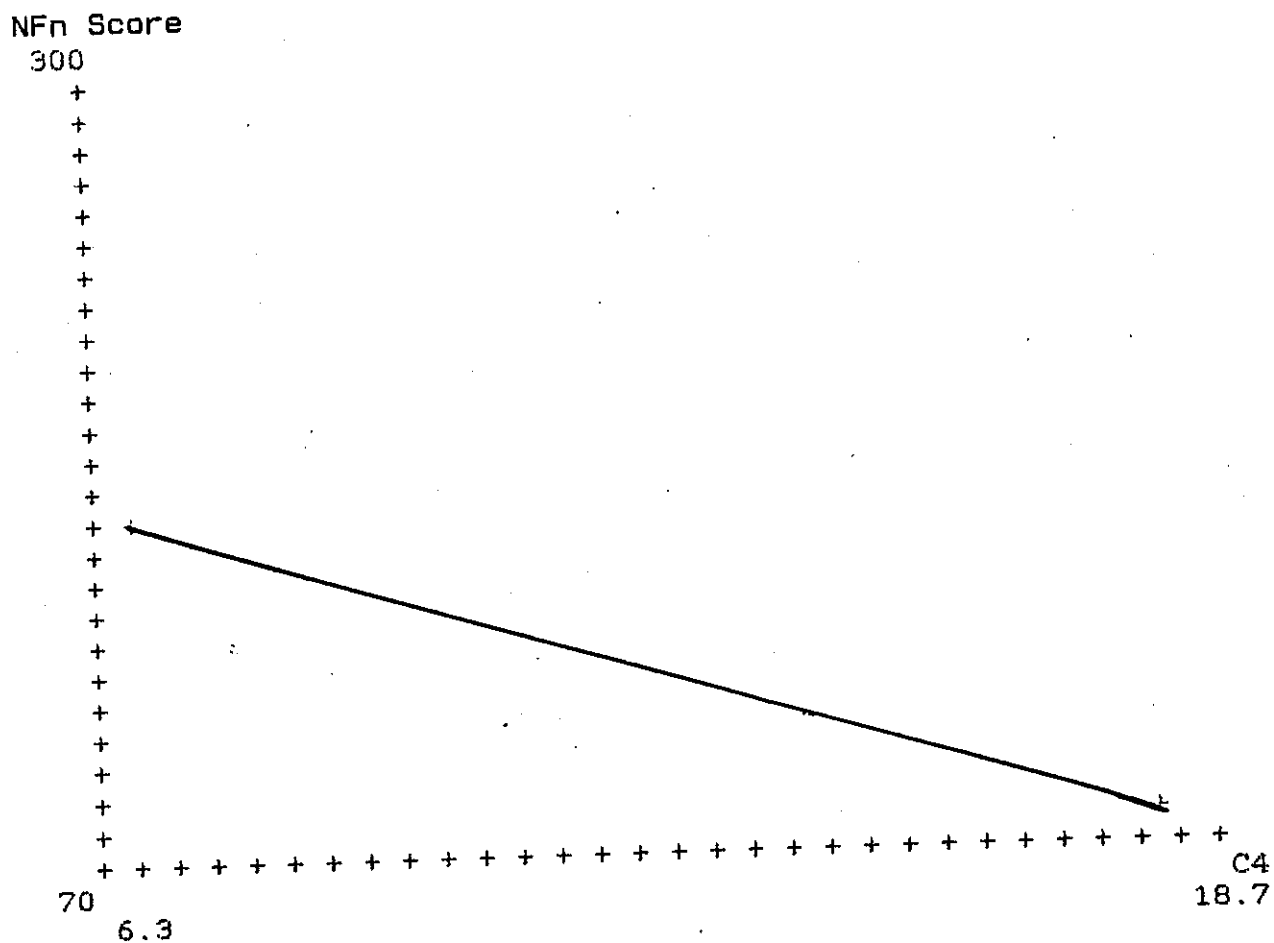
G.A. : Gestational age



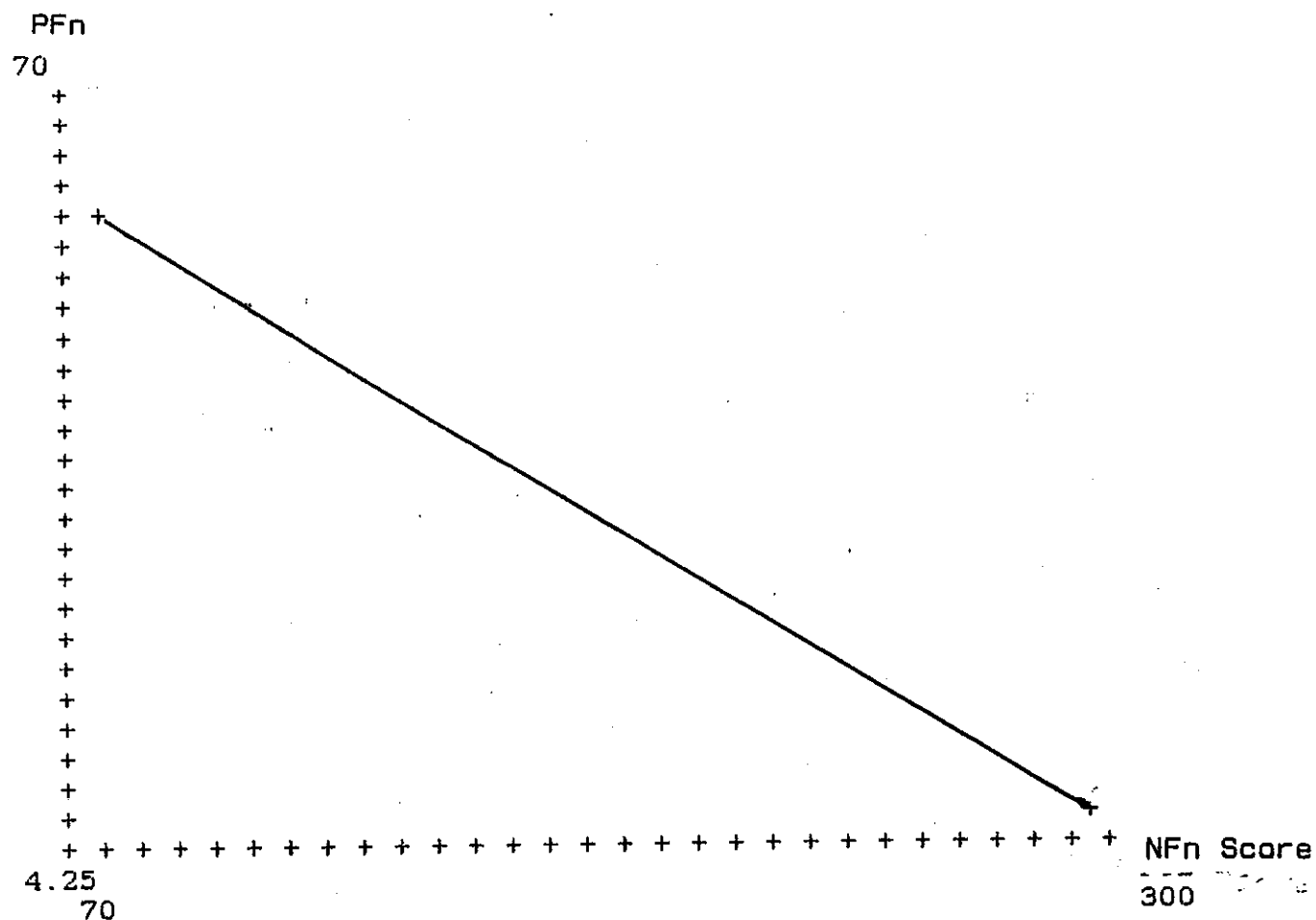
NFn Score



Negative perfect correlation between C3 & neutrophil  
fibronectin in septicemic full term neonates.



Negative strong correlation between C4 & neutrophil  
fibronectin in septicemic full term neonates.



Negative perfect correlation between plasma fibronectin & neutrophil fibronectin in septicemic full term neonates.

Table No. (31) shows that:-

- There were mild correlations between gestational age and between C3, and C4 in control full term neonates.
- There were mild correlations between plasma fibronectin and between neutrophil fibronectin and C3.
- There were negligible correlations between C4 and between plasma fibronectin and neutrophil fibronectin.

Table No. (31)

Correlation between Immunological Data of Full Term  
Control Neonates and Gestational Age.

|           | G.A. | C3   | C4   | PFn  |
|-----------|------|------|------|------|
| C3        | 0.25 |      |      |      |
| C4        | 0.27 | 0.10 |      |      |
| PFn       | 0.06 | 0.17 | 0.14 |      |
| NFn Score | 0.14 | 0.06 | 0.15 | 0.16 |

|       |                |   |                        |
|-------|----------------|---|------------------------|
| N.B.: | More than 0.62 | : | Perfect Correlation    |
|       | > 0.45 - 0.62  | : | Strong Correlation     |
|       | > 0.30 - 0.45  | : | Moderate Correlation   |
|       | > 0.15 - 0.30  | : | Mild Correlation       |
|       | > 0 - 0.15     | : | Negligible Correlation |

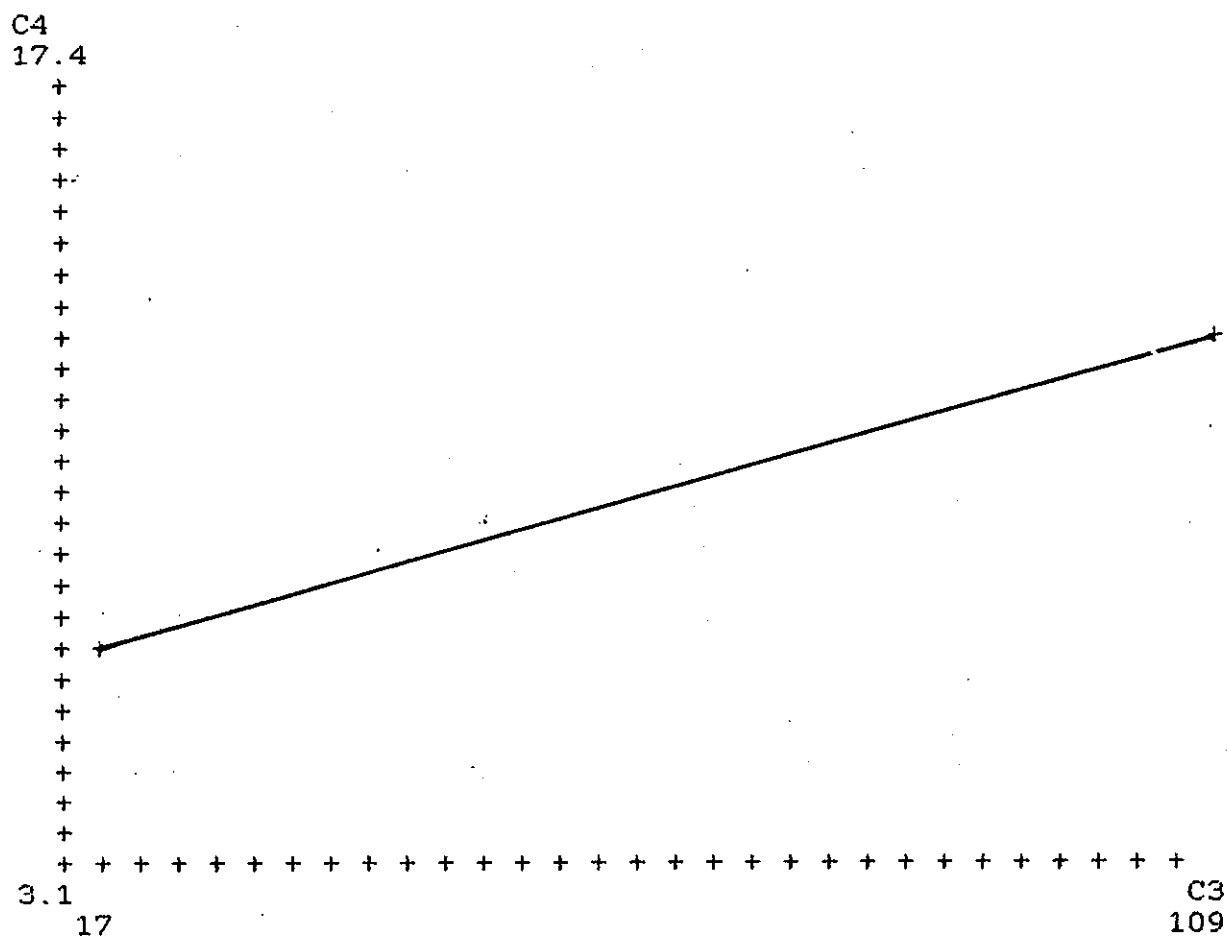
PFn : Plasma Fibronectin

NFn Score : Neutrophil Fibronectin Score

G.A. : Gestational age.

Table No. (32): Shows that:-

- There were perfect correlations between C4 and between each of these; gestational age, C3 and age of onset of the disease in septicemic preterm neonates.
- There was a strong correlation between C3 and plasma fibronectin.
- There were moderate correlations between gestational age between birth weight and age of onset of disease.
- There were mild correlations between C3, and between Gestational age and age of onset of disease.
- There were mild correlations between plasma fibronectin and between C4 and birth weight.



Perfect correlation between C3 & C4 in septicemic  
preterm neonates

Table No. (32)

Correlation between Immunological Data of Septicemic  
Preterm Neonates and Gestational age, Birth  
Weight and Age of Onset of Disease

|                                | G.A. | B.W. | C3   | C4   | PFn  |
|--------------------------------|------|------|------|------|------|
| B.W                            | 0.21 | 1.0  |      |      |      |
| C3                             | 0.19 | 0.12 | 1.0  |      |      |
| C4                             | 0.46 | 0.03 | 0.48 |      |      |
| PFn                            | 0.09 | 0.11 | 0.36 | 0.12 | 1.0  |
| Age of Onset<br>of the disease | 0.23 | 0.02 | 0.19 | 0.53 | 0.03 |

|       |               |   |                        |
|-------|---------------|---|------------------------|
| N.B.: | More than 0.4 | : | Perfect Correlation    |
|       | > 0.3 - 0.4   | : | Strong Correlation     |
|       | > 0.2 - 0.3   | : | Moderate Correlation   |
|       | > 0.1 - 0.2   | : | Mild Correlation       |
|       | > 0 - 0.1     | : | Negligable Correlation |

G.A. : Gestational age

PFn : Plasma Fibronectin

B.W. : Birth weight



Table No. (33) shows that:-

- There was a negative strong correlation between C3 and neutrophil fibronectin in septicemic preterm neonates.
- There was a moderate correlation between C4 and neutrophil fibronectin.
- There was a mild correlation between plasma fibronectin and neutrophil fibronectin.
- There was a mild correlation between gestational age and neutrophil fibronectin.
- There was a negligible correlation between birth weight and neutrophil fibronectin.

Table No. (33)

Correlation between Neutrophil Fibronectin of Septicemic  
Preterm Neonates and Gestational Age, Birth Weight,  
C3, C4 and Plasma Fibronectin

|                           | G.A. | B.W. | C3    | C4    | PFn   |
|---------------------------|------|------|-------|-------|-------|
| Neutrophil<br>Fibronectin | 0.19 | 0.12 | -0.40 | -0.29 | -0.23 |

|       |                |   |            |             |
|-------|----------------|---|------------|-------------|
| N.B.: | More than 0.53 | : | Perfect    | Correlation |
|       | > 0.4 - 0.53   | : | Strong     | Correlation |
|       | > 0.27 - 0.4   | : | Moderate   | Correlation |
|       | > 0.14 - 0.27  | : | Mild       | Correlation |
|       | > 0 - 0.14     | : | Negligable | Correlation |

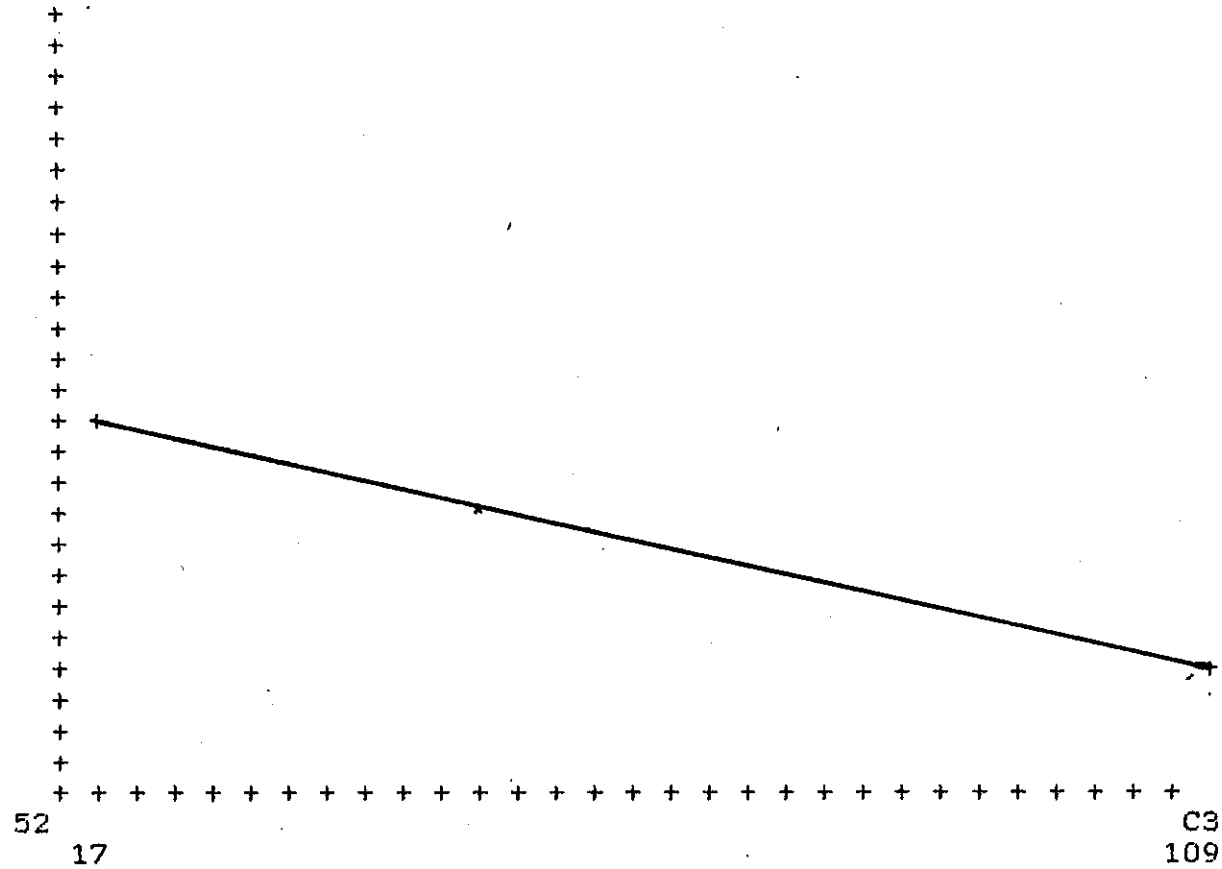
G.A. : Gestational age

PFn : Plasma Fibronectin

B.W. : Birth weight

NFn Score

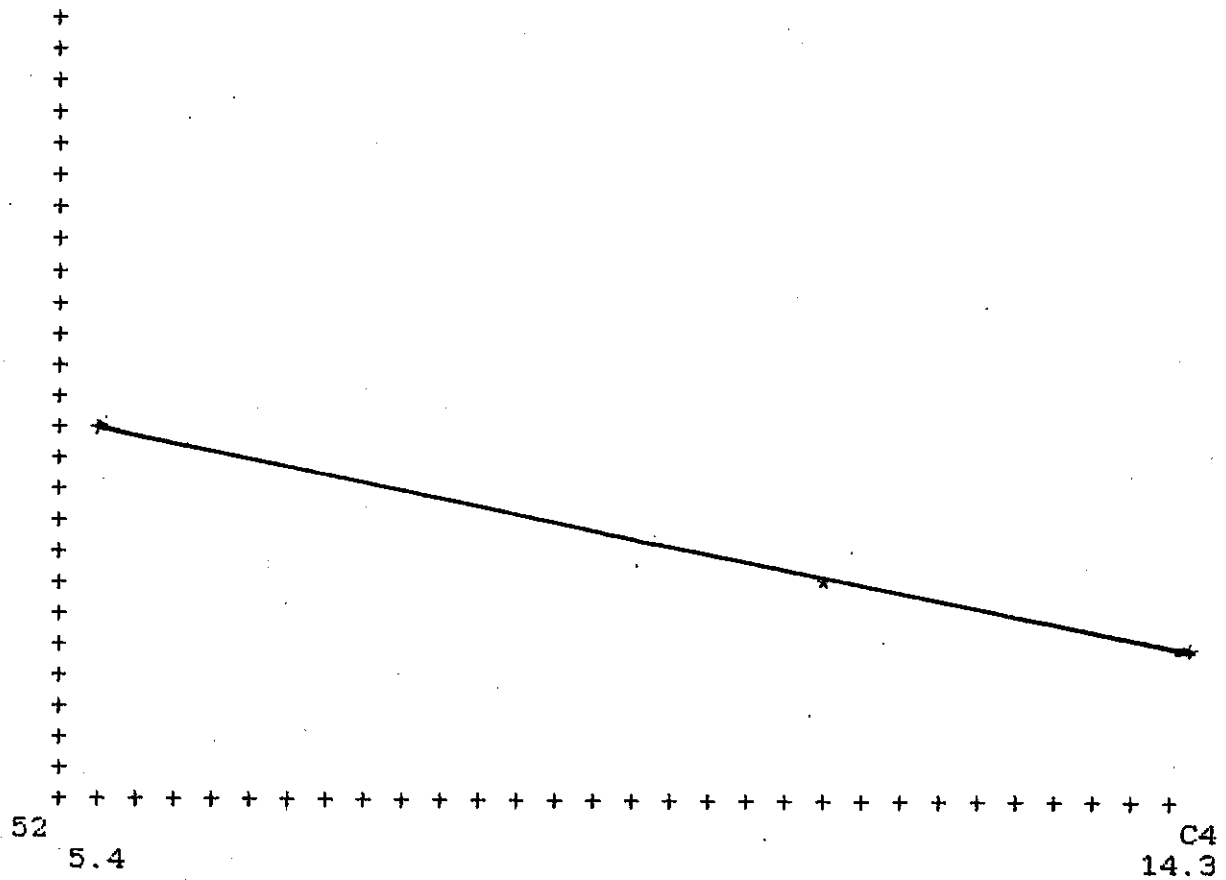
181.8



Negative strong correlation between C3 & Neutrophil  
fibronectin in septicemic preterm neonates

NFn Score

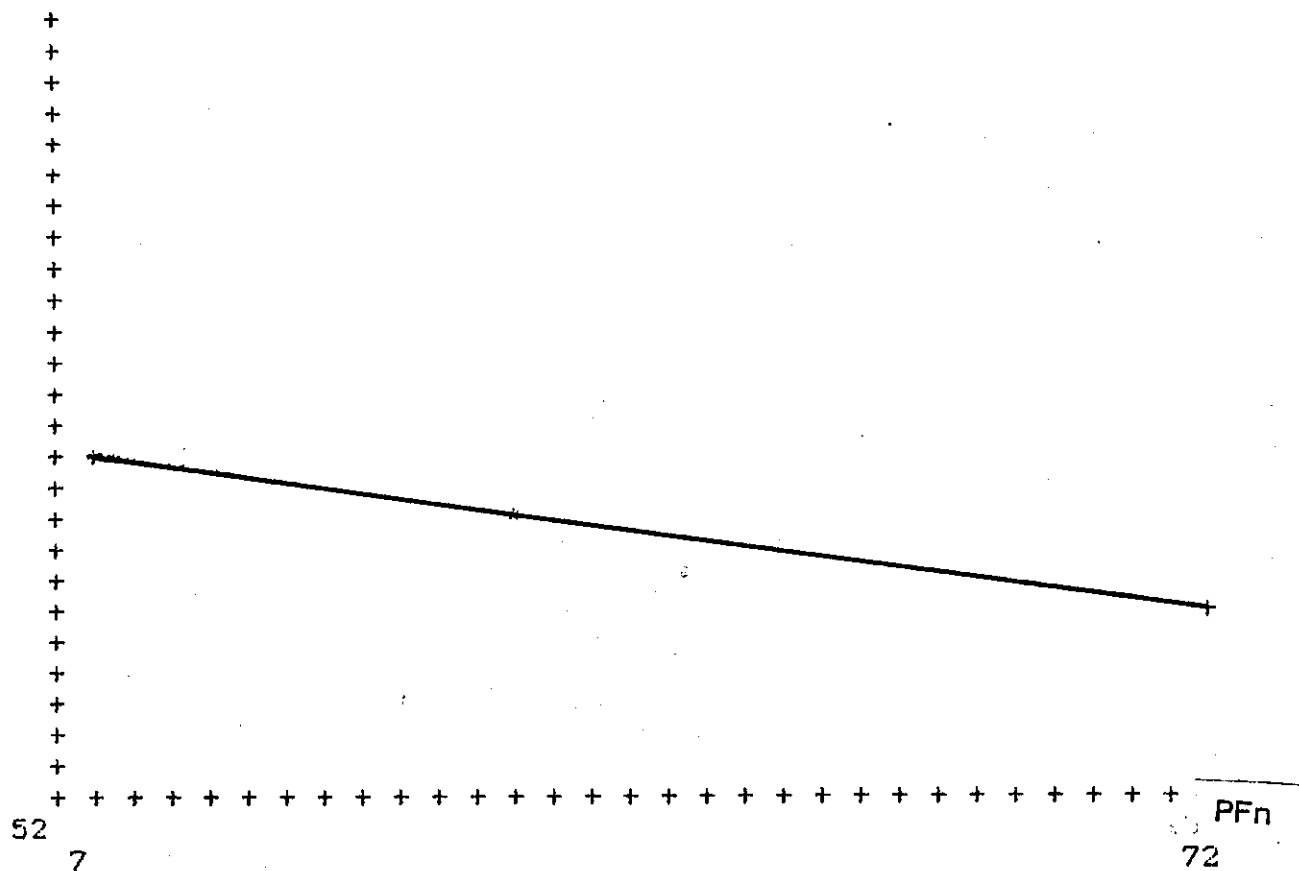
181.8



Negative moderate correlation between C4 & neutrophil  
fibronectin in septicemic preterm neonates.

NFn Score

181.8



Negative Mild correlation between plasma fibronectin & neutrophil fibronectin in septicemic preterm neonates.

Table No. (34) shows that:-

- There were perfect correlations between gestational age of preterm control neonates and between each of these; C3, C4 and plasma fibronectin.
- There were perfect correlations between plasma fibronectins and between each of these and G.A., C3 and C4.
- There was perfect correlations between C3 and C4.
- There were mild correlations between neutrophil fibronectin and between G.A. and C3.

Table No. (34)

Correlation between Immunological Data of Peterm  
Control Neonates and Gestational age.

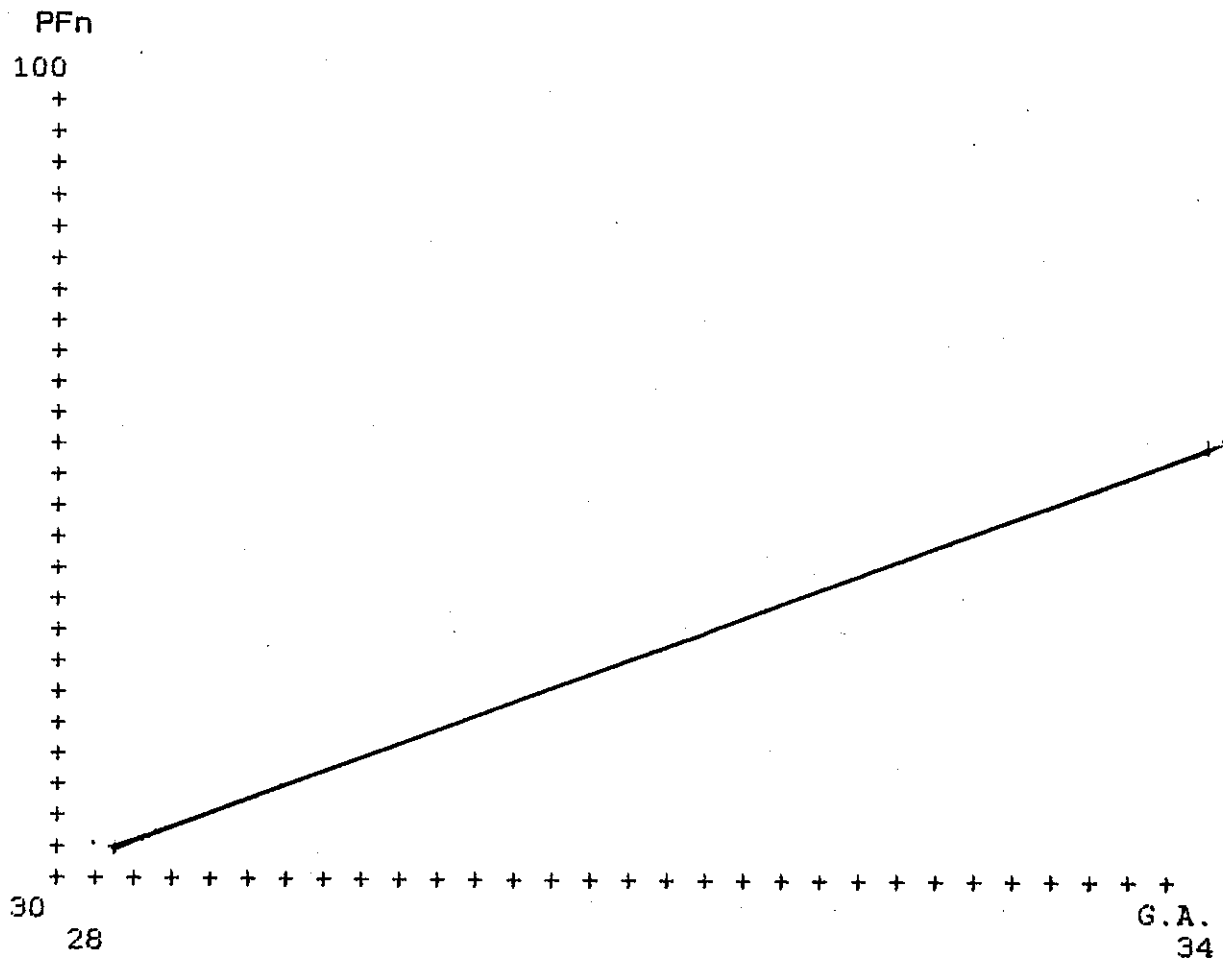
|           | G.A. | C3   | C4   | PFn  |
|-----------|------|------|------|------|
| C3        | 0.94 | 1.0  |      |      |
| C4        | 0.79 | 0.90 | 1.0  |      |
| PFn       | 0.70 | 0.83 | 0.94 | 1.0  |
| NFn Score | 0.25 | 0.20 | 0.02 | 0.03 |

|       |                |   |                        |
|-------|----------------|---|------------------------|
| N.B.: | More than 0.52 | : | Perfect Correlation    |
|       | > 0.45 - 0.62  | : | Strong Correlation     |
|       | > 0.3 - 0.45   | : | Moderate Correlation   |
|       | > 0.15 - 0.30  | : | Mild Correlation       |
|       | > 0 - 0.15     | : | Negligable Correlation |

G.A. : Gestational age

PFn : Plasma Fibronectin

NFn : Neutrophil Fibronectin Score



Perfect correlation between plasma fibronectin and  
gestational age in preterm control neonates