RESULTS

Table (5): Frequency distribution of clinical presentations among septicemic fullterms.

Clinical findings	Number of cases	%
(1)Poor feeding	16	80.0
(2)Lethargy	13	65 .0
(3) Hypothermia	12	60 .0
(4)Respiratory distress	11	55 .0
(5)Abdominal distension	9	45.0
(6) Hepatomegaly	8	40.0
(7)Seizures	7	35.0
(8) Diarrhea	6	30.0
(9)Irritability	6	30.0
(10)apnea	6	30.0
(11)Vomiting	6	25.0
(12)Jaundice	5	25.0
(13)Fever	4	20.0
(14) Pallor	2	10.0

N.B.: Patients presented by more than one clinical presentation had been recorded more than once according to each of the clinical finding present.

Table (6): Frequency distribution of clinical presentations among septicemic preterms.

Clinical findings	Number of cases	%
(1)Poor feeding	19	95.0
(2)Respiratory distress	16	80.0
(3)Lethargy	15	75.0
(4)Hypothermia	13	65.0
(5)Abdominal distention	10	50.0
(6)Apnea	10	50.0
(7)Diarrhea	9	45.0
(8)Jaundice	8	40.0
(9)Seizures	7	35.0
(10)Hepatomegaly	6	30.0
(11)Irritability	5	25.0
(12)Vomiting	5	25.0
(13)Pallor	3	15.0
(14)Fever	2	10.0

N.B.: Patients presented by more than one clinical presentation had been recorded more than once according to each of the clinical finding present.

Table (7): Systolic blood pressure among the studied groups.

Blood pressure / Studied groups	Mean systolic blood pressure ± SD	P value
(1)Septicemic fullterms	58 ± 2	> 0.5 Insignificant.
(2) Healthy fullterms	60 ± 1	
(3) Septicemic preterms	54 ± 2	> 0.5 Insignificant.
(4)Uncomplicated preterms	57 ± 1	

Table (8): C. reactive protein (CRP) among the studied groups.

CRP "mg/L" / Studied groups	Range	x	±SD	Tests of Significance		
				( )	t	p
(1) Septicemic fullterms	0 - 52	22.75	±17.326	1*2	5.403	<0.001
(2) Healthy fullterms	0 - 6.5	1.3	±2.741			
(3) Septicemic preterms.	0 - 52	31.85	±20.866	3*4	6.268	<0.001
(4) Uncomplicated preterms	0 - 6.5	1.95	±3.139			

Table (9): Diagnostic value of CRP as a screening test in comparison to blood culture as a definitive test.

Blood culture / CRP	Positive "septicemic"	Negative "control"	Total
Positive	34	0	34
Negative	6	20	26
Total	40	20	60

(1) Sensitivity = 85%

(2) Specificity = 100%

(3) Positive predictive accuracy = 100%

(4) Negative predictive accuracy = 76.9%

Table (10): Hematological Scoring (HS) among the studied groups.

HS / Studied groups	Range	x	±SD	Tests of Significance. ( ).	t	p
(1) Septicemic fullterms	1 - 6	3.9	±1.165	1*2	7.889	<0.001
(2) Healthy fullterms	0 - 2	0.9	±0.876			
(3) Septicemi preterms	4 - 5	4.4	±0.503	3*4	7.327	<0.001
(4) Uncomplicated preterms	1 - 2	1.2	±0.422			

Table (11): Diagnostic significance of individual hematological findings of* hematological scoring system (HSS) *in all cases (fullterms & preterms).

Statistical study / H.S.S.	Sensitivity %	Specificity %	Positive predictive value %	Negative predictive value %
(1) TLC <5000 or > 21000 /mm^3	40	50	61.51	29.4
(2) TPMNs <1750 or > 5400 /mm^3	95	85	92.7	89.5
(3) IPMNs >500 /mm^3	62.5	75	83.3	50.0
(4) I : T ratio >0.16	95	80	90.5	88.9
(5) I : M ratio >=0.3	90	85	92.3	80.9
(6) Platelet count <=150000	35	100	100	43.5
(7) Degenerative changes (+ve)	0.0	0.0	0.0	0.0
Hematological Scoring. ≥3	95	100	100	90.9

Table (12): Hematological scoring system : Positive and negative score.

HS / Studied Groups	< 3		≥ 3		Total		Z	P
	No.	%	No.	%	No.	%		
(1) Septicemic fullterms	2	10	18	90	20	100	3.587	<0.05
(2) Healthy fullterms	10	100	0	0	10	100	0	-
(3) Septicemic preterms	0	0	20	100	20	100	0	-
(4)Uncomplicated preterms	10	100	0	0	10	100	0	-
Total	23	38.33	37	61.67	60	100	2.8088	<0.05

Table (13): Hemoglobin concentration (gm/dl) among the studied groups.

Hemoglobin (gm/dl) / Studied groups	Range	x	±SD	Tests of Significance.		
				( )	t	P
(1) Septicemic fullterms	11.8-19.3	15.11	±2.03	1*2	5.41	<0.001
(2) Healthy fullterms	16-20.1	17.91	±1.12			
(3) Septicemic preterms	10.3-17.4	14.13	±2.71	3*4	5.72	<0.001
(4) Uncomplicated preterms	14.6-18.7	16.28	±1.15			

Table (14): Causative organisms among septicemic groups.

Septicemic groups / Blood Culture	Septicemic fullterms		Septicemic preterms		Total	
	No.	%	No.	%	No.	%
E. Coli.	12	60.0	13	65.0	25	62.5
Klebsiella	1	5.0	1	5.0	2	5.0
Streptococci (GBS)	4	20.0	4	20.0	8	20.0
Staphylococci	3	15.0	2	10.0	5	12.5
Total	20	100.0	20	100.0	40	100.0

df = 3
$x^2 = 1.29$
$p > 0.05$

Table (19): Blood gases (mean ± SD) among septicemic and healthy fullterms.

Blood gases / Studied groups	pH	PO_2 (mmHg)	O_2 saturation (%)	PCO_2 (mmHg)	HCO_3^- (mEq/l)
Septicemic fullterms	7.39 ± 0.01	74 ± 3	91 ± 3	39.9 ± 1.3	21.2 ± 0.6
Healthy fullterms	7.37 ± 0.02	78 ± 1	92 ± 2	37.6 ± 0.8	20.4 ± 0.3
P value	> 0.5	> 0.5	> 0.5	> 0.5	> 0.5

Table (20): Blood gases (mean ± SD) among septicemic and uncomplicated preterms.

Blood gases / Studied groups	pH	PO_2 (mmHg)	O_2 saturation (%)	PCO_2 (mmHg)	HCO_3^- (mEq/l)
Septicemic preterms	7.40 ± 0.01	75 ± 6	91 ± 2	36.5 ± 1.2	21.3 ± 0.5
Uncomplicated preterms	7.38 ± 0.03	76 ± 5	90 ± 3	35.7 ± 0.9	20.4 ± 0.4
P value	> 0.5	> 0.5	> 0.5	> 0.5	> 0.5

Table (21): Correlation coefficient "r" between glucose and other variables before and after treatment in septicemic cases.

Glucose / Other variables	Before treatment		After treatment	
	r	P	r	P
Poor feeding	0.365461	>0.05	0.2873	>0.05
HSS	0.148062	>0.05	0.1192999	>0.05
CRP	0.27302	>0.05	0.134675	>0.05
Gram-negative septicemia	0.5334	<0.05		
Lactate	-0.1832588	>0.05	0.134155	>0.05
Insulin	0.28875	>0.05	-0.0588134	>0.05
PH	0.092520	>0.05	0.201126	>0.05
PO_2	0.081948	>0.05	-0.1081519	>0.05
PCO_2	0.1912882	>0.05	0.053084	>0.05
Bicarbonate	-0.013556	>0.05	0.031996	>0.05

Table (22): Correlation coefficient "r" between lactate and other variables before and after treatment in septicemic cases.

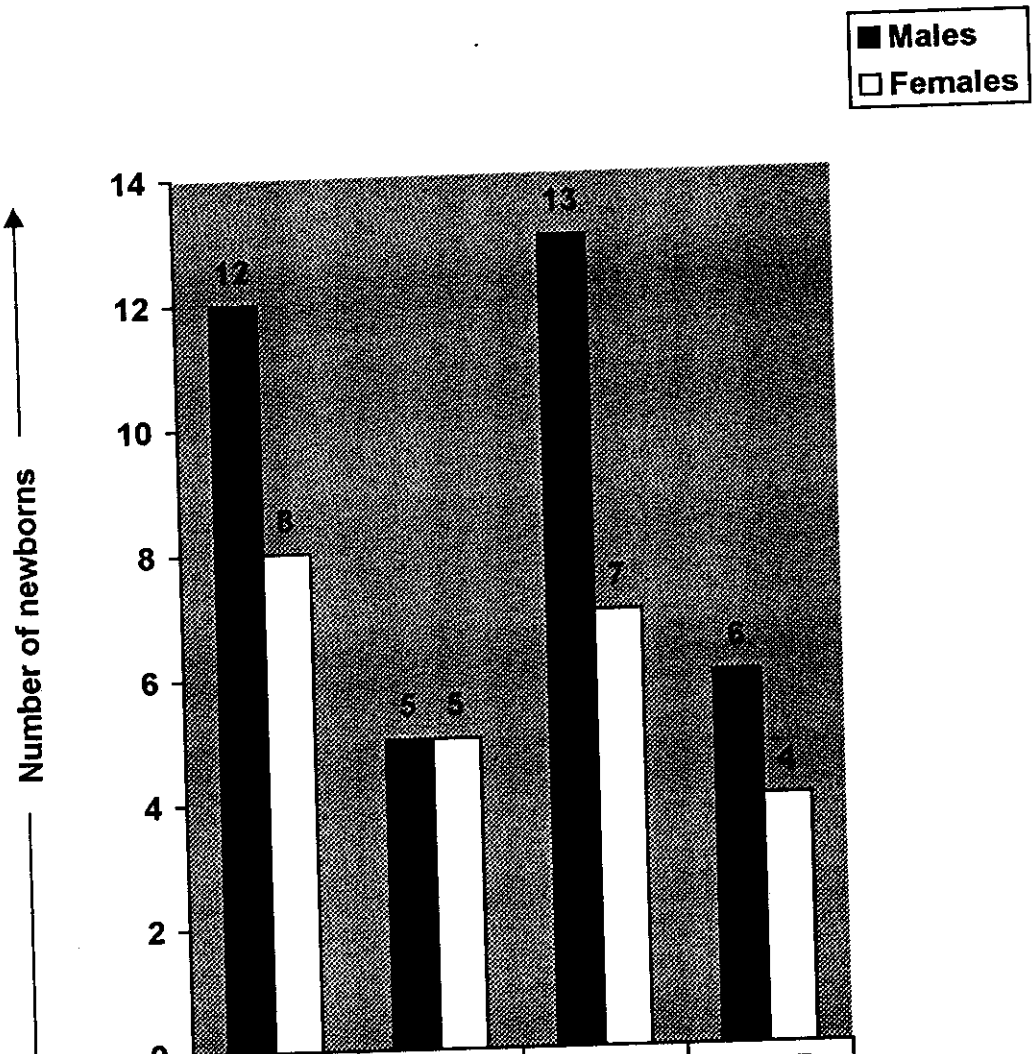
Lactate / Other variables	Before treatment		After treatment	
	r	P	r	P
HSS	-0.088029	>0.05	-0.108779	>0.05
CRP	0.193421	>0.05	0.126352	>0.05
Gram-negative septicemia	0.21143	>0.05		
glucose	-0.183258	>0.05	0.134155	>0.05
Insulin	-0.07337	>0.05	0.210892	>0.05
pH	0.28654	>0.05	-0.210892	>0.05
PO_2	0.121541	>0.05	-0.152882	>0.05
PCO_2	0.194806	>0.05	-0.11773	>0.05
Bicarbonate	0.304784	>0.05	0.193514	>0.05

Table (23): Comparison between the results of lab. Investigations before and after treatment among septicemic fullterms.

Sample / Lab. Investigations	Before treatment		After treatment		Statistical test	
	x	± SD	x	± SD	Paired t	P
HSS	3.9	± 1.165	0.45	± 0.605	8.774	< 0.001
CRP	22.75	± 17.326	2.275	±3.181	11.128	<0. 001
Glucose	47.15	± 12.145	74.0	±6.366	2.553	<0.05
Insulin	61.55	±20.433	69.9	±22.055	2.658	<0.05
Insulin/glucose ratio	1.4019	±0.668	0.9445	±0.2886	1.874	>0.05
Lactate	3.105	± 0.961	0.62	±0.209	9.441	<0.001
pH	7.39	±0.016	7.38	±0.038	1.78	>0.05
PO_2	74.7	±3.11	75.6	±2.563	1.584	>0.05
O_2 saturation	91	±3	92	±2	1.216	>0.05
PCO_2	37.65	±1.34	39.4	±1.569	1.6488	>0.05
Bicarbonate	21.2	±0.61	21.55	±1.276	1.016	>0.05

Table (24) Comparison between the results of lab. Investigations before and after treatment among septicemic preterms.

Sample / Investigations	Before treatment		After treatment		Statistical test	
	x	± SD	x	± SD	Paired t	P
HSS	4.4	± 0.503	0.55	± 0.686	9.427	< 0.001
CRP	31.85	± 20.866	2.275	±3.1881	13.647	<0.05
Blood glucose	41.25	± 11.938	76.45	±8.679	2.849	<0.001
Insulin	50.45	±18.8765	69.1	±21.123	1.769	<0.05
Insulin/glucose ratio	1.2658	±0.3921	0.9038	±0.2653	1.1463	>0.05
Lactate	3.61	± 0.68	0.625	±0.177	8.775	<0.05
P^H	7.40	±0.01	7.39	±0.023	1.549	>0.05
PO_2	75.0	±6. 27	74.5	±5.43	1.543	>0.05
O_2 saturation	91	±2	90	±3	0.873	>0.05
PCO_3	36.51	±1.28	37.55	±2.417	1.339	>0.05
Bicarbonate.	21.30	±0.50	21.25	±1.251	0.941	>0.05



Sep. F.T. = Septicemic Fullterms
H. F.T. = Healthy Fullterms
Sep. P.T. = Septicemic Preterms
U. P.T. = Uncomplicated Preterms

Figure (1): Sex distribution among the studied groups.

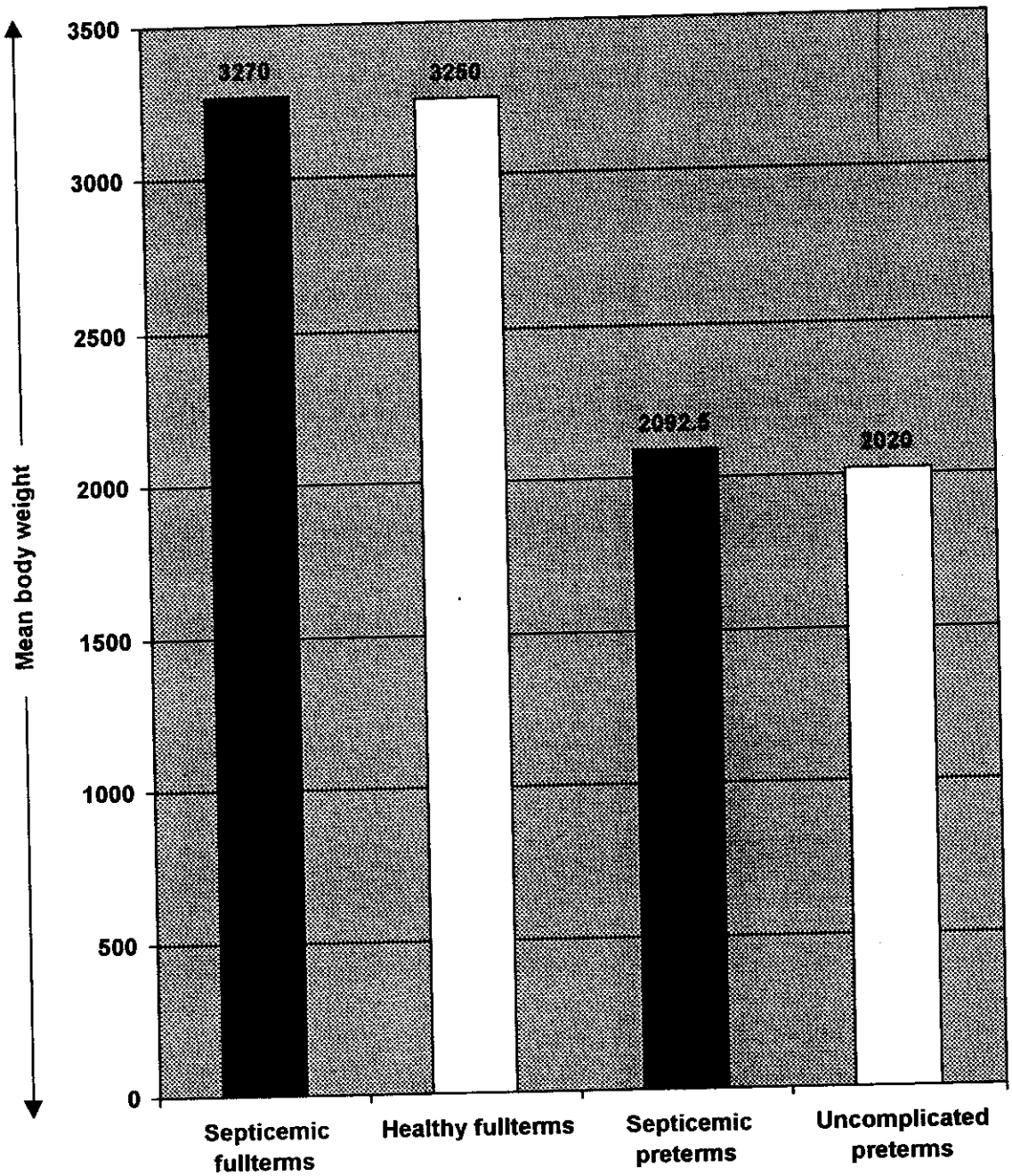


Figure (2): Body weight (grams) among the studied groups.

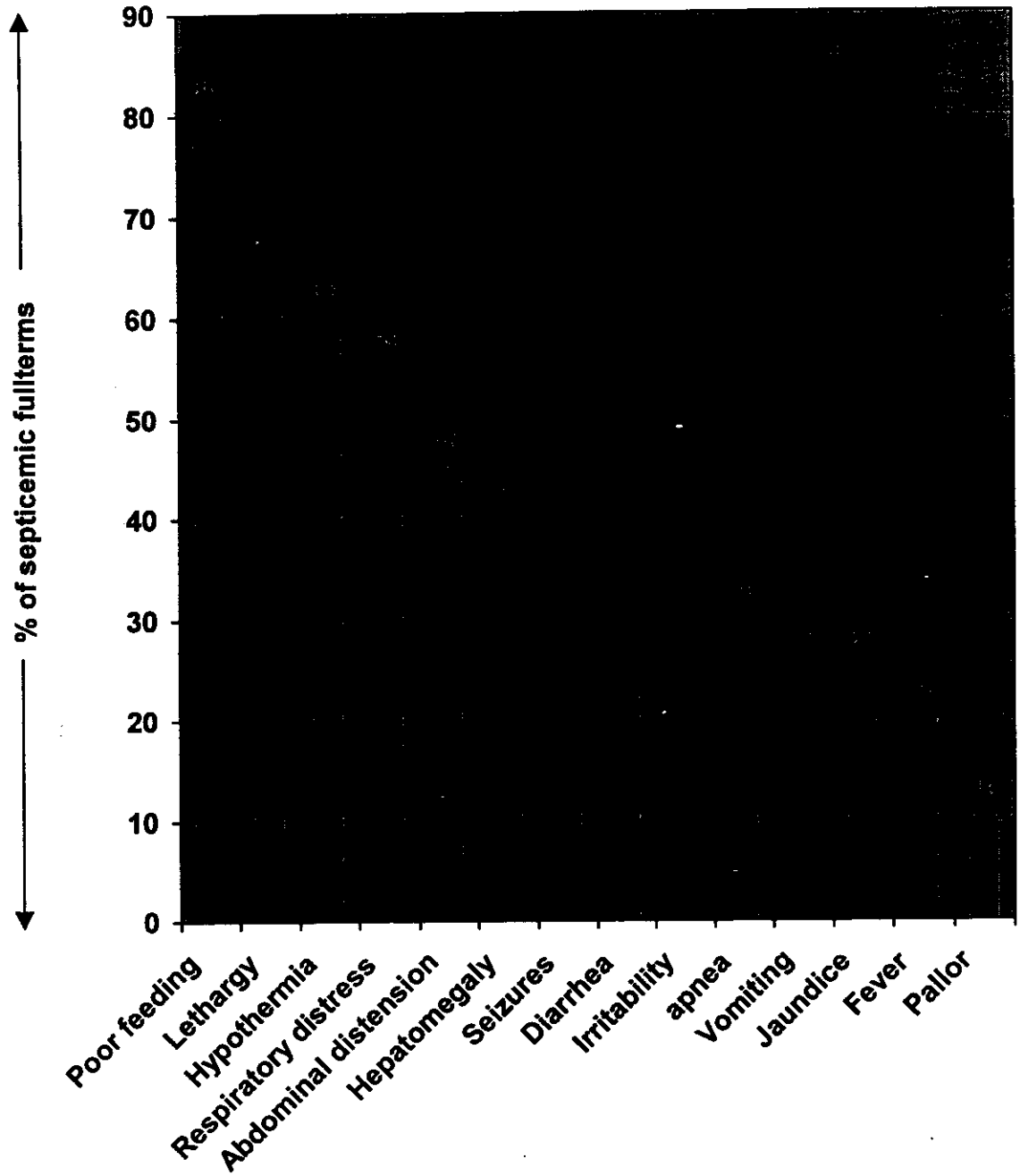


Figure (3) : Clinical presentations among septicemic fullterms.

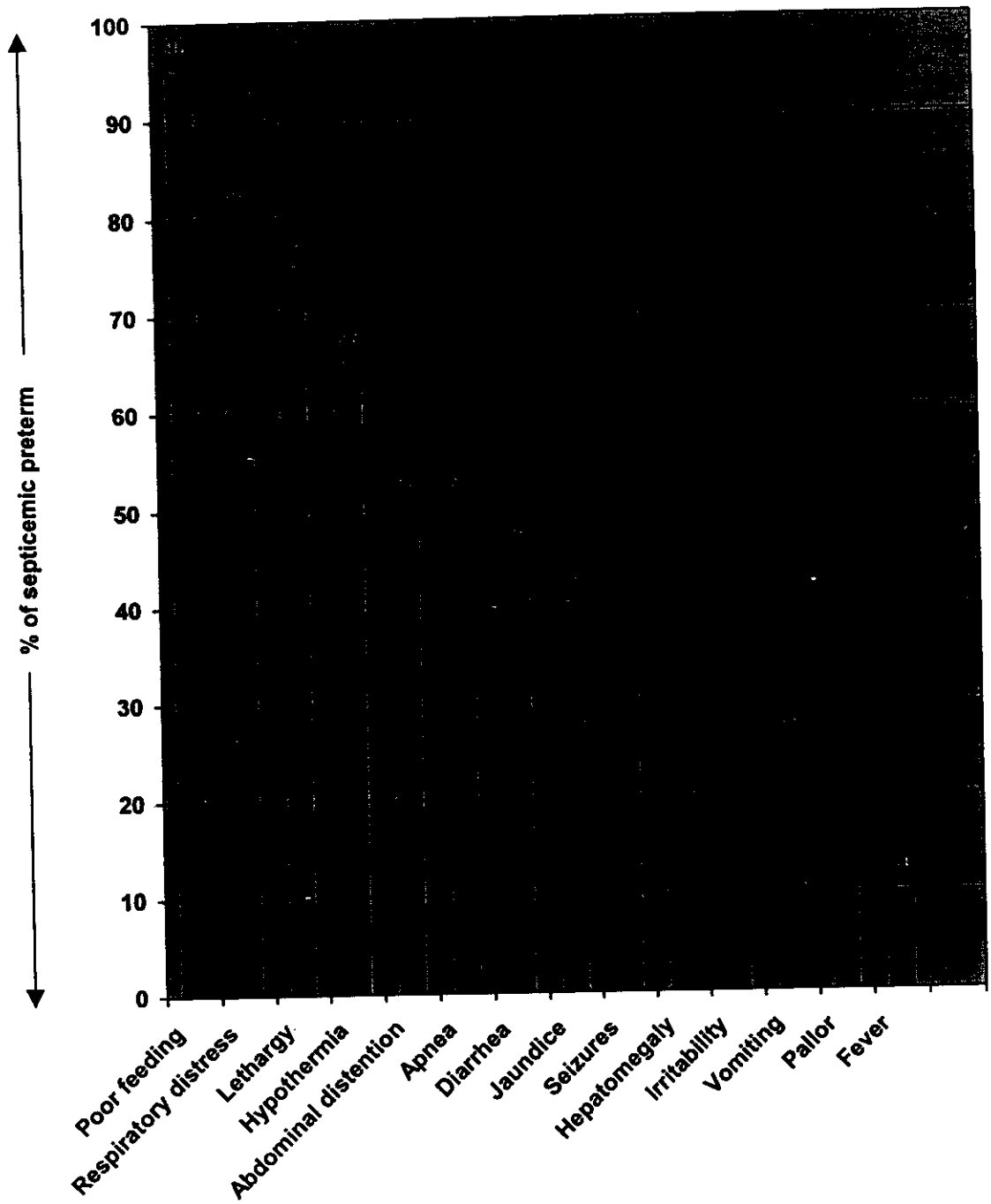


Figure (4): Clinical presentations among septicemic preterms.

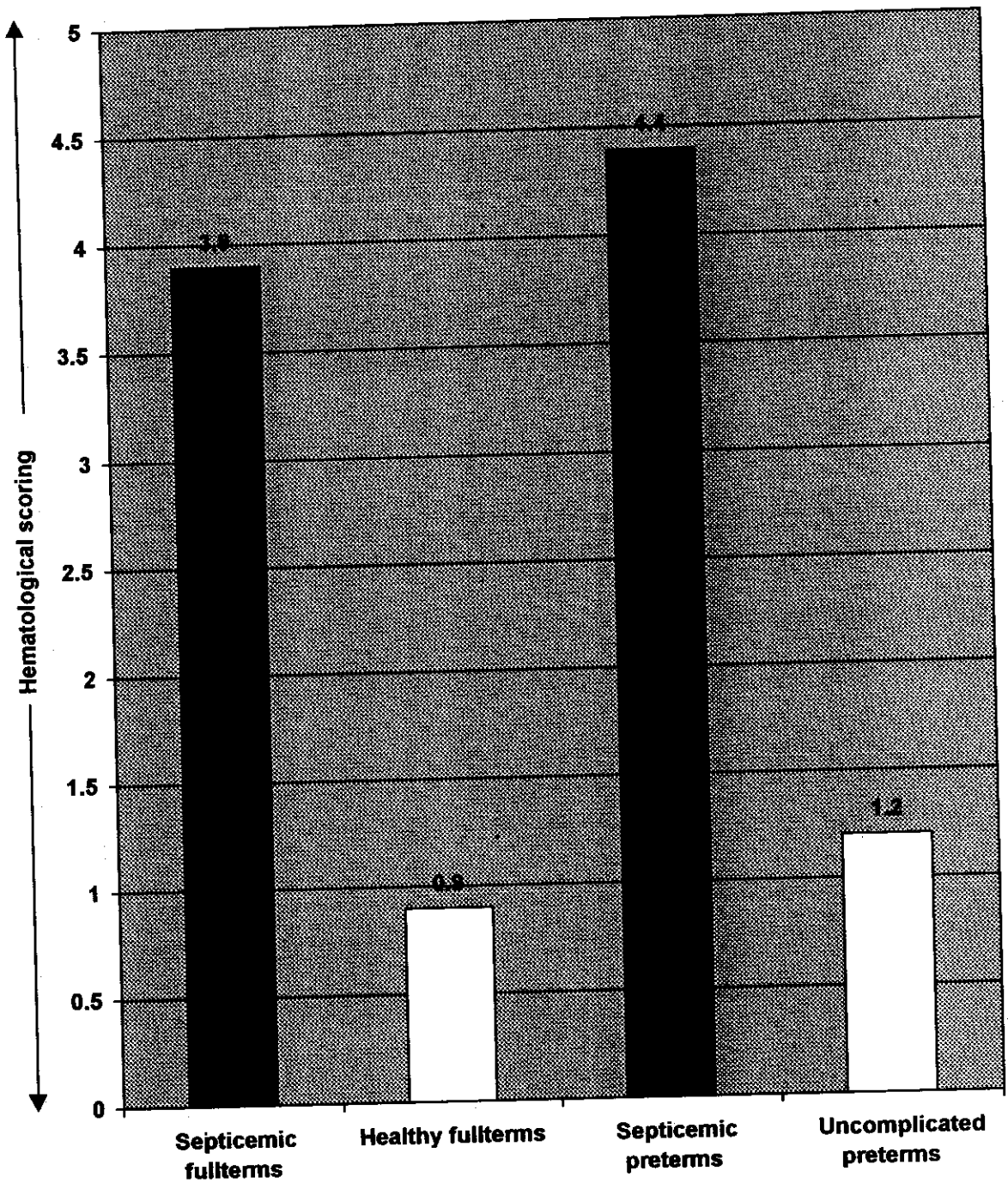


Figure (5) : Mean hemalogical scoring among the studied groups.

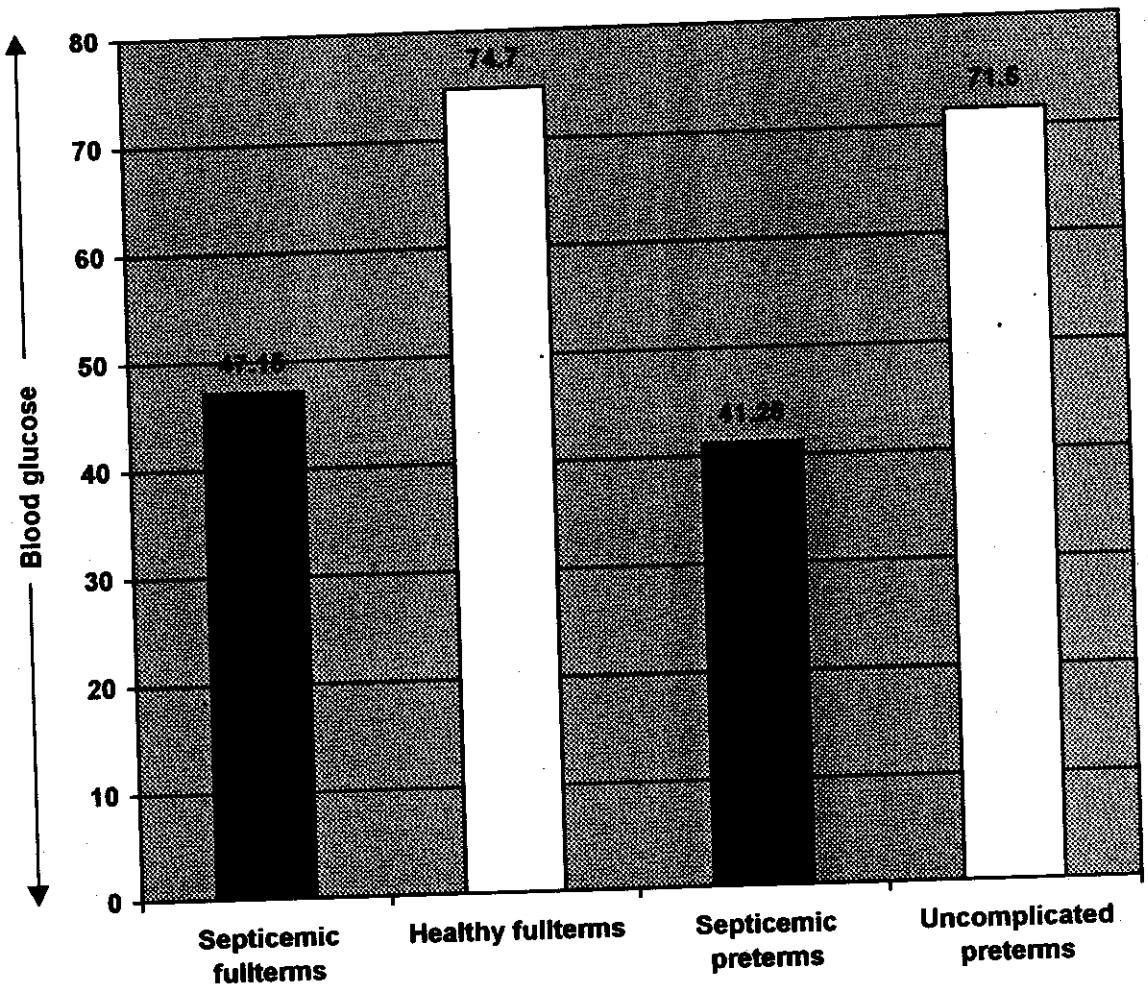


Figure (6): Mean blood glucose (mg/dl) among the studied groups.

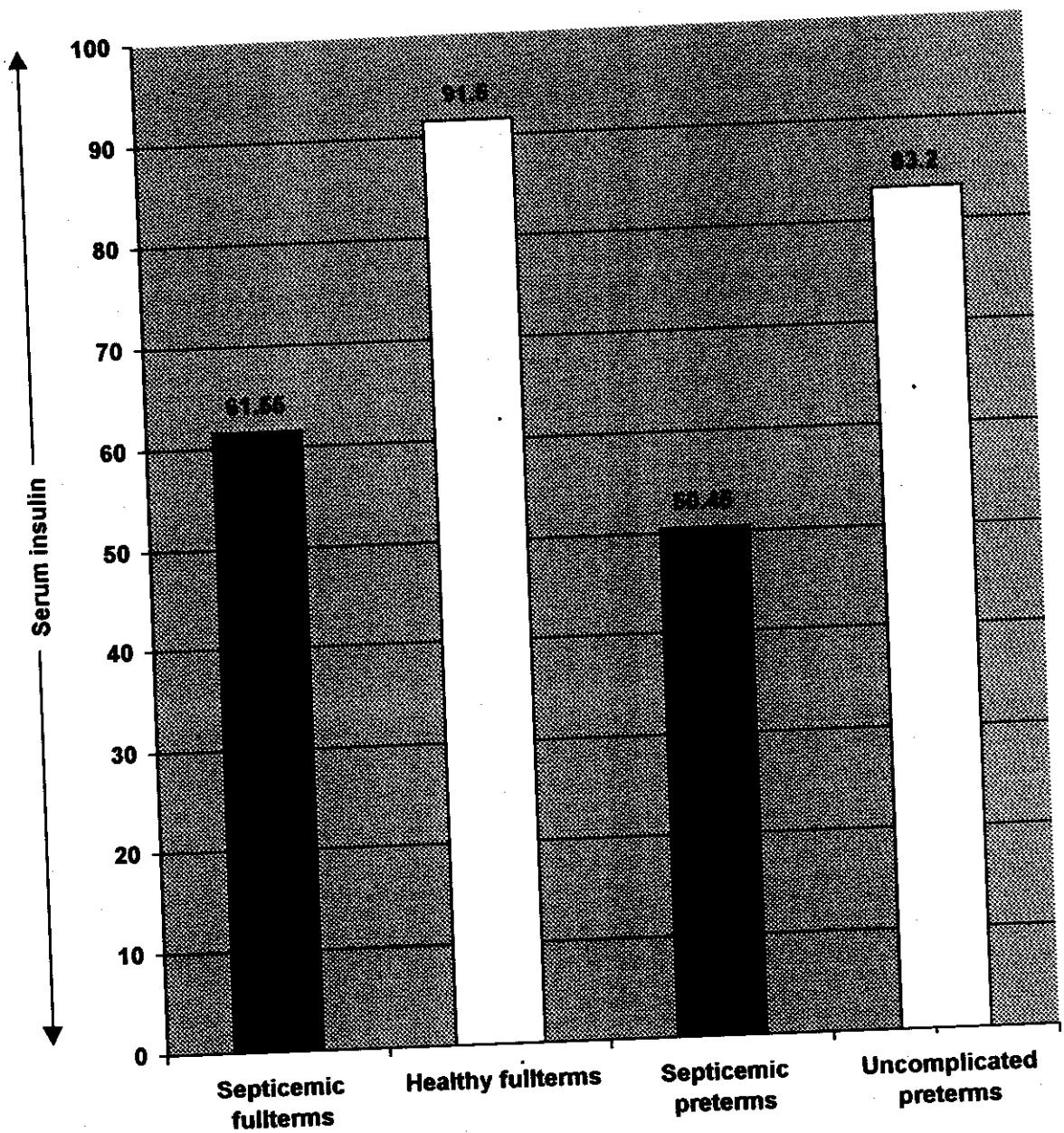


Figure (7): Mean serum insulin (Picomol/ml) among the studied groups.

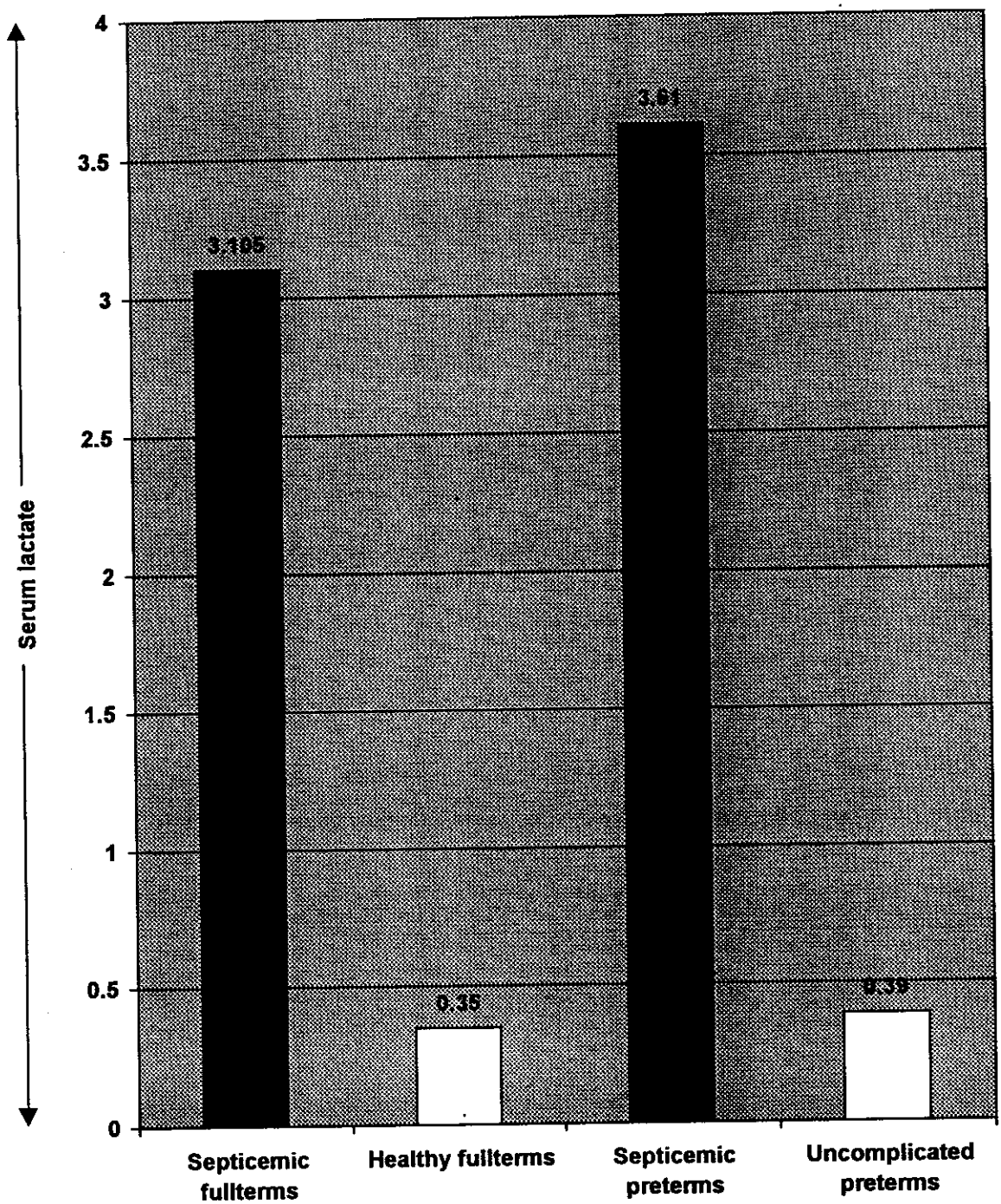


Figure (8): Mean serum lactate (mmol/l) among the studied groups.

ANALYSIS OF RESULTS

ANALYSIS OF THE RESULTS

Table (1) : Shows ranges & mean ± standard deviation of gestational age (weeks) of newborn infants under the study . Statistical analysis showed no statistically significant difference beween septicemic and control fullterms . Also no significant difference between septicemic and control preterms .

Table (2) & Figure (1) : Shows sex distribution of newborn infants under study . There was no statistically significant difference between septicemic and control groups .

Table (3) & Figure (2) : Shows ranges & mean ± standard deviation of body weight (gms) of newborn infants under study. Statistical analysis showed no significant difference between septicemic and control fullterms,also between septicemic and control preterms . Both septicemic and control newborns were matched appropriate for gestational age .

Table (4) : Shows ranges & mean ± standard deviation of the day of onset of septicemia (days) among the septicemic groups . Statistical analysis showed insignificant difference between septicemic fullterm and preterm newborns .

Table (5) & Figure (3) : Shows the frequency distribution of clinical presentations among septicemic fullterms. Poor feeding was the most frequent finding (80%) . Fever (20%) and pallor (10%) were the least frequent findings.

Table (6) & Figure (4) : Shows the frequency distribution of clinical presentations among septicemic preterms . Poor feeding was the least frequent one (10%) .

Table (7) :Shows mean systolic blood pressure among the studied groups . There was no statistically significant difference between septicemic fullterms & healthy fullterms . The same was observed in preterms (septicemic and uncomplicated) .

Table (8) :Shows ranges , mean ± standard deviations of serum CRP among the studied groups . Statistical analysis showed highly significant increase among septicemic newborns "fullterms and preterms" more than control newborns "fullterms and preterms".

Table (9) : Shows diagnostic value of CRP as a screening test in comparison to blood culture as a definitive diagnostic test .

Its sensitivity was 85% .

Its specificity was 100% .

Positive predictive value : 100% .

Negative predictive value : 76.9% .

Table (10) & Figure (5) : Shows ranges & means ± standard deviation of hematological scoring (HS) of newborn infants under study . Statistical analysis showed highly significant increase among septicemic newborns "fullterms and preterms" more than control "fullterms and preterms).

Table (11) : Shows diagnostic significance of individual hematological findings of HSS .The sensitivity of both ↑ or ↓ TPMNs count and I : T ratio were 95% followed by I : M ratio which had sensitivity 90% . In contrary , the sensitivity of total leucocytic count was 40% & that of thrombocytopenia was 35%, so the total leucocytic count and thrombocytopenia could not be a dependable sensitive tests for septicemia .

Table (12) : Shows the frequency of positive hematalogical scoring (≥ 3) among the studied groups as a diagnostic test in septicemic patient . All septicemic preterms had a score ≥ 3 and only 2 septicemic fullterm infants had a score < 3 .

All control newborns "preterms and fullterms" had a score < 3 .

Table (13) : Shows ranges & means ± standard deviation of hemoglobin concentration (gm / dl) among the the studied groups . Statistical analysis showed significant decrease

among septicemic newborns (fullterms and preterms) more than control newborns (fullterms and preterms) .

Table (14) : Shows the results of blood cultures of septicemic newborns under study.Gram-negative bacilli were the most frequent causative organisms for sepsis. *E.coli* affected 62.5% of our septicemic cases while *Klebsiella* was the least frequent, it affected 5% of our septicemic cases .

Statistical analysis showed no significant difference between fullterms and preterms .

Table (15) & Figure (6) : Shows ranges & means ± sandard deviations of blood glucose (mg/dl) among the studied groups. Statistical analysis showed highly significant decrease among septicemic groups (fullterms and preterms) less than control groups (fullterms and preterms) .

Table (16) & Figure (7) : Shows ranges & means ± standard deviations of serum insulin (picomol/ml) among the studied groups . Statistical analysis showed highly significant decrease among septicemic groups (fullterms and preterms) less than control groups (fullterms and preterms).

Table (17) : Shows ranges & means ± standard deviations of Insulin : glucose ratio among the studied groups . Statistical analysis showed no significant difference between septicemic and control fullterm newborns . Also no significant difference between septicemic and control preterm newborns .

Table (18) & Figure (8) : Shows ranges & means ± standard deviation of serum lactate (mmol/l) among the studied groups . Statistical analysis showed highly significant increase among septicemic groups (fullterms and preterms) more than control groups (fullterms and preterms) .

Table (19 & 20) : Shows ranges & means ± standard deviations of blood gases (pH , PO_2 , O_2 saturation , PCO_2 , bicarbonate) among the studied groups . Statistical analysis showed no significant difference between septicemic and control fullterm newborns . Also no significant difference between septicemic and control preterm newborns .

Table (21) : Shows correlation between blood glucose and other variables . Statistical analysis showed positive significant correlation between hypoglycemia and gram-negative septicemia , while no signficant correlations were found between hypoglycemia and other variables .

Table (22) : Shows correlation between serum lactate and other variables. No significant correlations were observed .

Table (23) : Shows comparison between the results of laboratory investigations in before and after treatment among septicemic fullterms .Statistical analysis showed signiticant difference between all variables except for blood gases and insulin : glucose ratio .

Table (24) : Shows comparison between the results of laboratory investigations before and after treatment among septicemic preterms . Statistical analysis showed significant difference between all variables except for blood gases and insulin : glucose ratio .