Results

Table (4): Comparison Between Cases and Control Groups as Regards Descriptive Data:

Descriptive data Items	Case group n = 35 (Mean ± SD)		Control group n = 20 (Mean ± SD)		Statistical test	p (Significance)
Gestational age (Wks)	38.23 ± 1.03		37.75 ± 0.79		$t = 1.80$	0.08 (NS)
Birth weight (Kg)	2.93 ± 0.55		3.45 ± 0.16		$t = 4.15$	< 0.0001 (**HS**)**
Sex Male Female	12 (34.3%) 23 (65.7%)		7 (35.0%) 13 (65.0%)		$X^2 = 0.003$	0.96 (NS)
Mode of delivery Vaginal Caesarian	12 (34.3%) 23 (65.7%)		12 (60%) 8 (40%)		$X^2 = 3.42$	0.06 (NS)
	Median	**IQR**	**Median**	**IQR**		
Apgar score 1min.	5.00	5.00 - 6.00	7.00	6.00 - 7.00	*Z= 5.19*	< 0.0001 (**HS**)**
Apgar score 5min.	8.00	7.00 - 8.00	9.00	9.00 - 9.75	$Z = 5.61$	< 0.0001 (**HS**)**

t = Student-t test, x^2 = Chi-Square Test,   Z= Mann-Whitney test

**Highly Significant test p<0.01

This table shows that there was no significant difference between Cases and Control groups as regards the mean gestational age, sex and mode of delivery. Birth weight and Apgar scores at 1 and 5 min. were highly significantly lower in cases group when compared to control group.

Table (5): Comparison Between Cases and Control Groups as Regards Risk Factors for Neonatal Sepsis and Fate :

Risk factors for neonatal sepsis	Case group n = 35 n (%)	Control group n = 20 n (%)	p (Significance)
PROM > 18 hrs	15 (42.9%)	0 (0.0%)	< 0.0001 (**HS**)**
Need for Resuscitation	20 (57.1%)	1 (5.0%)	< 0.0001 (**HS**)**
Maternal UTI	22 (62.9%)	3 (15.0%)	< 0.001 (**HS**)**
Chorioamnionit is	5 (14.3%)	0 (0.0%)	0.15 (NS)
Fate Recovery Death	32 (91.4%) 3 (8.6%)	20 (100%) 0 (0.0%)	0.29 (NS)

Chi-Square Test.   **Highly Significant test p<0.01

PROM = Premature Rupture Of Membrane; UTI = Urinary Tract Infection
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This table shows that the cases group has highly significant increase in the occurrence of PROM > 18 hours, need for resuscitation and maternal UTI , while there was no significant difference between both groups in the incidence of Chorioamnionitis or mortality rate.
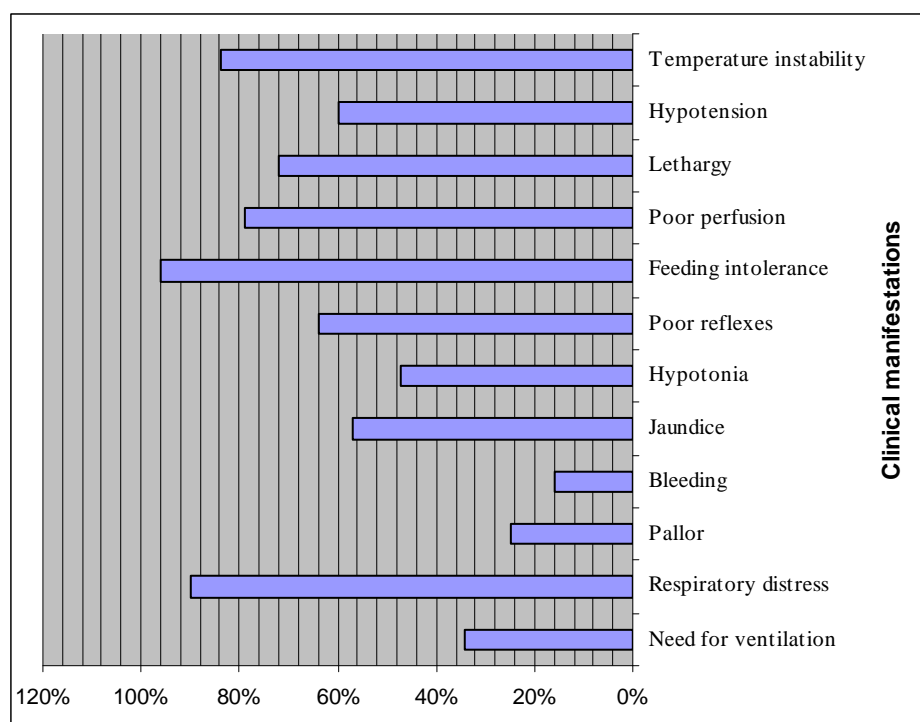
Figure (2) : Clinical Manifestations of Neonatal Sepsis in Cases Group.

This figure shows that 34% of cases needed mechanical ventilation , 90% developed respiratory distress, 25% developed pallor, 16% developed bleeding, 57% developed jaundice, 47% developed hypotonia. Also, this figure shows that 64% of cases had poor reflexes, 96% developed feeding intolerance, 79% had poor perfusion, 74% were lethargic, 60% developed hypotension and 84% had temperature instability.

**Table (6):** Comparison Between Cases and Control Groups as Regards Laboratory Data for Neonatal Sepsis:

| Laboratory data	Case group n = 35 (Mean ± SD)	Control group n = 20 (Mean ± SD)	p (Significance)
Hb (gm/dl)	12.57 ± 1.20	17.10 ± 2.02	$< 0\cdot.001$ (**HS**)**
TLC ($\times 10^9$/L)	22.58 ± 2.74	10.97 ± 3.59	$< 0\cdot.001$ (**HS**)**
Mature PMN ($\times 10^9$/L)	9.271 ± 4.552	6.28 ± 1.80	< 0.001 (**HS**)**
Immature PMN ($\times 10^9$/L)	2.749 ± 1.902	1.24 ± 0.2	< 0.001 (**HS**)**
I/T Ratio	0.20 ± 0.02	0.10 ± 0.02	< 0.001 (**HS**)**
Platelets ($\times 10^9$/L)	158 ± 41	275 ± 105	< 0.001 (**HS**)**
CRP (mg/L)	75.2 ± 27.011	0.0 ± 0.0	< 0.0001 (**HS**)**
S. Leptin (ng/ml) Before treatment After treatment	4.08 ± 0.49 2.45 ± 0.18	1.71 ± 0.15 1.71 ± 0.15	< 0.0001 (**HS**)** < 0.0001(**HS**)**

t = Student-t test
**Highly Significant test p<0.01

Hb, hemoglobin; TLC, total leucocytic count; PMN, polymorphnuclear leucocytes, I/T ratio, Immature to Total Neutrophil Ratio; CRP, C-Reactive Protein; s.Leptin ,serum Leptin level.

This table shows that there were highly significant decrease in Hb and platelets count in cases group compared to control group. Also there were highly significant increase in TLC, mature PMN count, immature PMN count, I/T ratio, CRP and Serum Leptin level (Before and After treatment) in cases group.
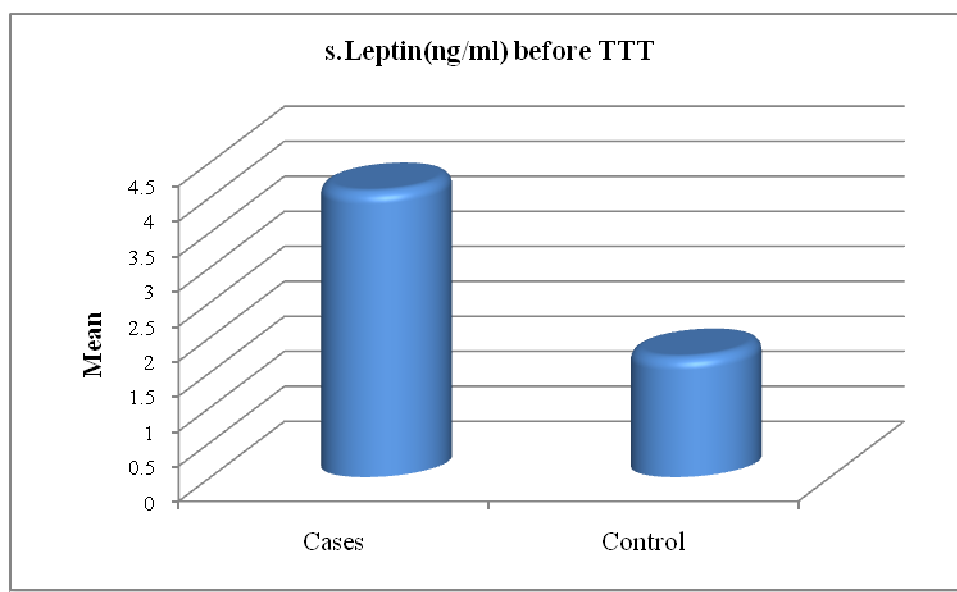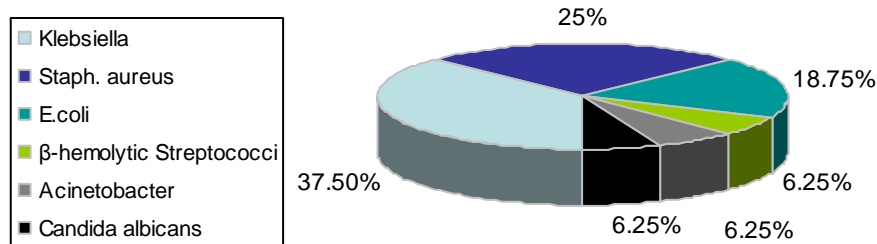
Figure (3) : Serum Leptin level (Before treatment) in Cases and Control Groups.

This figure shows that there was a highly significant increase in serum Leptin level on admission in cases group when compared to control group.
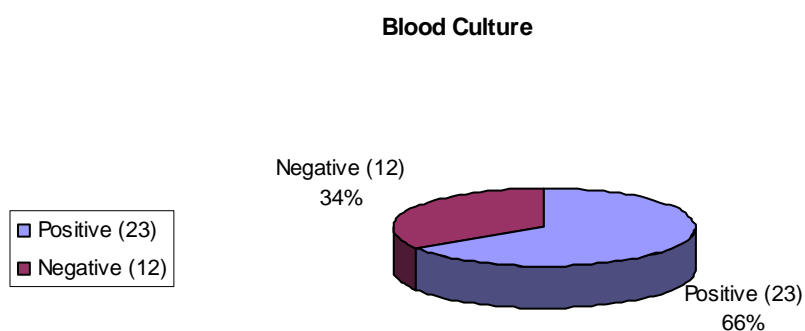
Figure (4): Percentage of Positive and Negative Blood Cultures in Cases Group.

Figure (5): Percentage of Different Organisms Isolated in Positive Blood Culture.

Figures (4) and (5) show that 66% of cases group (23 patient) had positive blood cultures, 37.5% of them were positive for Klebsiella, 25% were positive for staphylococcus aureus, 18.75% were positive for E.coli , 6.25% were positive for Beta-hemolytic Streptococci , 6.25% were positive for Acinobacter and 6.25% were positive for Candida albicans.

Table (7): Comparison Between Serum Leptin Level Before and After Treatment in Cases Group:

	Before (Mean± SD)	**After** (Mean± SD)	**Statistical test**	**p (Significance)**
S. Leptin (ng/ml)	4.08± 0.49	2.45± 0.18	t = 20.50	<0.0001 (**HS**)**

Paired t test
**Highly Significant test p<0.01
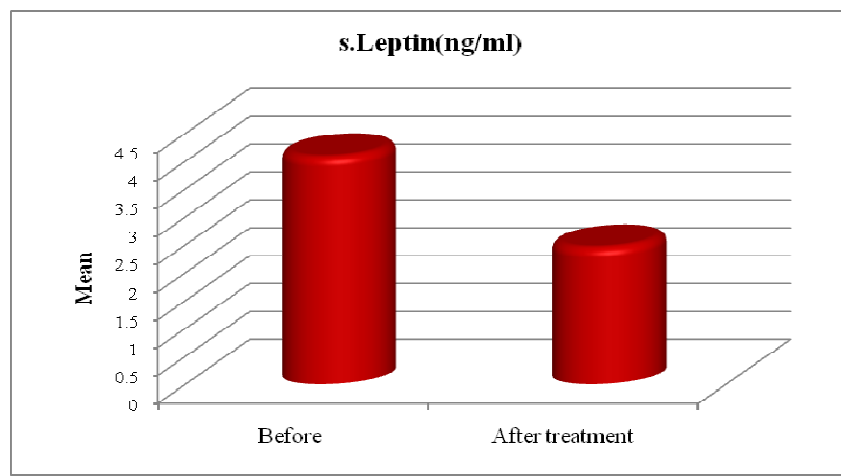
Figure (6) : Serum Leptin level Before and After Treatment in Cases group.

Table (7) and figure (6) show that there was a highly significant decrease in serum Leptin in cases group after successful management of neonatal sepsis.

Table (8): Correlation Between Serum Leptin and Other Measured Parameters in Cases Group:

Measured parameters	S. Leptin (ng/ml)			
	Pre		Post	
	r	p (Significance)	r	p (Significance)
Gestational age (Wks)	0.17	0.33 (NS)	0.16	0.36 (NS)
Birth weight (Kg)	0.08	0.63 (NS)	– 0.03	0.85 (NS)
Apgar 1	0.07	0.71 (NS)	0.10	0.56 (NS)
Apgar 5	– 0.10	0.58 (NS)	– 0.04	0.84 (NS)
TLC $(\times 10^9/L)$	– 0.10	0.56 (NS)	– 0.03	0.86 (NS)
ANC $(\times 10^9/L)$	– 0.144	0.44 (NS)	0.17	0.34 (NS)
I/T Ratio	– 0.28	0.10 (NS)	– 0.05	0.77 (NS)
I/M Ratio	– 0.111	0.55 (NS)	0.17	0.33 (NS)
Platelets $(\times 10^9/L)$	– 0.026	0.89 (NS)	0.17	0.34 (NS)
Hb (gm/dl)	– 0.17	0.33 (NS)	0.16	0.36 (NS)
CRP (mg/L)	– 0.16	0.36 (NS)	0.13	0.46 (NS)
Sepsis score	0.548	0.02 (**S**)*		

r = Pearson correlation coefficient test.   ** Significant test p<0.05*

TLC, total leucocytic count; ANC, absolute neutrophil count; , I/T ratio, Immature to Total Neutrophil Ratio; I/M ratio, Immature to Mature Neutrophil Ratio; Hb, hemoglobin; CRP, C-Reactive Protein.

This table shows that Serum Leptin showed significant positive correlation with Sepsis score [The higher the sepsis score, the higher the serum Leptin level], While there were no significant correlations with other measured parameters in cases group.

Table (9): Comparison Between Serum Leptin Level in patients with Positive and Negative Blood Cultures in Cases Group:

	Positive blood cultures (Mean ± SD)	**Negative blood cultures** (Mean ±SD)	P (Significance)
S. Leptin level(**ng/ml**)	3.85 ±0.60	2.50±0.25	<0.05(**S**)

t = Student-t test   ** Significant test p<0.05*

This table shows that serum Leptin was significantly higher in patients with positive blood culture compared to those with negative blood culture .

Table (**10**): Comparison Between Survivors and Non-survivors in Cases Group:

|	**Survivors n = 32** (Mean ± SD)	**Non-Survivors n = 3** (Mean ± SD)	**Statistical test** (*t/z*)	**p (Significance)**
NICU Stay (Days)	25.65 ± 17.928	27.40 ± 21.078	$Z = -0.155$	0.880 (NS)
TLC ($\times 10^9$/L)	17.73 ± 8.29	13.8 ± 10.5	$t = -1.093$	0.284 (NS)
ANC ($\times 10^9$/L)	10.51 ± 6.38	9.89 ± 8.346	$t = 0.226$	0.823 (NS)
Immature PMN ($\times 10^9$/L)	2.48 ± 1.942	3.004 ± 4.48	$Z = -0.596$	0.559 (NS)
Mature PMN ($\times 10^9$/L)	8.631 ± 4.5889	7.886 ± 6.4549	$t = 0.365$	0.718 (NS)
I/T Ratio	0.181 ± 0.09	0.13 ± 0.106	$Z = -1.526$	0.131 (NS)
I/M Ratio	0.23 ± 0.123	0.16 ± 0.135	$Z = -1.701$	0.091 (NS)
Platelets ($\times 10^9$/L)	134.3 ± 105.3	90.0 ± 40.07	$Z = -1.212$	0.231 (NS)
Hb (gm/dl)	12.84 ± 2.40	11.55 ± 2.29	$t = 1.405$	0.171 (NS)
CRP (mg/L)	70.8 ± 26.37	76.8 ± 31.59	$Z = -0.573$	0.619 (NS)
S. Leptin (ng/ml) (Before treatment)	4.17 ± 0.37	4.23 ± 0.26	$Z = -1.438$	0.155 (NS)

t = Student-t test, z = Mann-Whitney Test

NICU, neonatal intensive care unit ; TLC, total leucocytic count; ANC, absolute neutrophil count; PMN, polymorphnuclear leucocytes, I/T ratio, Immature to Total Neutrophil Ratio; I/M ratio, Immature to Mature Neutrophil Ratio; Hb, hemoglobin; CRP, C-Reactive Protein; s.Leptin ,serum Leptin level.

This table shows that there was no significant difference between survivors and non-survivors in Cases group as regards the table mentioned parameters.

Table (11): Sensitivity and Specificity of Serum Leptin Level to Detect Sepsis Using ROC Curve:

Area under the curve	Cutoff	Sensitivity	Specificity
79.2%	2.750	75%	70%

ROC curve
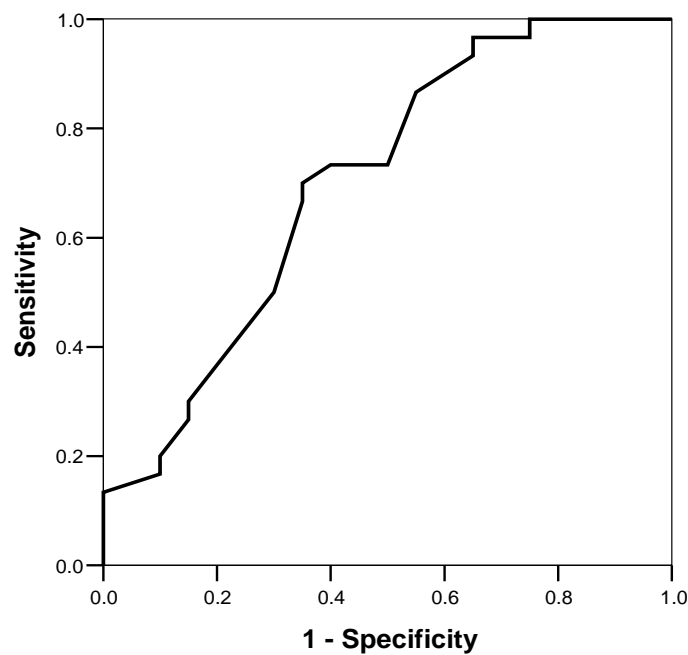
Figure (7): **Receiver Operating Characteristic (ROC) Curve.**

The ROC Curve defines the best cutoff value of S. leptin to detect sepsis. It showed that S. leptin level was reliable to detect sepsis P <0.01. The cutoff value was 2.75 ng/ml with 75% sensitivity and 70% specificity.