RESULTS

***Table (1)*:** Sex distribution among the studied groups.

		Sex		
		Male	**Female**	**Total**
Control	**N**	3	7	10
	%	30	70	100
Case	**N**	16	4	20
	%	80	20	100
Total	**N**	19	11	30
	%	63.3	37.7	100
Z		2.7		
P-value		<0.05		

The table shows that there is a statistically significant difference between male and female distribution in the study group in comparison with the control group.

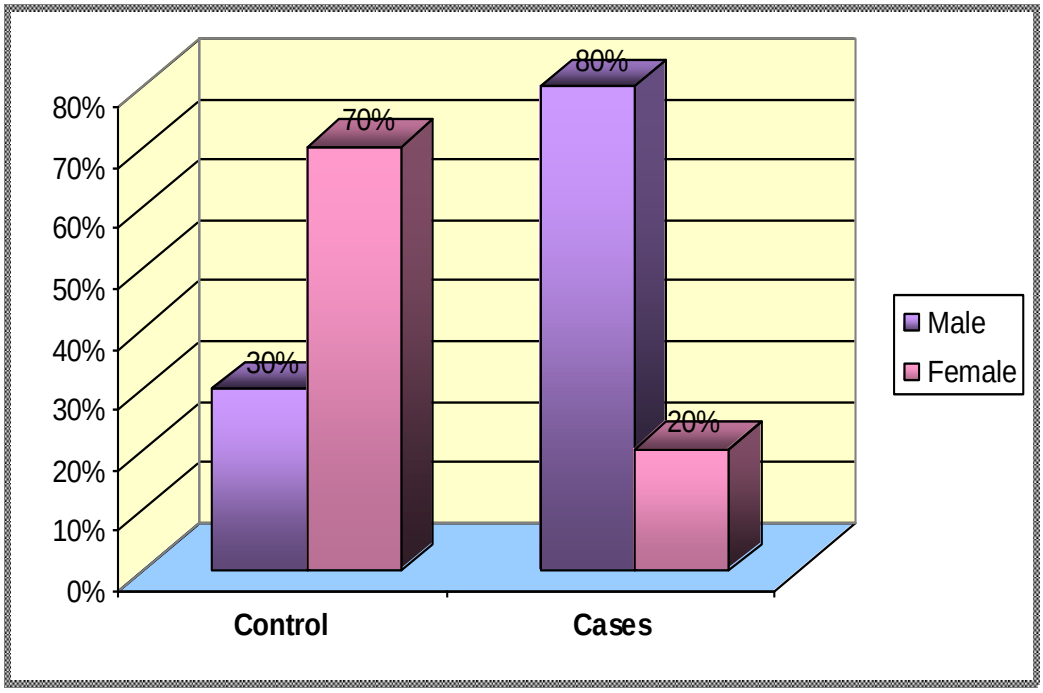

Fig. (1): Sex distribution among the studied groups.

***Table (2)*:** Comparison between the studied groups as regard to gestational age.

	Gestational age		
	Control "group I"	**Study "group II"**	
		Group IIa	Group IIb
		> 32wks	≤ 32wks
Range	28-34	33-34	28 - 32
Mean	31	34	30.2
± SD	2.1	0.0	1.6
t. test	1.8	0.98	3.07
p. value	>0.05*	>0.05**	<0.01***

*Between control and group IIa. ** Between control and group IIb.

*** Between group IIa and group IIb.

The table shows that there is no statistically significant difference between group I and group "IIa" or group "IIb" as regard to gestational age, but there is a highly significant statistical difference between group IIa and group IIb as regard to gestational age.

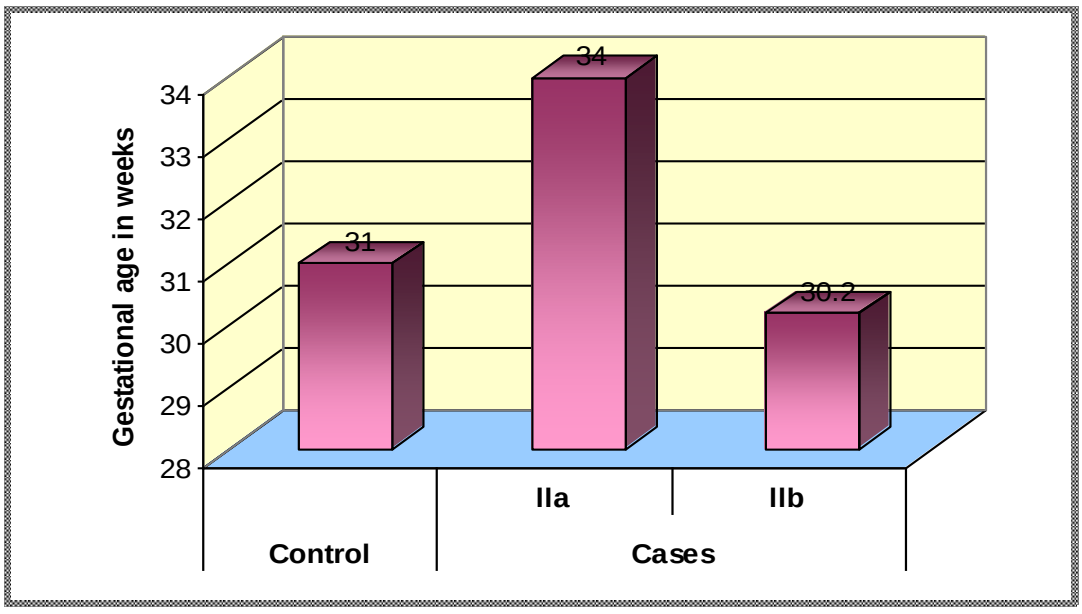

Fig. (2): Comparison between the studied groups as regard to gestational age.

Table (3): Comparison between the studied groups as regard to birth weight.

	Birth weight		
	Control "Group I"	**Study**	
		Group IIa	Group IIb
		>1500gm	<1500gm
Range	900-2000	1500-1800	900-1444
Mean	1285	1683	1169
± SD	311	160.7	168
t. test	2.08	1.2	4.9
p. value	>0.05*	>0.05 **	<0.01***

*Between control and group IIa. ** Between control and group IIb.

*** Between group IIa and group IIb.

The table shows that there is no statistically significant difference between group I and group "IIa" or group "IIb" as regard to birth weight, but there is a highly significant statistical difference between group IIa and group IIb as regard to birth weight.

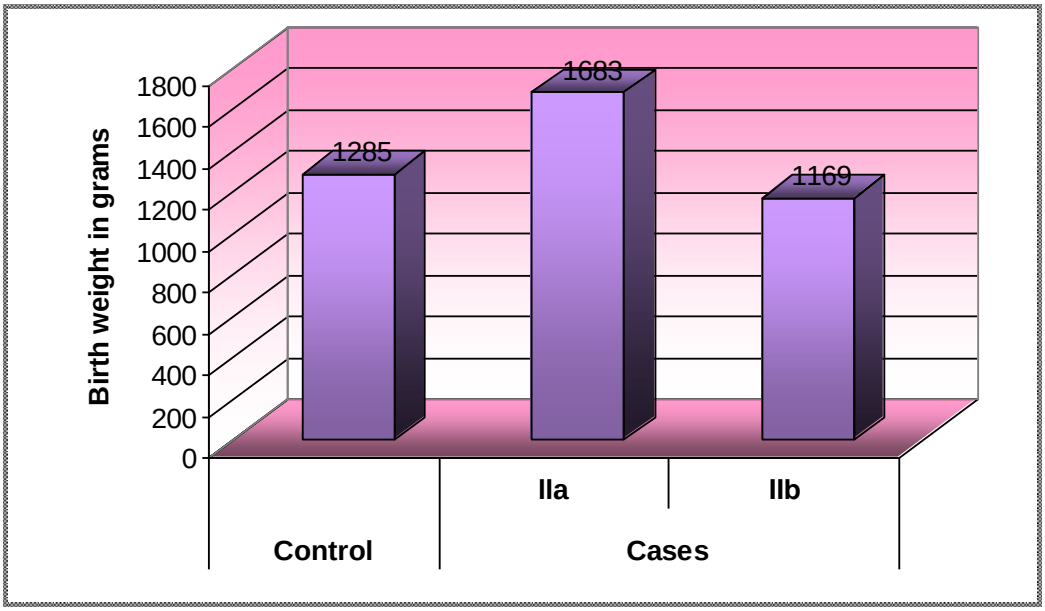

***Fig. (3)*:** Comparison between the studied groups as regard to birth weight.

***Table (4)*:** Distribution of studied groups regarding to mode of delivery.

		Mode of delivery		
		C.S	NVD	Total
Control	N	3	7	10
	%	30	70	100
Case	N	5	15	20
	%	25	75	100
Total	N	8	22	30
	%	26.6	73.4	100
Z		0.29		
p. value		>0.05		

The table shows that there is no statistically significant difference between modes of delivery in the study group in comparison with the control group.

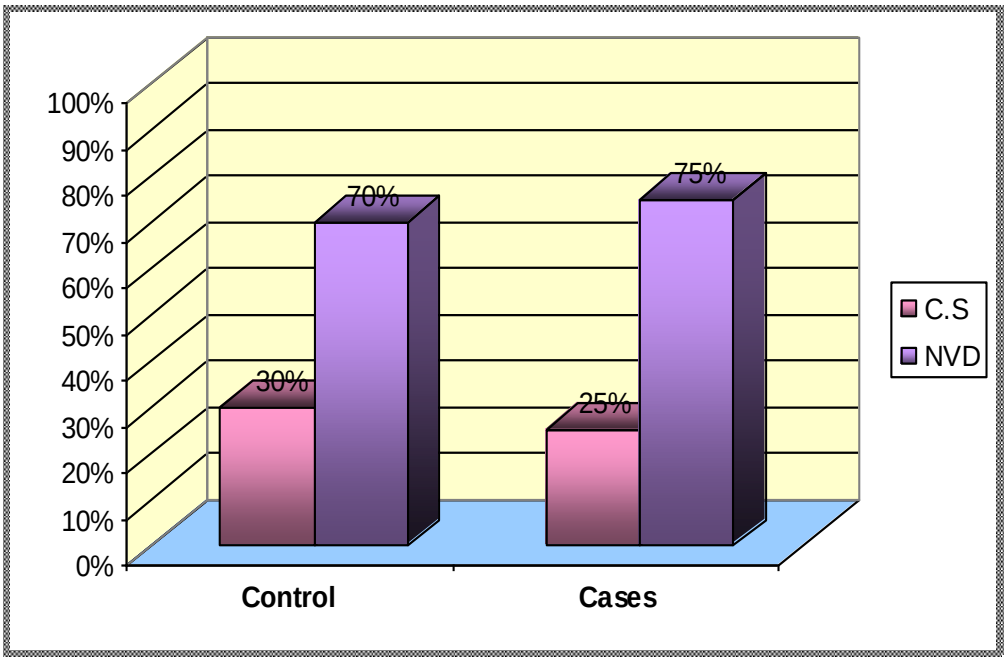

Fig. (4): Distribution of studied groups regarding to mode of delivery.

***Table (5)*:** Comparison between the studied groups as regard to Apgar score at 1 min.

	Apgar score at 1 min	
	Control	**Study**
Range	6 - 9	6 - 8
Mean	7.7	7.3
± SD	0.82	0.57
t. test	1.5	
p. value	>0.05	

The table shows that there is no statistically significant difference between Apgar score at 1 min in the study group in comparison with the control group.

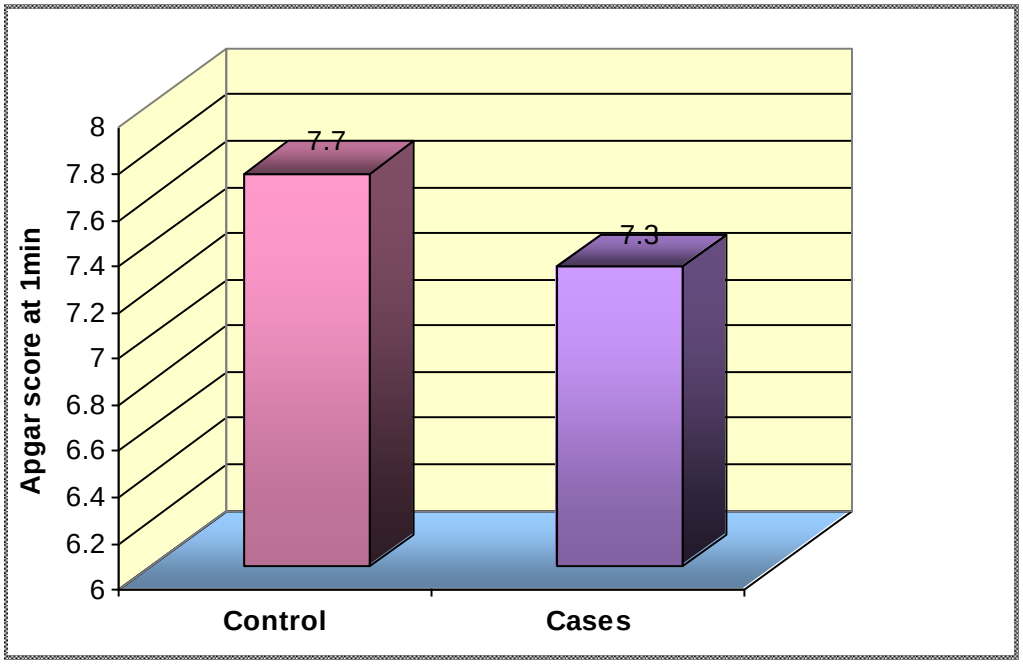

Fig. (5): Comparison between the studied groups as regard to Apgar score at 1 min.

***Table (6)*:** Comparison between the studied groups as regard to Apgar score at 5 min.

	Apgar score at 5 min	
	Control	**Study**
Range	6 - 9	7- 9
Mean	8.3	8
± SD	1.05	0.6
t. test	0.82	
p. value	>0.05	

The table shows that there is no statistically significant difference between Apgar score at 5 min in the study group in comparison with the control group.

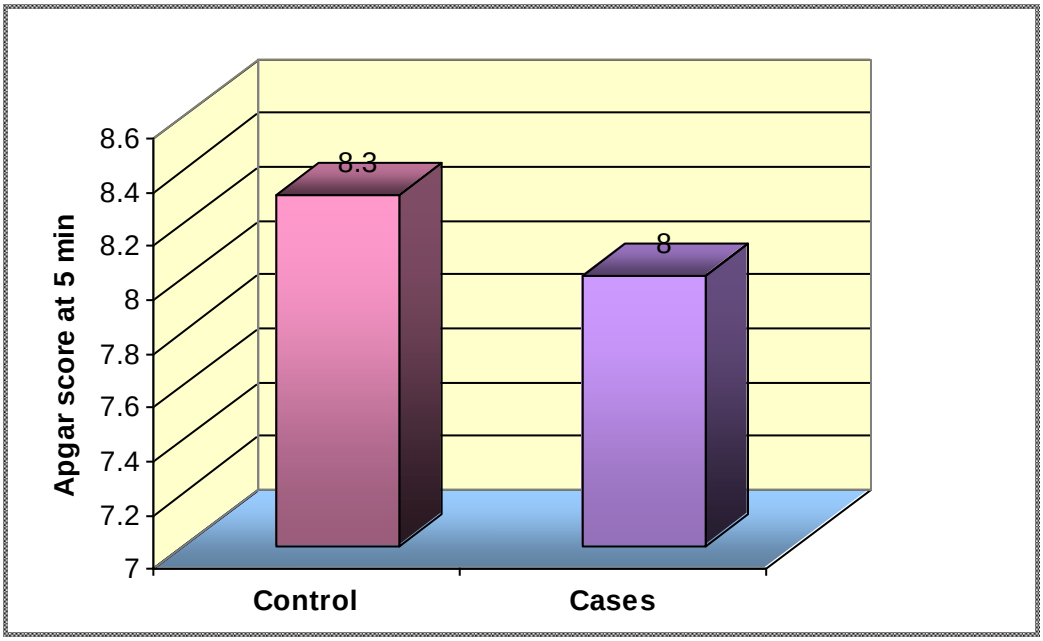

Fig. (6): Comparison between the studied groups as regard to Apgar score at 5 min.

***Table (7)*:** Comparison between the studied groups as regard to maternal plasma free carnitine levels.

	Maternal plasma free carnitine	
	Control	**Study**
Range	38.1-45.4	33.8-48.1
Mean	41.5	41
± SD	1.7	3.2
t. test	0.47	
p. value	>0.05	

The table shows that there is no statistically significant difference between maternal plasma free carnitine in the study group in comparison with the control group.

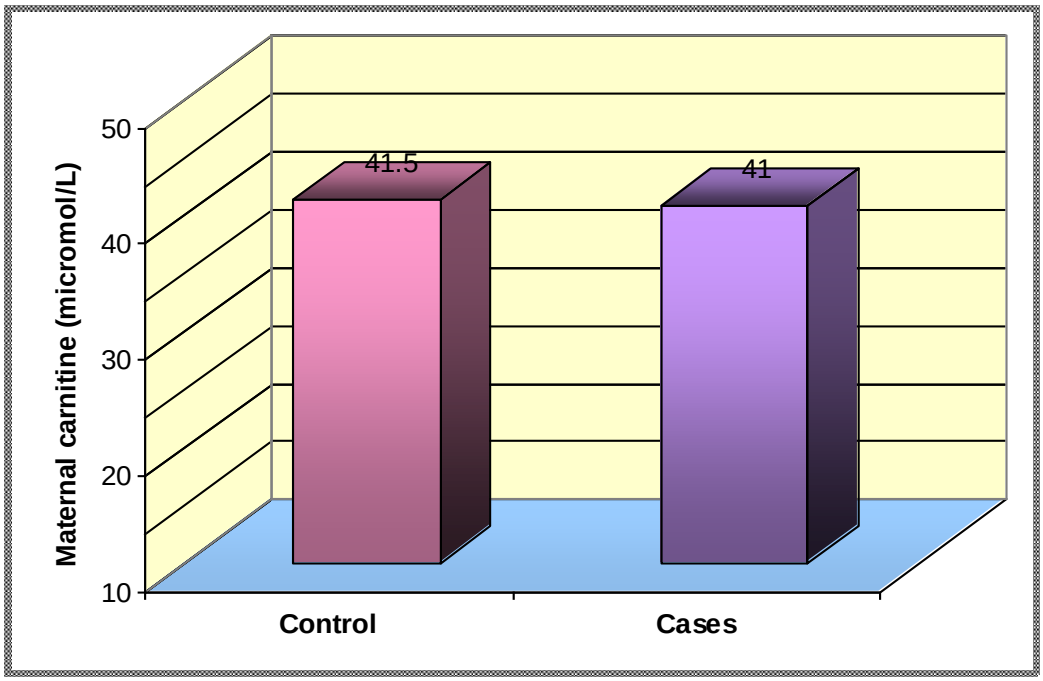

Fig. (7): Comparison between the studied groups as regard to maternal plasma free carnitine level.

Table (8): Comparison between maternal plasma free carnitine levels and different gestational ages of the studied groups.

	Maternal plasma free carnitine		
	Control	**Study**	
		Group IIa	Group IIb
		>32wks	≤32 wks
Range	38.1- 45.4	33.8-48.1	39.1-41.9
Mean	41.5	41.8	40.4
± SD	1.7	4.7	0.93
t. test	1.7	0.9	1.6
p. value	>0.05*	>0.05**	>0.05***

*Between control and group IIa. ** Between control and group IIb.

*** Between group IIa and group IIb.

The table shows that there is no statistically significant difference between maternal plasma free carnitine levels in group I and both divisions of group II. Also, there is no statistically significant difference between these levels in group "IIa" and group "IIb" as regard to gestational age.

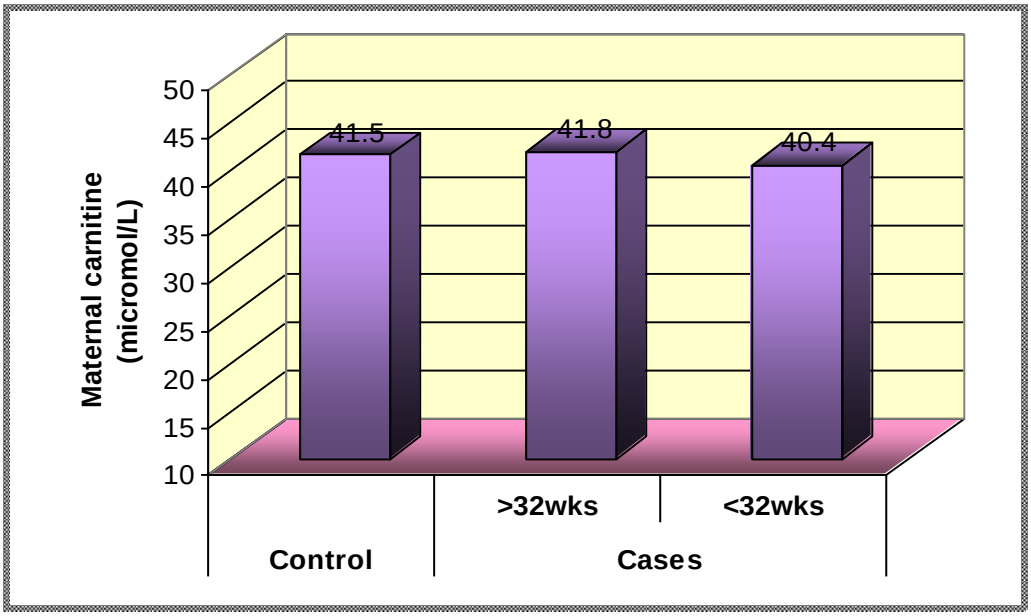

Fig. (8): Comparison between maternal plasma free carnitine level and different gestational ages of the studied groups.

Table (9): Comparison between maternal plasma free carnitine levels and different birth weights of the studied groups.

	Maternal plasma free carnitine		
	Control	**Study**	
		Group IIa	Group IIb
		>1500gms	<1500gms
Range	38.1 – 45.4	40.1-45.6	33.8-48.1
Mean	41.5	43.3	40.6
± SD	1.7	2.8	3.2
t. test	0.079	1.5	0.96
p. value	>0.05*	>0.05**	>0.05***

*Between control and group >1500. ** Between control and <1500.

*** Between group >1500 and group <1500.

The table shows that there is no statistically significant difference between maternal plasma free carnitine levels in group I and both divisions of group II. Also, there is no significant difference between these levels in group "IIa" and group "IIb" as regard to birth weight.

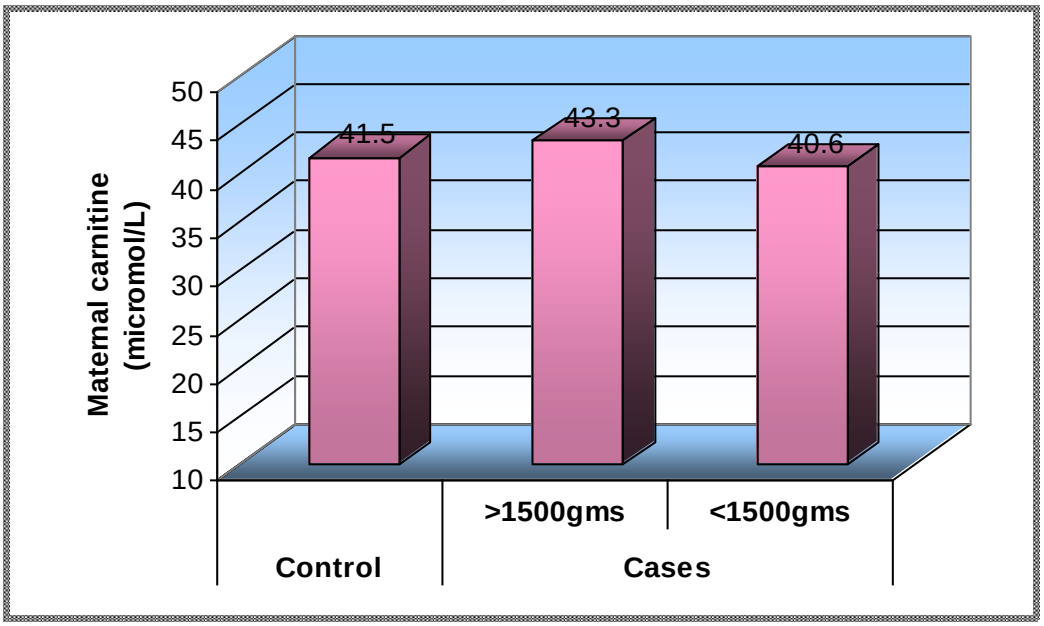

Fig. (9): Comparison between maternal plasma free carnitine level and different birth weights of the studied groups.

Table (10): Comparison between maternal plasma free carnitine levels and mode of delivery of the studied groups.

	Maternal plasma free carnitine			
	Control		**Study**	
	C.S	**NVD**	**C.S**	**NVD**
Range	41.1 – 42.1	38.1 -45.4	39.9-47.2	33.8 – 48.1
Mean	41.5	41.5	42.5	40.5
± SD	0.5	2.1	3.1	3.2
t. test	0.010*		1.2**	
p. value	>0.05*		>0.05**	

*Between CS and NVD in control group. ** Between CS and NVD in study group.

The table shows that there is no statistically significant difference between maternal plasma free carnitine levels in preterm infants delivered by C.S and those delivered vaginally in both control and study groups.

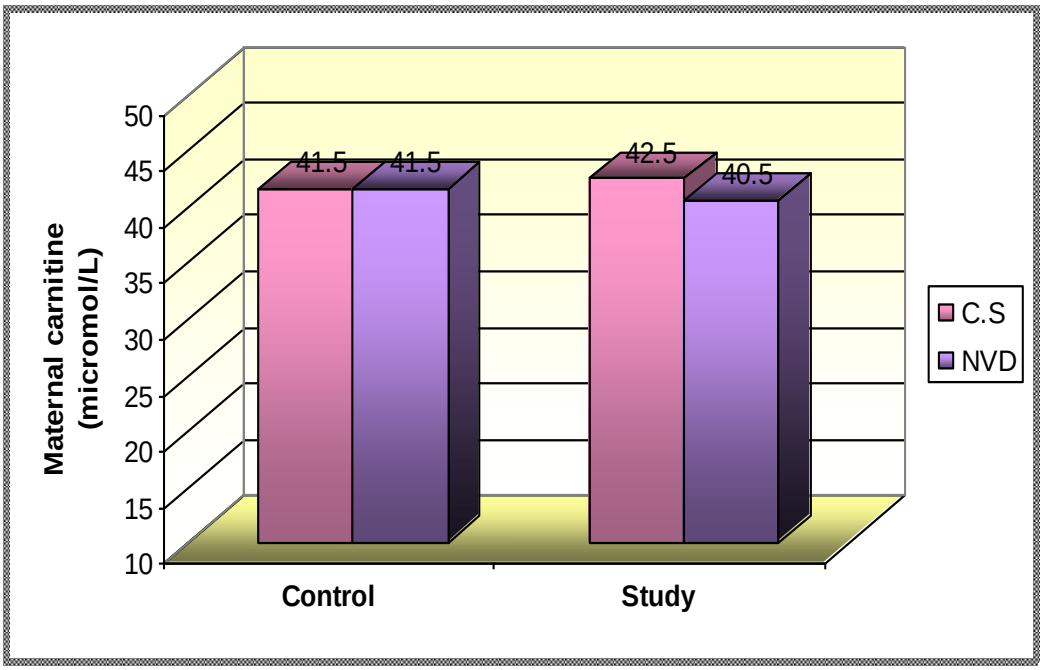

Fig. (10): Comparison between maternal plasma free carnitine levels and mode of delivery of the studied groups.

Table (11): Comparison between maternal plasma free carnitine levels and sex distribution of the studied groups.

	Maternal plasma free carnitine			
	Control		**Study**	
	Male	Female	Male	Female
Range	40.5 – 41.8	38.1 – 45.4	33.8 – 48.1	40.1-45.6
Mean	41.2	41.6	40.6	42.8
± SD	0.66	2.1	3.3	2.5
t. test	0.30*		2.04**	
p. value	>0.05*		>0.05**	

*Male and female in control group. ** Male and female in study group.

The table shows that there is no statistically significant difference between maternal plasma free carnitine levels in both sexes in group I in comparison to their levels in group II.

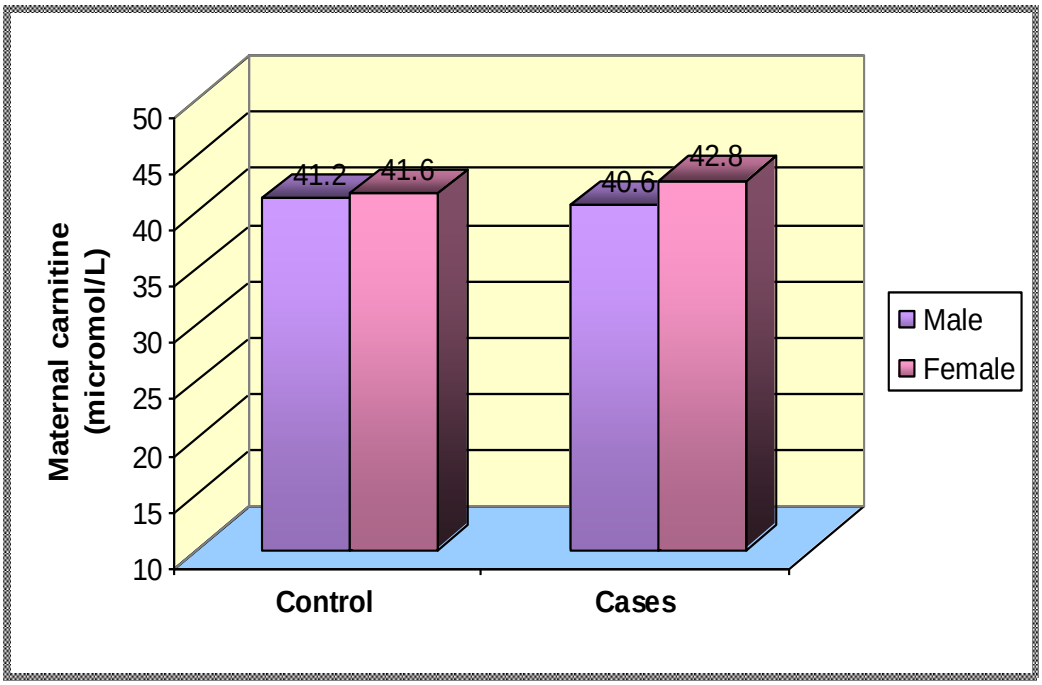

Fig. (11): Comparison between maternal plasma free carnitine levels and sex distribution of the studied groups.

Table (12): Comparison between the studied groups as regard to neonatal plasma free carnitine levels (1st sample).

	Neonatal plasma carnitine (1st sample)	
	Control	**Study**
Range	35.9-49.1	19.9-32.6
Mean	41.4	25.1
± SD	4.3	3.9
t. test	4.4	
p. value	<0.01	

The table shows that there is a highly significant statistical difference between neonatal plasma free carnitine levels (1st sample) in the study group in comparison with the control group.

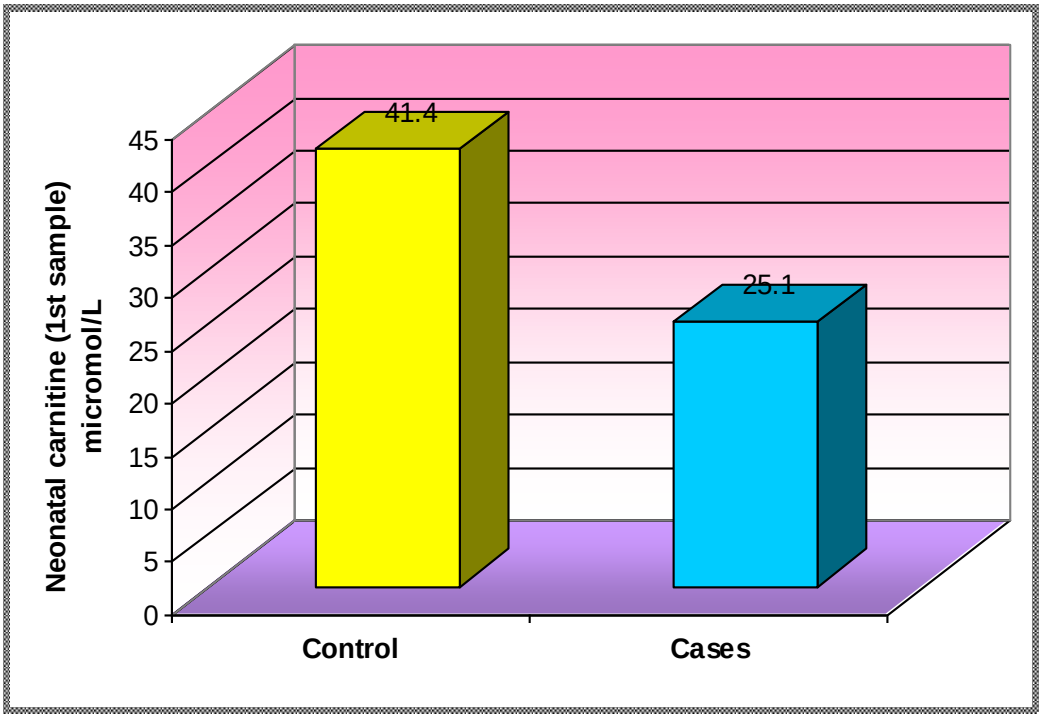

Fig. (12): Comparison between the studied groups as regard to neonatal plasma free carnitine levels (1st sample).

***Table (13)*:** Comparison between neonatal plasma free carnitine levels (1st sample) and different gestational ages of the studied groups.

	Neonatal plasma carnitine (1st sample)		
	Control	**Study**	
		Group IIa	Group IIb
		>32wks	≤32 wks
Range	35.9 - 49.1	19.9 – 30.1	20.1 – 32.6
Mean	41.4	25.4	24.9
± SD	4.3	3.8	4.1
t. test	4.4	10.3	0.05
p. value	<0.01*	<0.01**	>0.05***

*Between control and group IIa. ** Between control and group IIb.

*** Between group IIa and group IIb.

The table shows that there is a highly significant statistical difference between neonatal plasma free carnitine levels (1st sample) in group I and both divisions of group II, but there is no statistically significant difference between these levels in group "IIa" and group "IIb" as regard to gestational age.

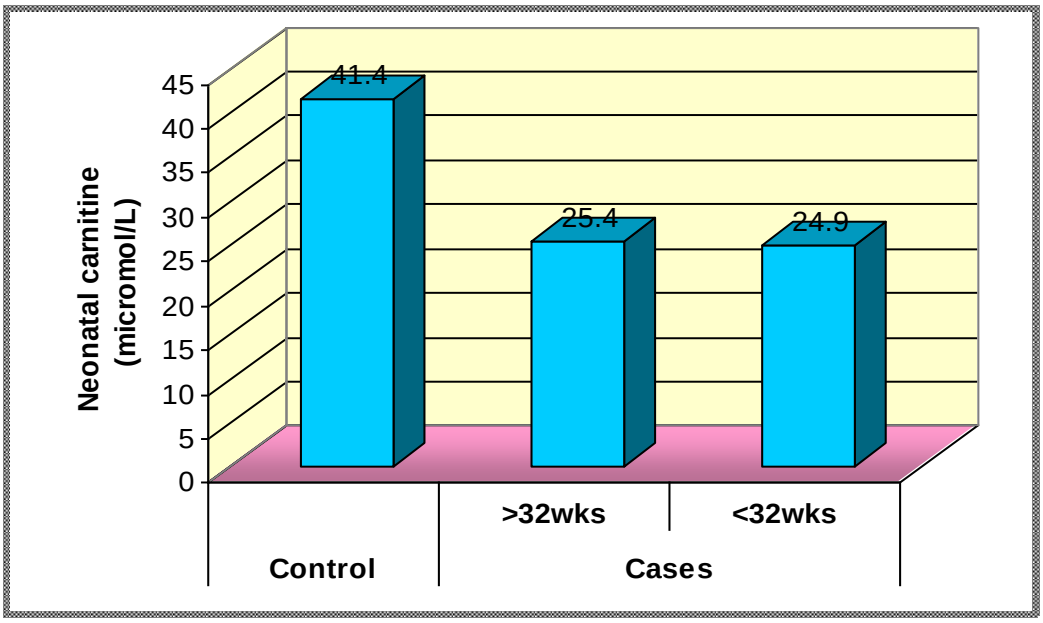

Fig. (13): Comparison between neonatal plasma free carnitine levels (1st sample) and different gestational ages of the studied groups.

Table (14): Comparison between neonatal plasma free carnitine levels (1st sample) and different birth weights of the studied groups.

	Neonatal plasma carnitine (1st sample)		
	Control	**Study**	
		Group IIa	Group IIb
		>1500gms	<1500gms
Range	35.9 - 49.1	19.9 – 30.1	20.1 – 32.6
Mean	41.4	25.3	25.1
± SD	4.3	5.1	3.8
t. test	5.4	10.1	0.06
p. value	<0.01*	<0.01**	>0.05***

*Between control and group >1500. ** Between control and <1500.

*** Between group >1500 and group <1500.

The table shows that there is a highly significant statistical difference between neonatal plasma free carnitine levels (1st sample) in group I and both divisions of group II, but there is no statistically significant difference between these levels in group "IIa" and group "IIb" as regard to birth weight.

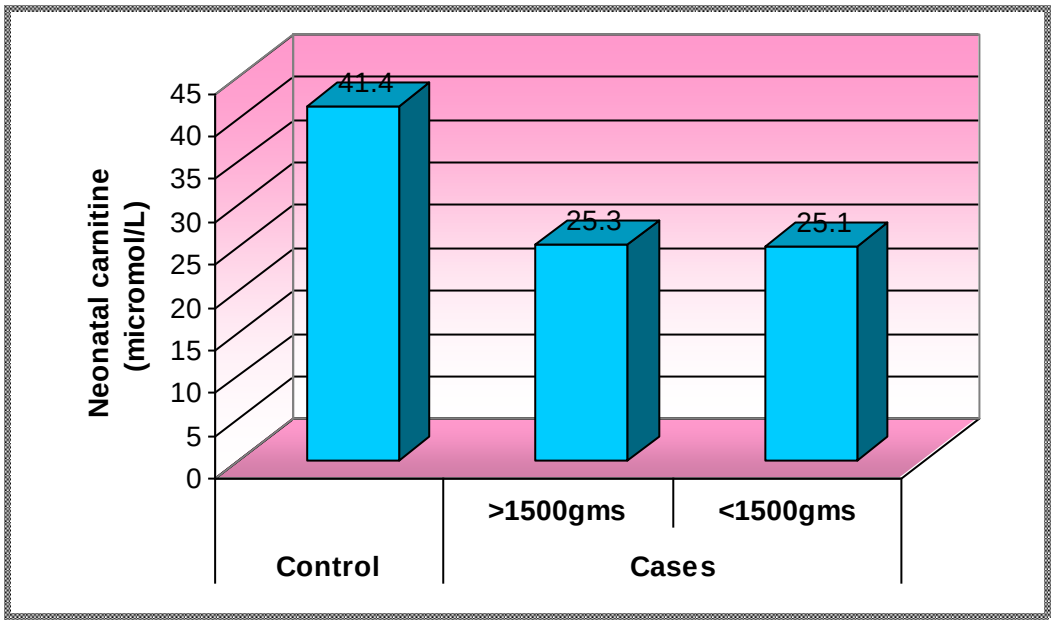

Fig. (14): Comparison between neonatal plasma free carnitine levels (1st sample) and different birth weights of the studied groups.

Table (15): Comparison between neonatal plasma free carnitine levels (1st sample) and mode of delivery of the studied groups.

	Neonatal plasma carnitine (1st sample)			
	Control		**Study**	
	C.S	**NVD**	**C.S**	**NVD**
Range	38.6 – 45.1	35.9 – 49.1	19.9-31.1	20.1-32.6
Mean	41.3	41.4	26.2	24.8
± SD	3.3	4.4	4.5	3.7
t. test	0.44*		0.067**	
p. value	>0.05*		>0.05**	

*Between CS and NVD in control group. ** Between CS and NVD in study group.

The table shows that there is no statistically significant difference between neonatal plasma free carnitine levels (1st sample) in preterm infants delivered by C.S and those delivered vaginally in both control and study groups.

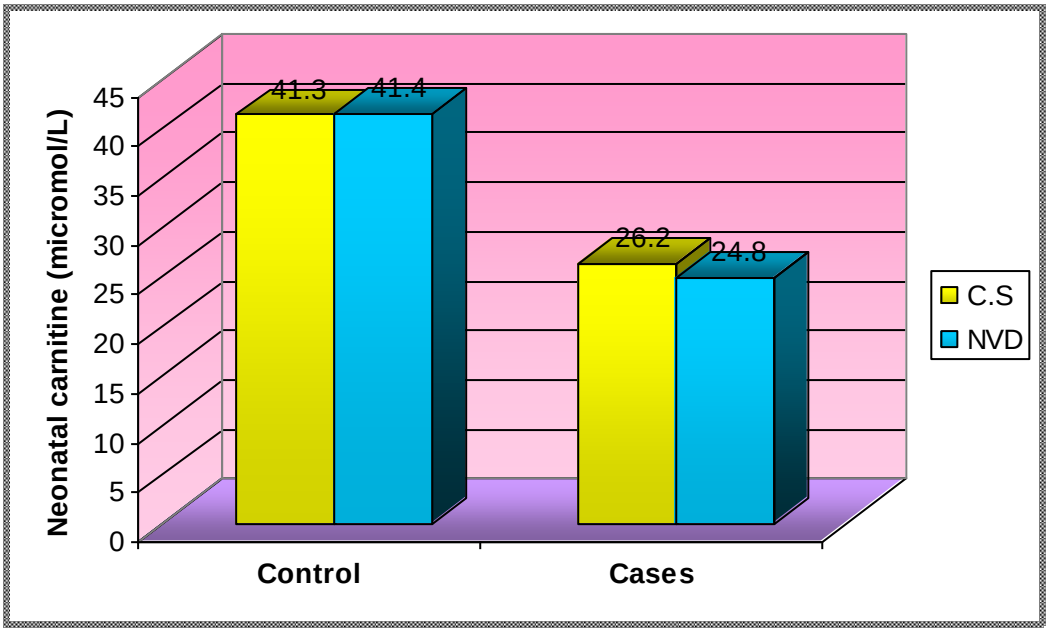

Fig. (15): Comparison between neonatal plasma free carnitine levels (1st sample) and mode of delivery of the studied groups.

Table (16): Comparison between neonatal plasma free carnitine levels (1st sample) and sex distribution of the studied groups.

	Neonatal plasma carnitine (1st sample)			
	Control		**Study**	
	Male	**Female**	**Male**	**Female**
Range	35.9-45.1	37.7-49.1	20.1-32.6	19.9-30.1
Mean	41.2	41.6	25.1	25
± SD	0.66	2.1	3.9	4.2
t. test	0.30*		0.075**	
p. value	>0.05*		>0.05**	

*Male and female in the control group. ** Male and female in the study group.

The table shows that there is no statistically significant difference between neonatal plasma free carnitine levels (1st sample) in both sexes in group I in comparison to their levels in group II.

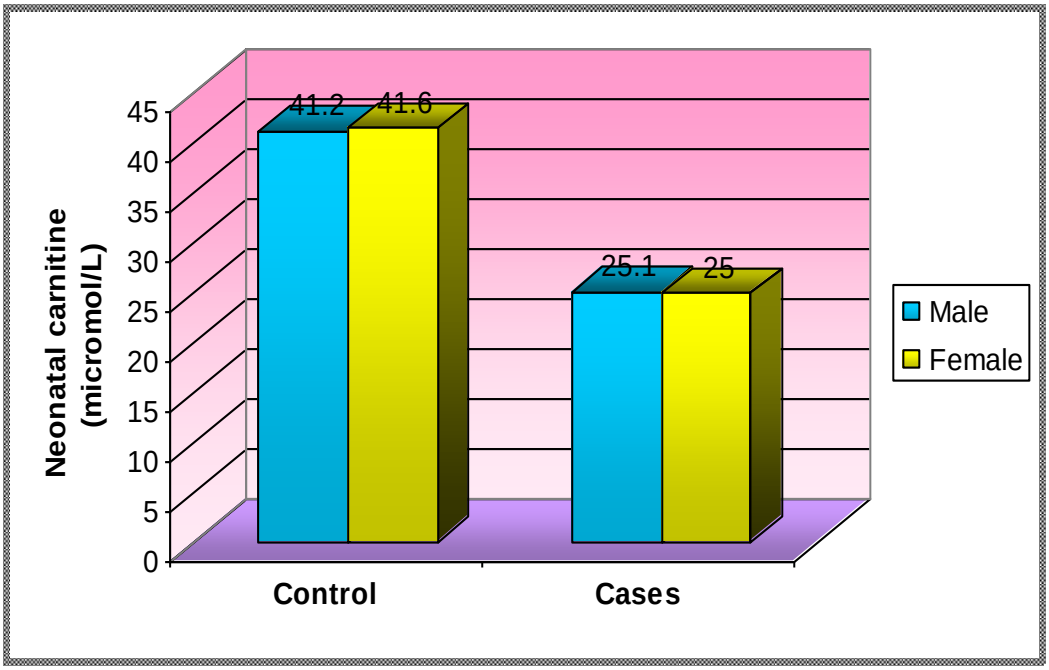

Fig. (16): Comparison between neonatal plasma free carnitine levels (1st sample) and sex distribution of the studied groups.

Table (17): Comparison between the 1st sample and the 2nd sample of neonatal plasma free carnitine in the RDS group (groupII).

	1st neonatal sample	2nd neonatal sample
Range	19.9 – 32.6	17.1 – 28.9
Mean	25.1	21.7
SD	3.9	3.6
t. test	2.8	
p. value	<0.01	

The table shows a highly significant statistical difference between 1st sample and 2nd sample of neonatal plasma free carnitine level among the study group (groupII).

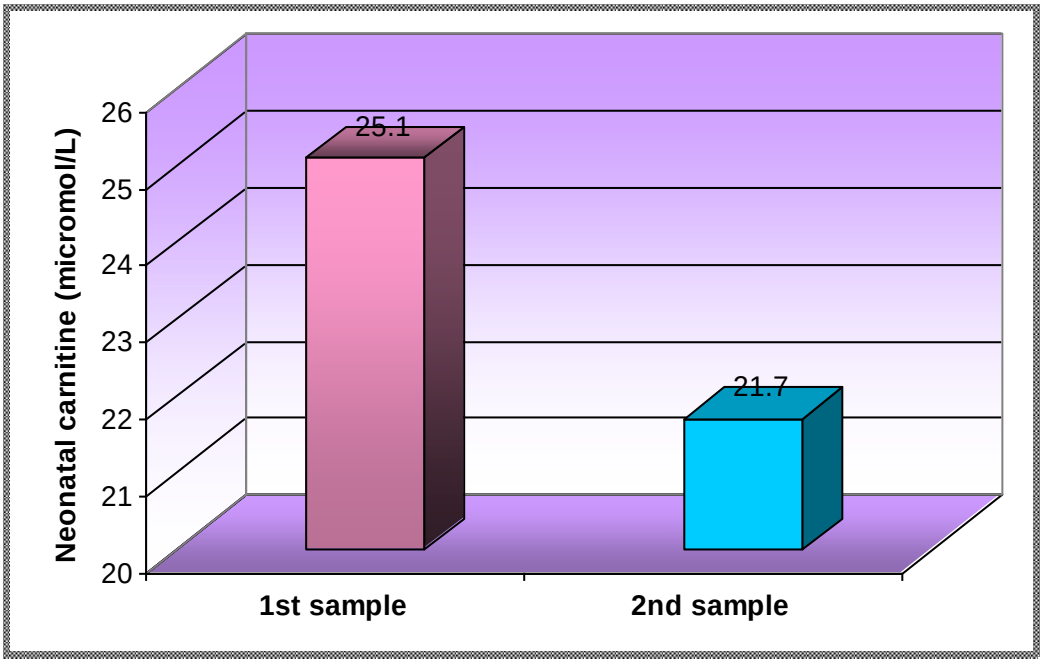

Fig. (17): Means of 1st sample and 2nd sample of neonatal plasma carnitine level among the study group (group II).

Table (18): Comparison between maternal plasma free carnitine levels in different grades of respiratory distress of the studied groups.

	Control (No distress)	**Moderate distress**	**Severe distress**	**F**	**P**
X±SD	41.5 ± 1.7	41 ± 3.4	41 ± 3.1	0.08	>0.05

The table shows that there is no statistically significant difference between maternal plasma free carnitine levels in different grades of respiratory distress in the study group in comparison with the control group.

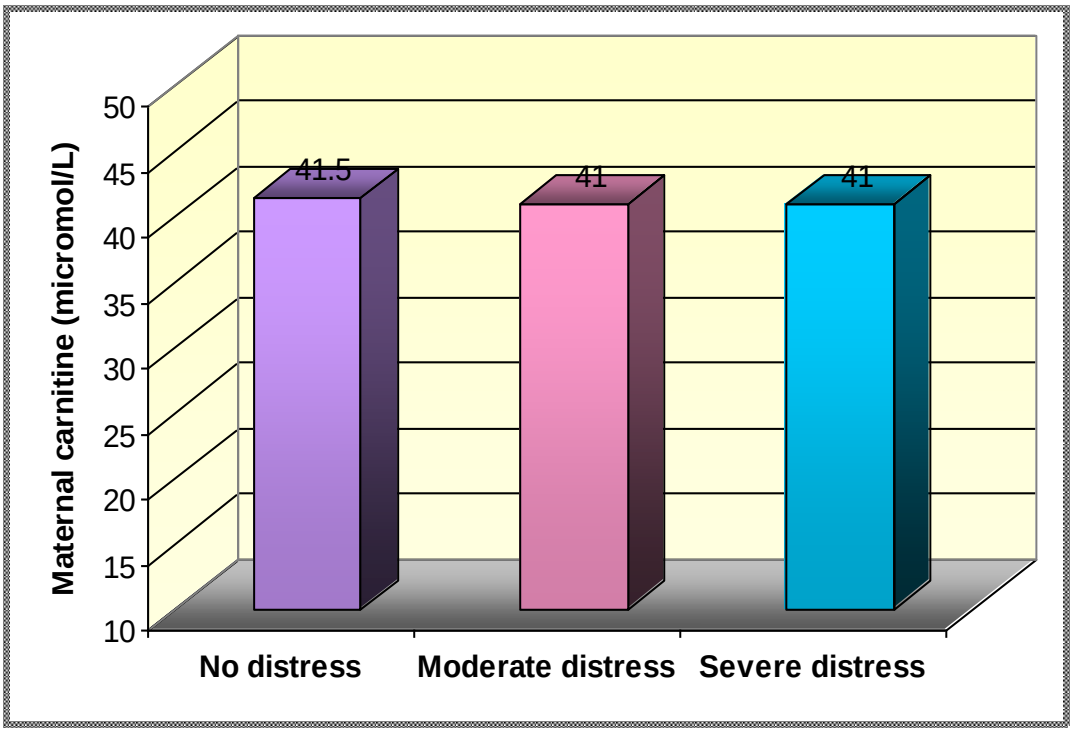

Fig. (18): Comparison between maternal plasma free carnitine levels in different grades of respiratory distress of the studied groups.

Table (19): Comparison between neonatal plasma carnitine levels (1st sample) in different grades of respiratory distress of the studied groups.

	Control (No distress)	Moderate distress	Severe distress	F	P
X±SD	41.4 ± 4.3	27.6 ± 2.9	21.4 ± 1.05	96	< 0.0001

The table shows that there is a highly significant statistical difference between neonatal plasma free carnitine levels (1st sample) in different grades of respiratory distress in the study group in comparison with the control group.

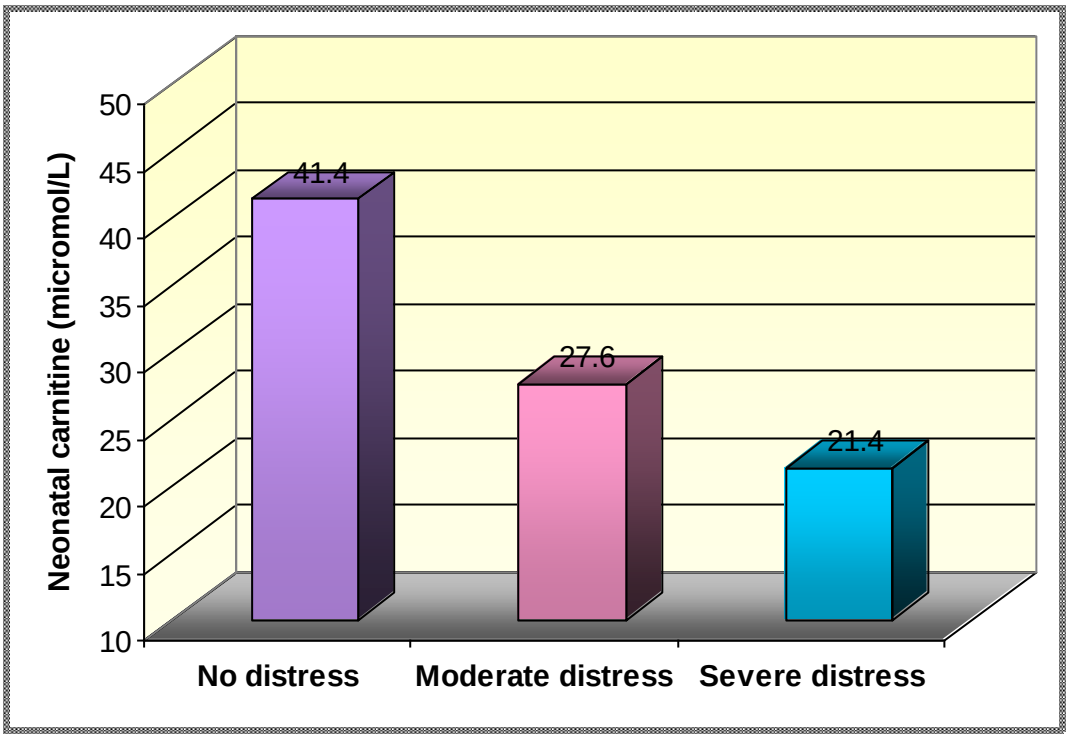

Fig. (19): Comparison between neonatal plasma carnitine level (1st sample) in different grades of respiratory distress of the studied groups.

Table (20): Comparison between neonatal plasma carnitine levels (2nd sample) in different grades of respiratory distress in the study group (group II).

	Moderate distress	**Severe distress**	**t**	**P**
X±SD	23.5 ± 3.4	18.9 ± 1.6	3.4	< 0.01

The table shows that there is a highly significant statistical difference between neonatal plasma free carnitine levels (2nd sample) in different grades of respiratory distress in the study group.

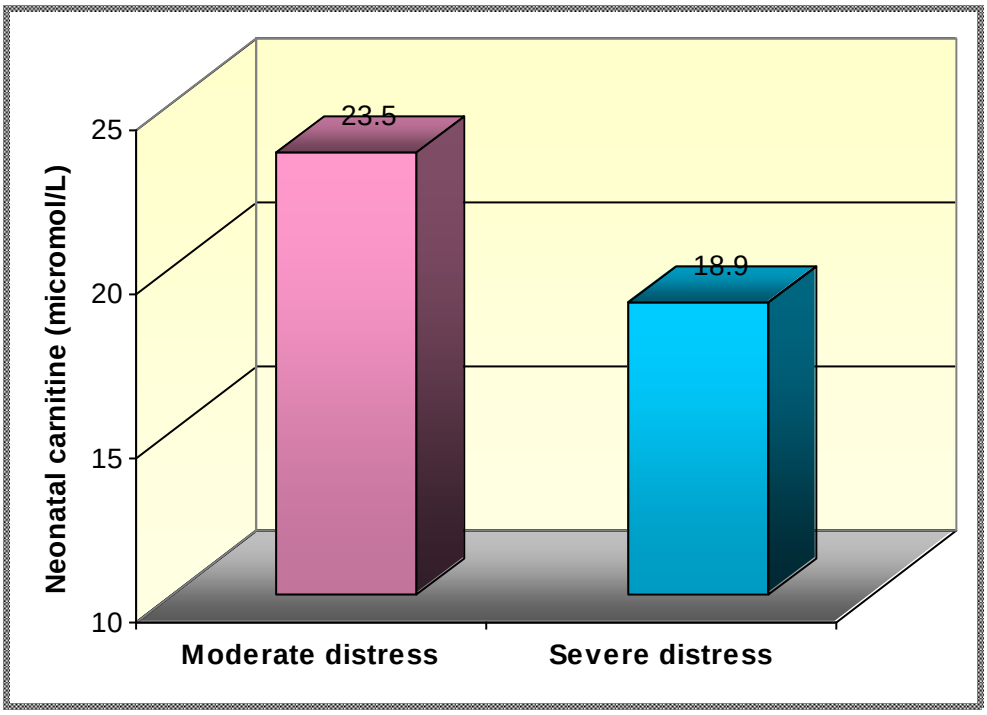

Fig. (20): Comparison between neonatal plasma carnitine levels (2nd sample) in different grades of respiratory distress in the study group (group II).

Table (21): Correlation between maternal plasma free carnitine levels and different variables.

Variables	(r)	P-value
Gestational age	0.1672	> 0.05
Birth weight	0.2025	> 0.05
Neonatal carnitine	0.1117	> 0.05

The table shows no statistically significant correlation between maternal plasma free carnitine levels, gestational age, birth weight and neonatal carnitine levels.

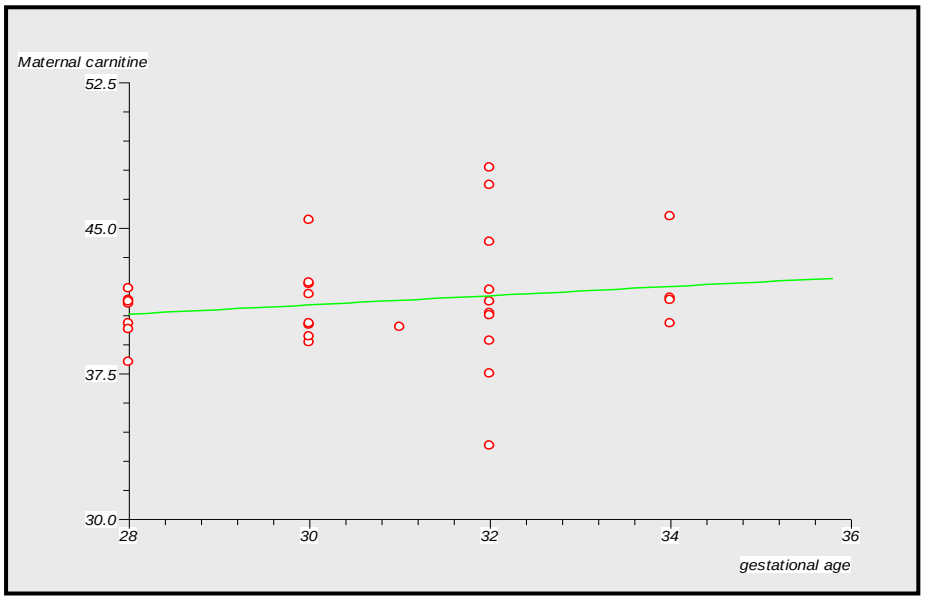

Fig. (21): Shows no statistically significant correlation between maternal free carnitine levels and different gestational ages of the studied groups.

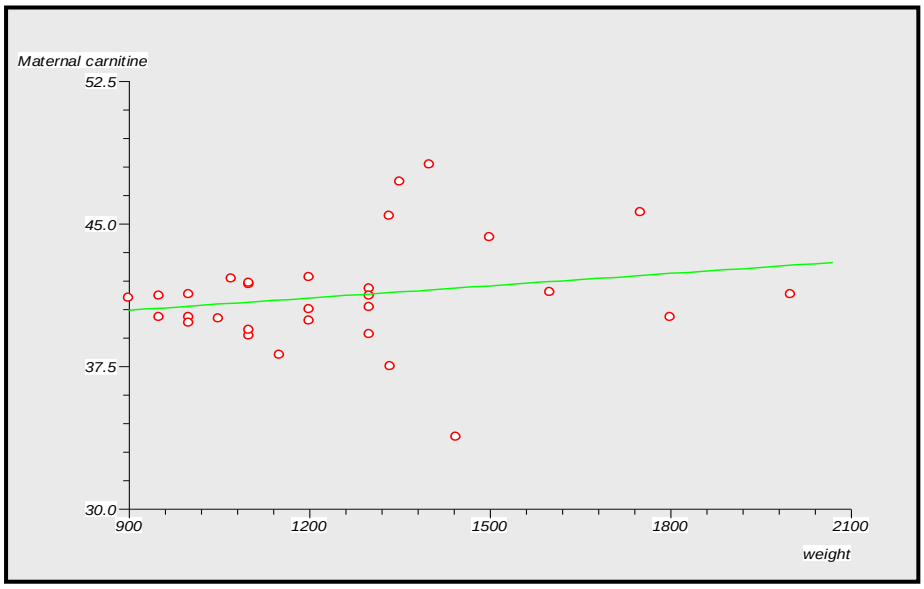

Fig. (22): Shows no statistically significant correlation between maternal free carnitine levels and different birth weights of the studied groups.

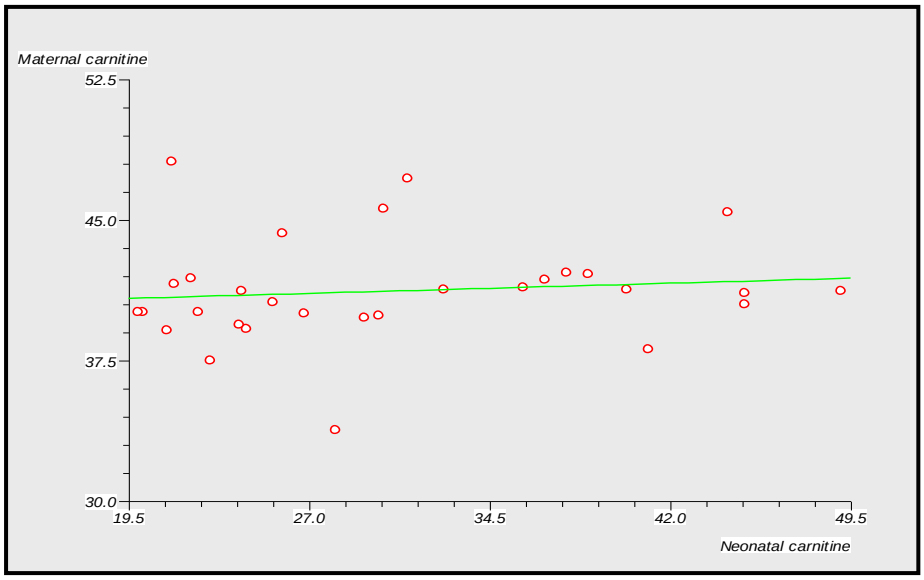

Fig. (23): Shows no statistically significant correlation between maternal free carnitine levels and neonatal carnitine levels (1st sample) of the studied groups.

Table (22): Correlation between neonatal plasma carnitine levels (1st sample) and different variables.

Variables	(r)	P-value
Gestational age	0.03541	> 0.05
Birth weight	0.03181	> 0.05
Maternal carnitine	0.1117	> 0.05

The table shows no statistically significant correlation between neonatal plasma free carnitine levels (1st sample), gestational age, birth weight and maternal plasma free carnitine levels.

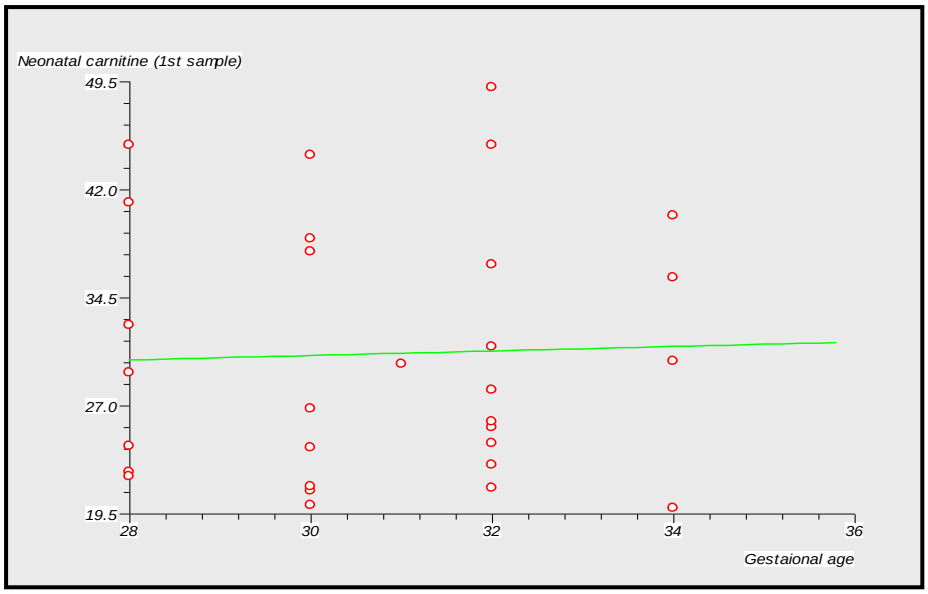

Fig. (24): Shows no statistically significant correlation between neonatal free carnitine levels (1st sample) and different gestational ages of the studied groups.

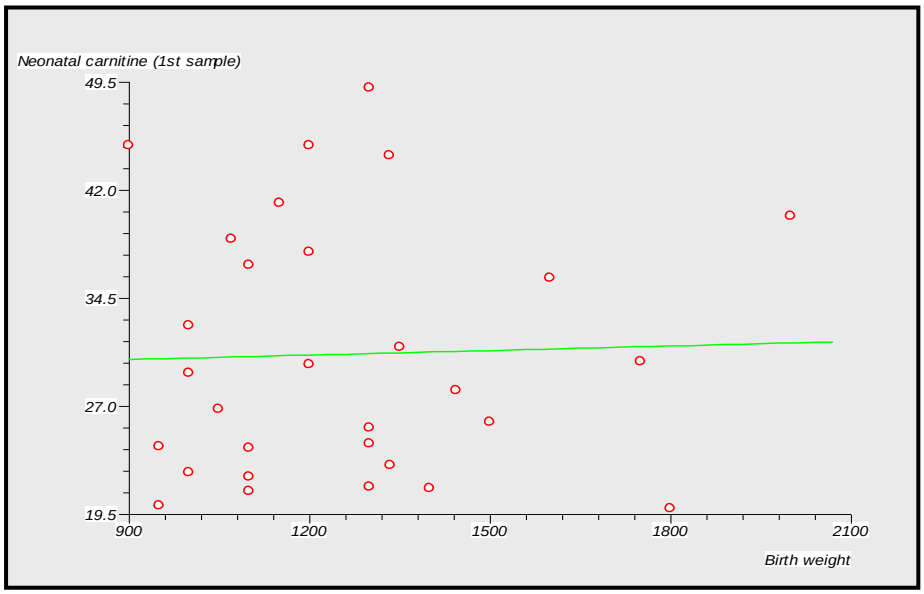

Fig. (25): Shows no statistically significant correlation between neonatal free carnitine levels (1st sample) and different birth weights of the studied groups.

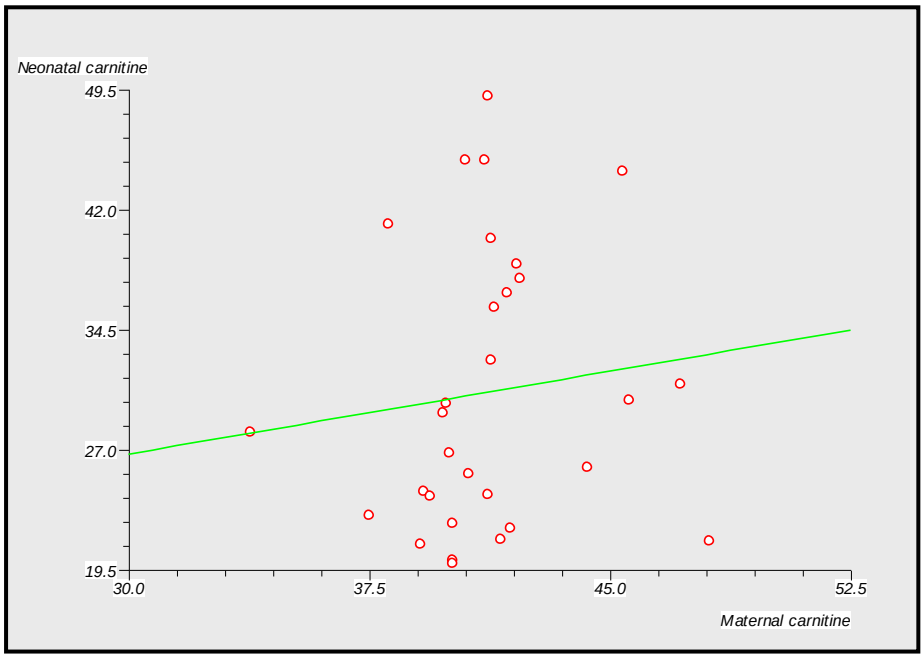

Fig. (26): Shows no statistically significant correlation between neonatal free carnitine levels (1st sample) and maternal plasma free carnitine levels of the studied groups.

Table (23): Correlation between degree of RDS and different variables.

Variables	(r)	P-value
Gestational age	-0.101988	> 0.05
Birth weight	-0.084328	> 0.05
Apgar score at 1 min.	-0.21639	> 0.05
Apgar score at 5 min.	-0.13105	> 0.05
Maternal plasma carnitine	-0.0652	> 0.05
Neonatal plasma carnitine (1st sample)	-0.9289	< 0.0001

The table shows that the degree of RDS shows a negative correlation with gestational age, birth weight, Apgar score and maternal plama free carnitine levels. However, this correlation is statistically insignificant. Also, there is a negative correlation between degree of RDS and neonatal carnitine level which is highly significant.

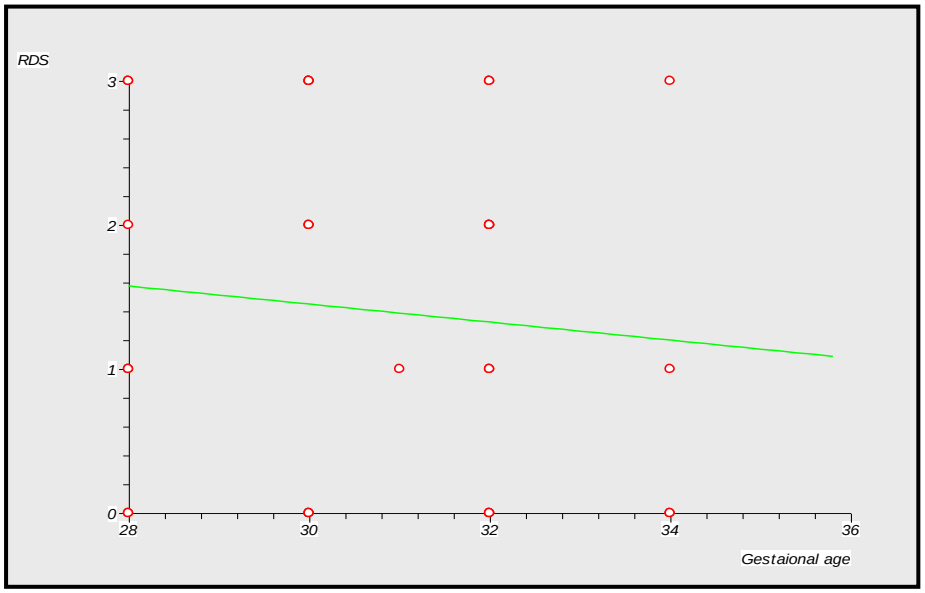

Fig. (27): Shows no statistically significant correlation between the degree of RDS and different gestation ages of the studied groups.

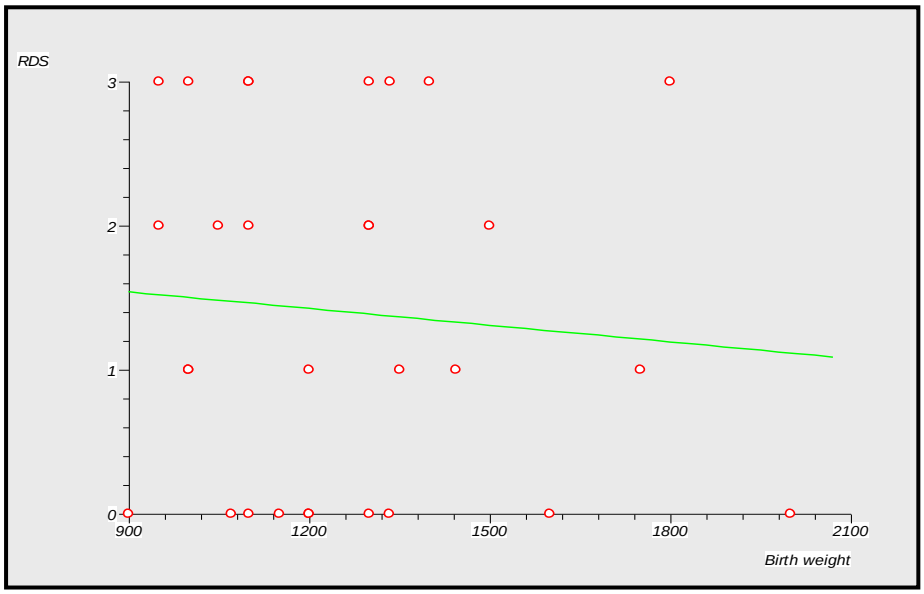

Fig. (28): Shows no statistically significant correlation between the degree of RDS and different birth weights of the studied groups.

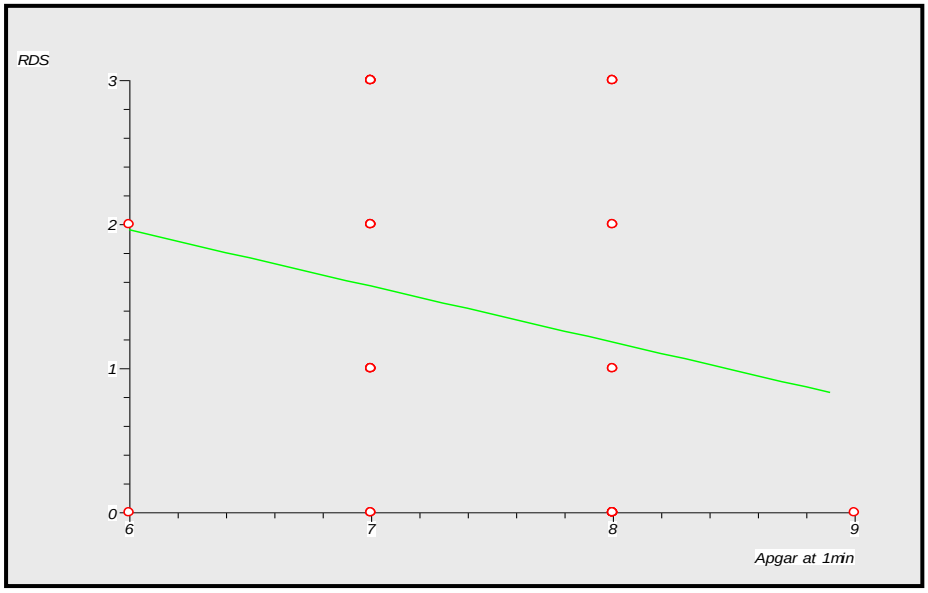

Fig. (29): Shows no statistically significant correlation between the degree of RDS and Apgar score at 1min.

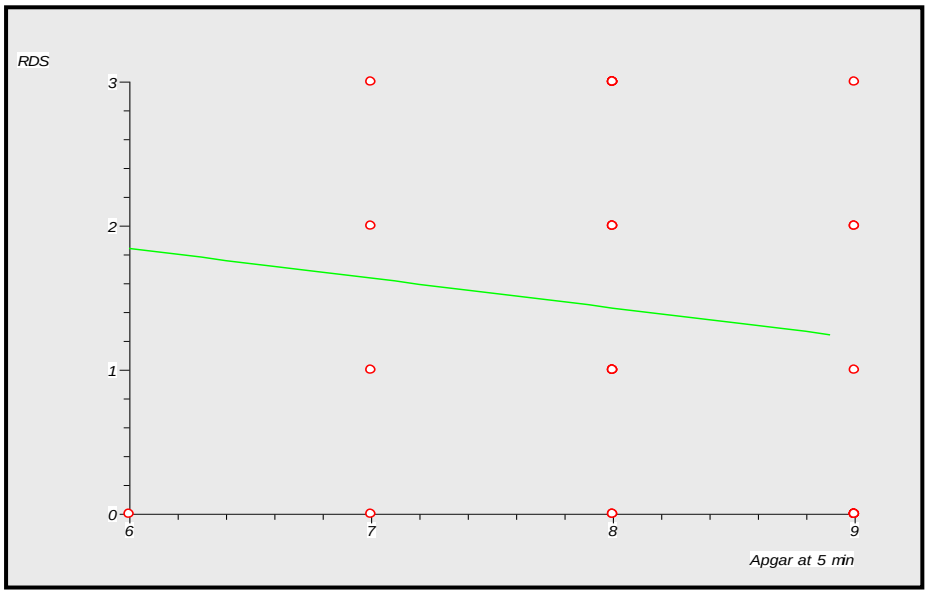

Fig. (30): Shows no statistically significant correlation between the degree of RDS and Apgar score at 5min.

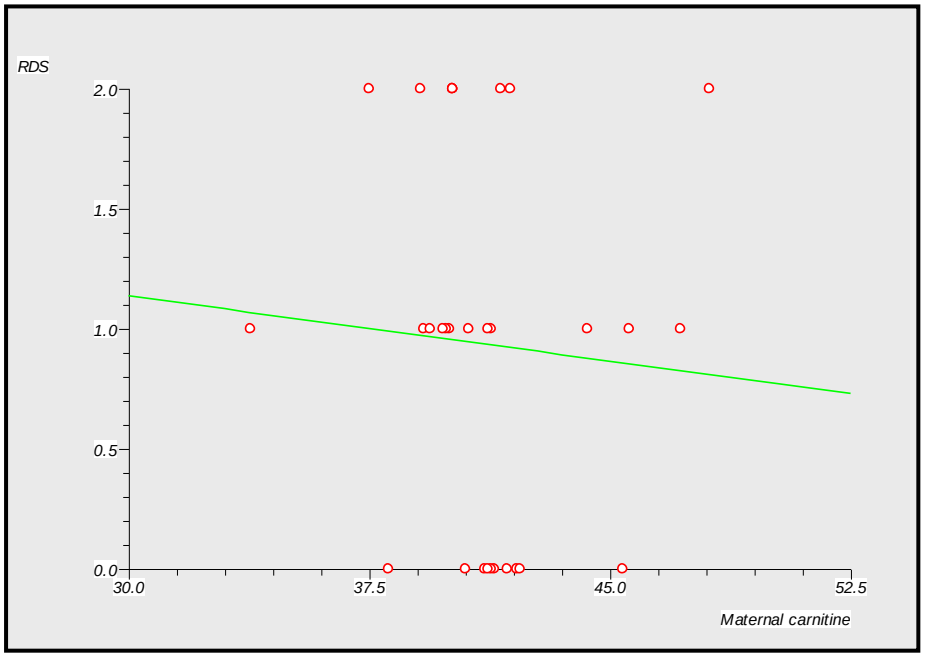

Fig. (31): Shows no statistically significant correlation between degree of RDS and maternal plasma free carnitine level of the studied groups.

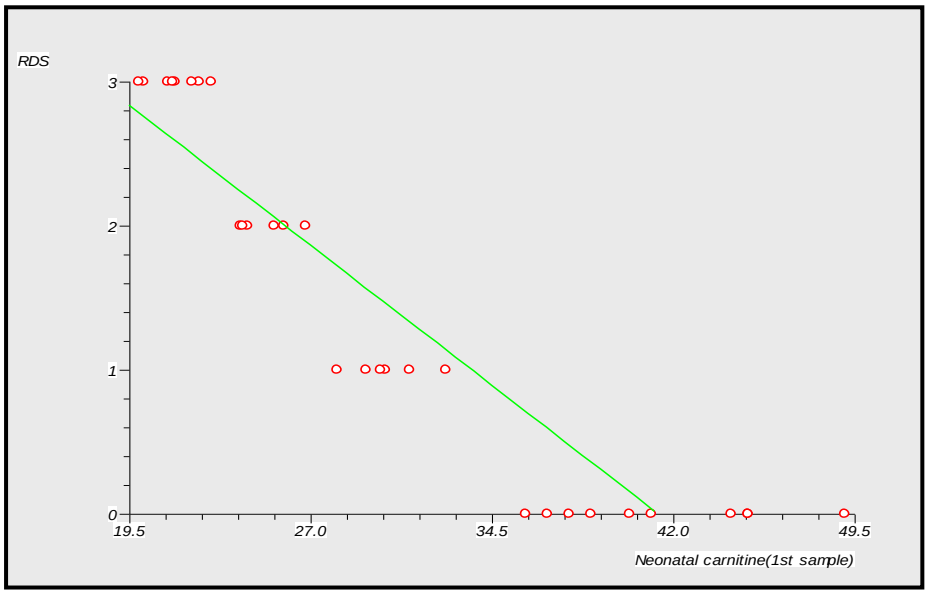

Fig. (32): Shows a highly significant correlation between the degree of RDS and neonatal plasma free carnitine levels (1st sample) of the studied groups.