Results

(Table 9) : Comparison between gestational age of the studied neonates .

Variable		PRETERM		t	*P*
		Group I (28-32)	*Group II (33-36w)*		
Age	**Mean**	*30.90*	*34.56*	**17.472**	**0.001***
	SD	*1.22*	*1.15*		

This table shows that group I are highly significant lower in mean of gestational age as compared with group I I

(P was < 0.01).

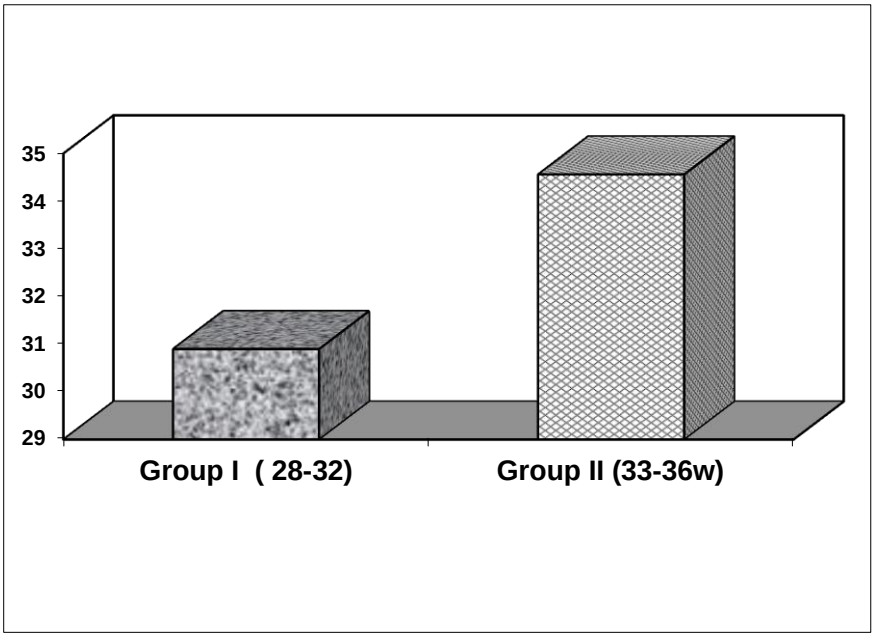

Figure 2: shows the difference of gestational age between the studied groups.

(**Table 10) : Sex distribution of the studied neonates .**

Variable	PRETERM						X2	*P*
	Group I (28-32)		*Group II (33-36w)*		*Total (n=130)*			
	n	*%*	*n*	*%*	*n*	*%*		
Sex								
Male	25	38.5	35	53.8	60	46.1		
Female	40	61.5	30	46.2	70	53.8	**3.095**	**0.079**

This table shows that there is no significant difference between sex in the groups as (P >0.05).

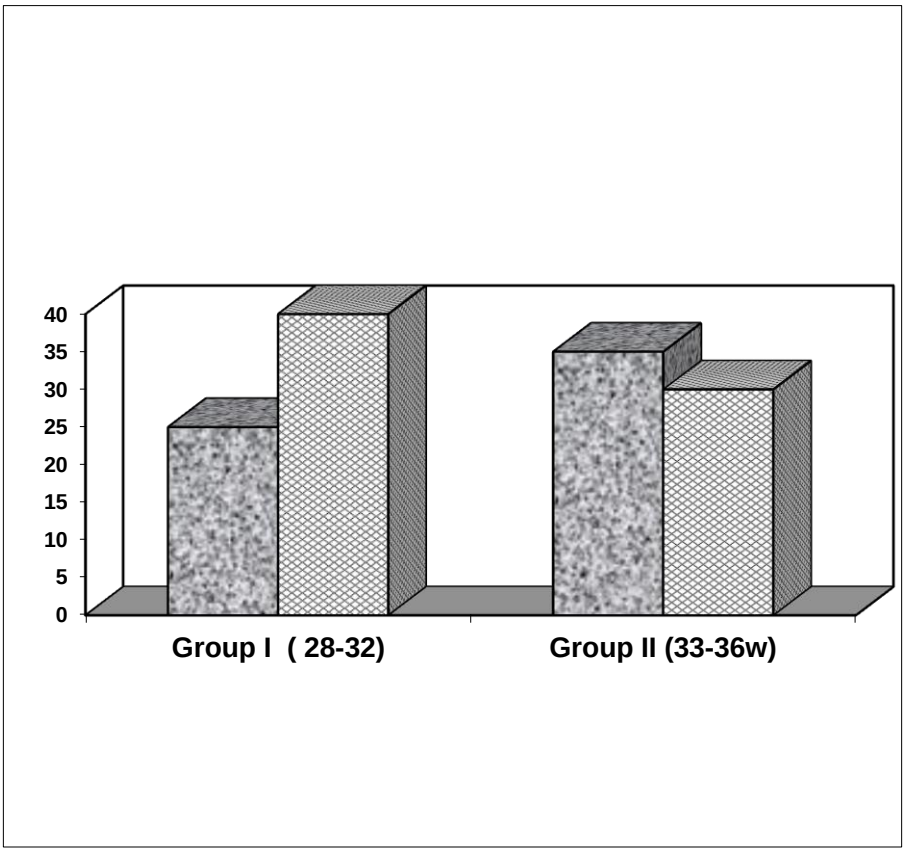

Figure 3: shows Sex distribution of studied groups.

(Table 11) : Comparison of weight among the studied neonates .

Variable		PRETERM		t	*P*
		<1.5	*1.5-2.5*		
Weight	**Mean**	*1340.1*	*1879.2*	**13.837**	**0.001***
	SD	*134.33*	*280.7*		

This table shows that group I is highly significant lower in mean of weight as compared with group I I (P was < 0.01)

.

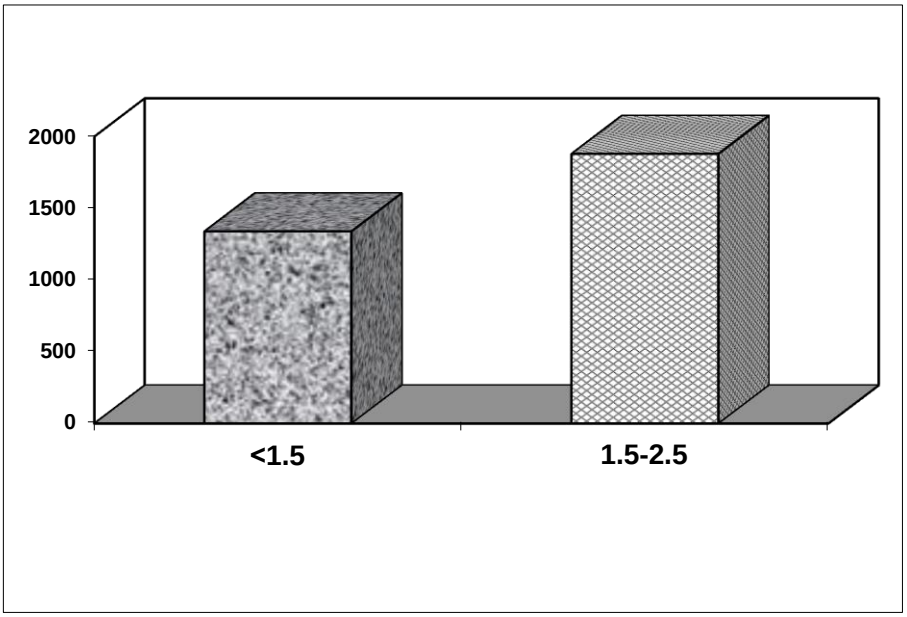

Figure 4: shows comparison of weight between the studied groups.

(Table 12) Comparison between abnormal ultrasound data among the studied neonates .

Variables	PRETERM						x^2	P
	Group I (28-32)		*Group II* (33-36w)		**Total** (n=130)			
	N	%	N	%	n	%		
IVH	***23%***		***18.4%***		***20%***			
HIE	***3%***		***1.5%***		***2.3%***			
1st CUS								
Non	48	*73.8*	58	*89.2*	106	*81.53*	**20.14**	**0.001***
Grade 1	11	*16.9*	5	*7.6*	16	*12.3*		
Grade 2	1	*1.5*	1	*1.5*	2	*1.53*		
Grade 3	3	*4.6*	0	*0*	3	*2.3*		
Brain edema	2	*3.1*	1	*1.5*	3	*2.3*		
2nd CUS								
Non	54	*83.1*	53	*81.5*	107	*82.3*		
Grade 1	5	*7.7*	7	*10.8*	12	*9.23*	**25.36**	**0.001***
Grade 2	1	*1.5*	2	*3.1*	3	*2.3*		
Grade 3	4	*6.2*	3	*4.6*	7	*5.3*		
Brain edema	1	*1.5*	0	*0*	1	*0.76*		
3 rd CUS								
Non	53	*81.5*	55	*84.6*	108	*83.07*		
Grade 1	5	*7.7*	4	*6.2*	9	*6.9*		
Grade 2	0	*0*	1	*1.5*	1	*0.76*	**34.25**	**0.001***
Grade 3	3	*4.6*	4	*6.2*	7	*5.38*		
Grade 4	3	*4.6*	1	*1.5*	4	*3.07*		
Brain edema	1	*1.5*	0	*0*	1	*0.76*		

This table shows that there is a highly significant increase in incidence of abnormal cranial ultra sound finding in group I as compared with those in group II.

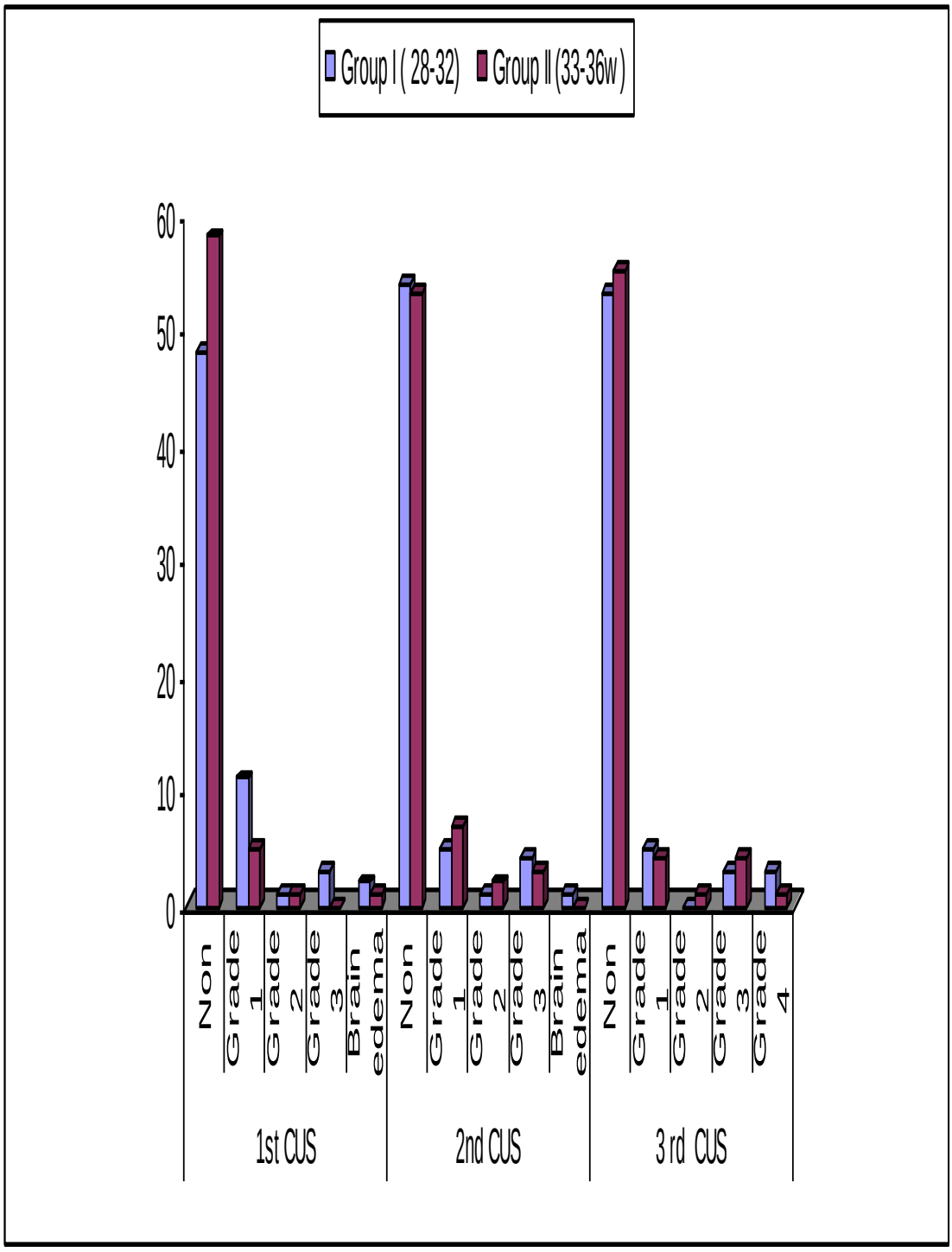

Figure 5: Show significant higher incidence of abnormal cranial ultra sound in group I as compared with those in group II.

(Table13) Effect of Maternal diabetes, PROM, PIH, APH and Steroids on cranial ultrasound data.

Variable	*cranial ultrasound data*						X2	*P*
	+Ve (n = 29)		*-Ve (n = 101)*		*Total (n=130)*			
	n	*%*	*n*	*%*	*n*	*%*		
Maternal diabetes								
Yes	4	*13.7*	3	*2.9*	7	*5.38*		
No	25	*86.2*	98	*97*	123	*94.6*	**2.124**	**0.145**
PROM								
Yes	3	*10.3*	24	*82.8*	27	*20.7*		
No	26	*89.6*	77	*٧٦.2*	103	*79.2*	**0.535**	**0.457**
PIH								
Yes	2	*13.3*	13	*86.7*	15	*11.5*		
No	27	*23.5*	88	*76.5*	115	*88.4*	**٠.788**	**0.375**
APH								
Yes	6	*20.7*	23	*22.7*	29	*22.3*		
No	23	*22.8*	78	*77.2*	101	*77.7*	**0.056**	**0.812**
Steroids								
Yes	10	*31.3*	22	*68.8*	32	*24.6*		
No	19	*19.4*	79	*80.6*	98	*75.4*	**1.959**	**0.162**

Table 13 shows the effect of the studied perinatal factors on cranial ultrasound data. The table shows that there is no significant between Maternal diabetes, PROM, PIH, APH and Steroids(P >0.05).

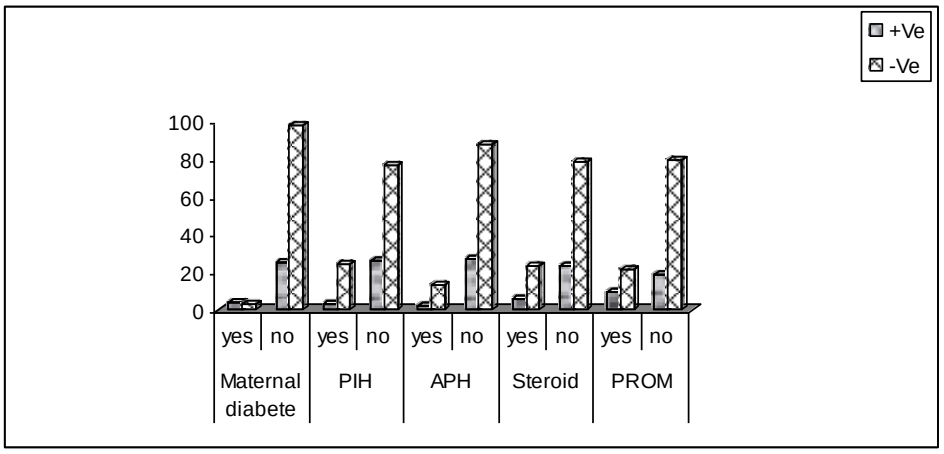

Figure 6: Shows the effect of the studied perinatal factors on cranial ultrasound data.

(Table 14) Effect of presentation and mode of delivery on cranial ultrasound data.

Variables	cranial ultrasound data						x^2	*P*
	+Ve (n=48)		*-Ve (n= 102)*		*Total (n=130)*			
	n	*%*	*n*	*%*	*n*	*%*		
Presentation								
Vertex	18	*18.2*	81	*81.8*	99	*76.1*		
Other	11	*35.4*	20	*64.5*	31	*23.8*	**9.212**	**0.010**
Delivery								
Vaginal	17	*23.3*	56	*76.7*	73	56.1	**0.353**	**0.838**
CS	12	*21.1*	45	*78.9*	57	43.8		

Table 14 shows the effect of the studied perinatal factors on cranial ultrasound data. The table shows that there is a highly significant decrease in incidence of abnormal cranial ultrasound in vertex presentation as compared to those with normal ultrasound data.

Regarding the mode of delivery there is no significant difference as (P >0.05).

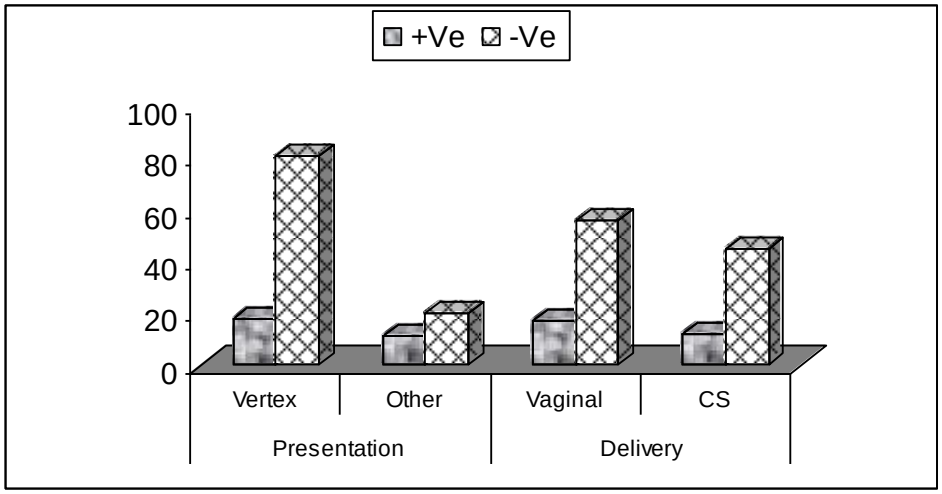

Figure 7: Shows the effect of the studied perinatal factors on cranial ultrasound data.

(Table 15) Effect of gestational age, birth weight and body temperature on cranial ultrasound data.

Variables		cranial ultrasound data.		*t*	*P*
		+Ve (n=48)	*-Ve (n= 102)*		
Gestational Age (weeks)	$\overline{X}$	*30.48*	*33.37*	***7.55***	***0.001***
	SD	*1.24*	*1.91*		
Weight (grams)	$\overline{X}$	*1307.7*	*1696.1*	***5.99***	***0.001***
	SD	*144.6*	*339.3*		
Temperature of preterm	$\overline{X}$	*36.08*	*36.39*	***1.94***	***0.055***
	SD	*0.97*	*0.64*		

This table shows that there is a highly significant difference between both groups as regards gestational age, birth weight and temperature on admission to NICU (P<0.01).

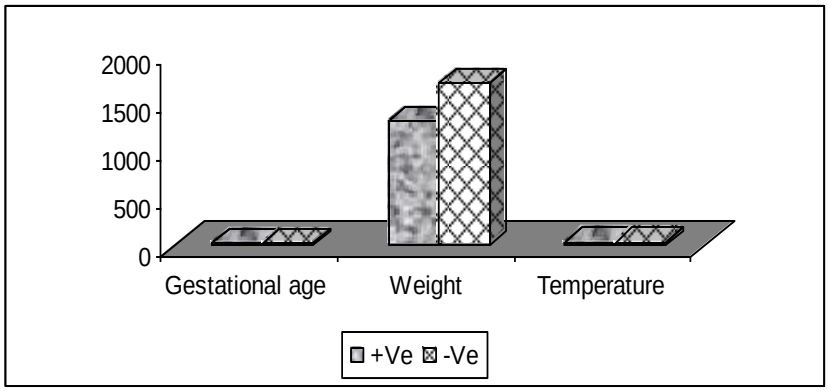

Figure 8: Shows the effect of the gestational age, birth weight and body temperature on cranial ultrasound data

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(Table 16) Effect of gender, and % of occurrence of SGA on cranial ultrasound data.

Variables	*cranial ultrasound data*						x^2	*P*
	+Ve (n=48)		*-Ve (n= 102)*		*Total (n =130)*			
	n	*%*	*N*	*%*	*n*	*%*		
Sex								
Male	١1	*18.3*	٤٩	*81.7*	60	*46.1*		
Female	١٨	*25.7*	٥٢	*74.3*	70	53.8	**1.16**	**0.314**
SGA								
Yes	2	*25*	6	*75*	8	*6.1*		
No	27	*22.1*	95	*77.9*	122	*93.8*	**0.036**	**0.850**

This table shows that There is no significant differences between both groups as (P>0.05).

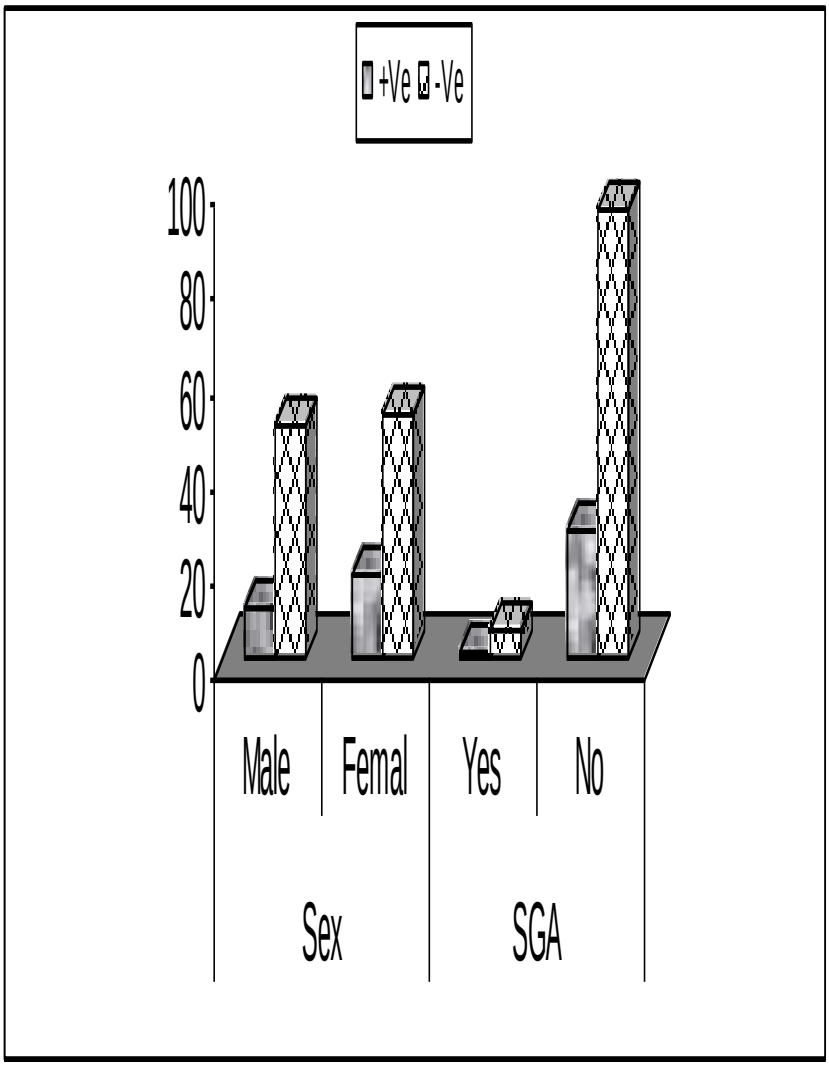


Figure 9: Shows the effect of gender, and % of occurrence of SGA on cranial ultrasound data.

(Table 17) Effect of O2 Duration , RBCS , HB , PLT ,WBCs and IT on cranial ultrasound data.

Variables		Cranial ultrasound data		*t*	*P*
		+Ve (n=29)	*-Ve (n= 101)*		
O2 Duration		*11.82*	*7.72*	***2.325***	***0.036***
	$\overline{X}$ ***SD***	*2.32*	*0.81*		
RBCs	$\overline{X}$	*3.56*	*3.77*	***0.253***	***0.164***
	SD	*0.52*	*0.74*		
HB	$\overline{X}$	*12.58*	*12.67*	***0.963***	***0.860***
	SD	*2.78*	*2.48*		
Platelets	$\overline{X}$	*192.4*	*280.29*	***4.325***	***0.003***
	SD	*25.7*	*13.8*		
WBCs	$\overline{X}$	*8.23*	*9.76*	***1.417***	***0.150***
	SD	*4.50*	*4.71*		
IT ratio	$\overline{X}$	*0.100*	*0.084*	***1.193***	***0.869***
	SD	*0.072*	*0.209*		

This table shows that there is a significant differences between the mean of O2 Duration among preterm with abnormal cranial ultrasound compared to those without

there is a highly significant differences between the mean of PLTs among preterm with abnormal cranial ultrasound compared to those without.

There was no significant differences between both groups as regards RBCS ,HB ,WBCs, IT ratio (P>0.05).

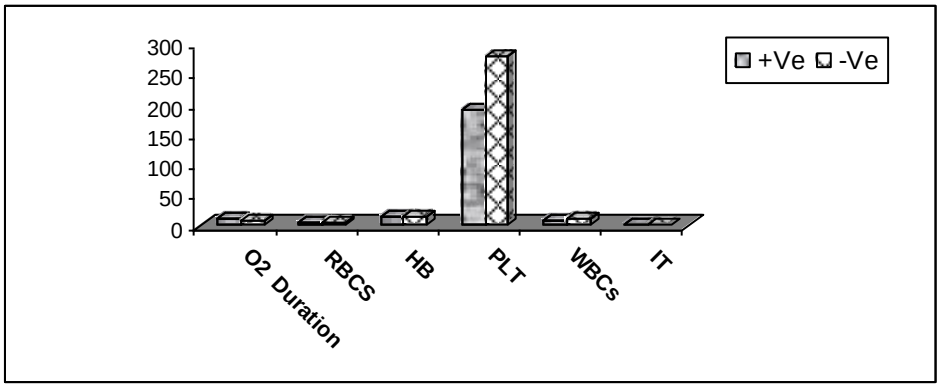


Figure 10 shows Effect of O2 Duration , RBCS , HB , PLT ,WBCs and IT on cranial ultrasound data..

(Table 18) Effect of RDS , Sepsis and Level of cons and Hypotension on cranial ultrasound data.

Variables	*cranial ultrasound data*						x^2	P
	+Ve (n = 29)		-Ve (n = 101)		Total (n=130)			
	N	%	N	%	n	%		
RDS								
Yes	27	93.1	6	20.6	33	25.4		
No	2	6.8	95	94	97	74.6	**0.03**	**0.869**
Sepsis								
Yes	11	37.9	29	28.7	29	22.3		
No	18	62	72	71.2	101	77.7	**1.97**	**0.636**
Level of Cons								
Conscious	19	65.5	90	89.1	29	22.3		
lethargic	10	34.4	11	10.8	101	77.7	**1.25**	**0.586**
Hypotension								
Yes	10	23.3	33	76.7	43	100		
No	19	25.3	56	74.7	75	100	**0.064**	**0.801**

This table shows that There was no significant differences between both groups as (P>0.05).

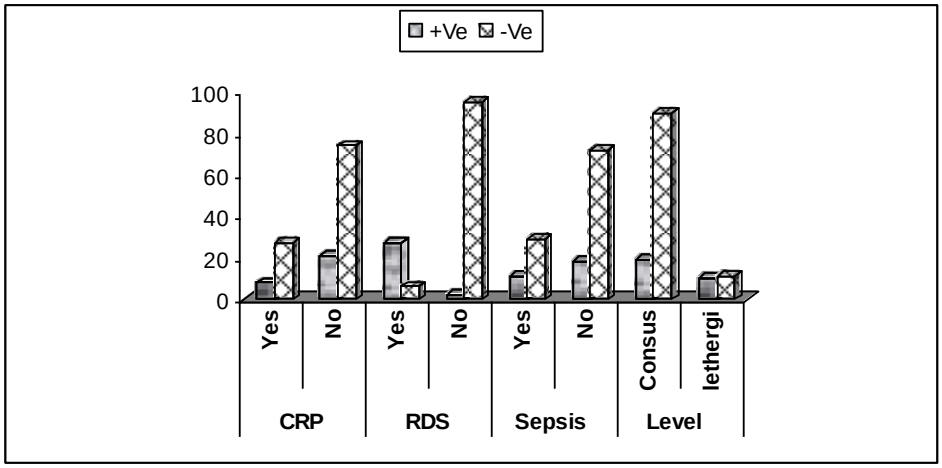


Figure 11 shows Effect of CRP , RDS , Sepsis and Level of conscious and cranial ultrasound data.

(Table 19) Effect of presence of peumothorax and seizures on cranial ultrasound data.

Variables	*cranial ultrasound data*						x^2	P
	+Ve (n = 29)		*-Ve* (n = 101)		**Total** (n=130)			
	N	%	N	%	n	%		
Peumothorax								
Yes	6	*42.9*	8	*57.1*	14	*10.7*		
No	23	*19.8*	93	*80.2*	116	*89.2*	**3.83**	**0.05**
Seizures								
Yes	6	*42.9*	8	*57.1*	14	*10.7*		
No	23	*19.8*	93	*80.2*	116	*89.2*	**3.83**	**0.05**

There was significant difference between those with compared to those without peumothorax and Seizures as regard the normal and abnormal ultrasound findings.

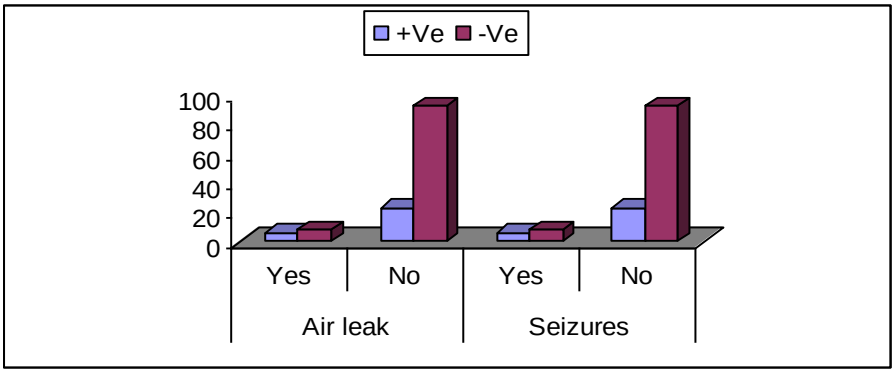


Figure 12 shows the Effect of presence of peumothorax and seizures on cranial ultrasound data.

(Table 20) Effect of Muscle tone , Moro and Sucking on cranial ultrasound data.

Variables	***Cranial ultrasound Data***						***x^2***	***P***
	+Ve (n = 29)		*-Ve (n = 101)*		***Total*** *(n=130)*			
	N	*%*	*N*	*%*	*n*	*%*		
Muscle Tone								
Week	*8*	*32*	*17*	*68*	*29*	*22.3*		
good	*21*	*20*	*84*	*80*	*101*	*77.7*	***1.65***	***0.325***
Moro Reflex								
Week	*12*	*26.7*	*33*	*73.3*	*45*	*34.6*		
good	*17*	*20*	*68*	*80*	*85*	*65.3*	***0.75***	***0.386***
Sucking Reflex								
Week	*16*	*29.1*	*39*	*70.9*	*55*	*42.3*		
good	*13*	*17.3*	*62*	*82.7*	*75*	*57.7*	***2.51***	***0.112***

There is no significant difference between muscle tone ,Moro reflex and sucking reflex with cranial ultrasound.

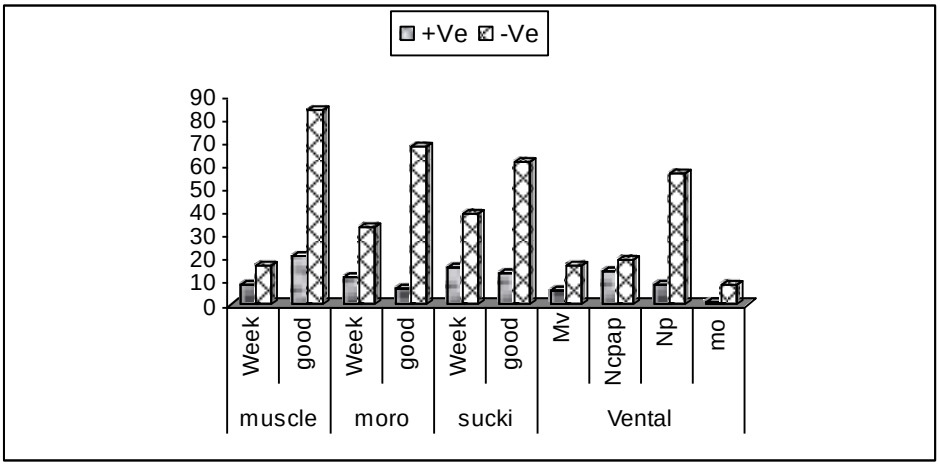


Figure 13 shows Effect of Muscle tone , Moro, Sucking and Ventilation on cranial ultrasound data.

(Table 21) Effect of CRP and ventilation on cranial ultrasound data.

Variables	*cranial ultrasound data*						x^2	P
	+Ve (n = 29)		*-Ve* (n = 101)		**Total** (n=130)			
	N	%	N	%	n	%		
CRP								
Yes	*8*	*27.5*	*27*	*26.7*	*35*	*26.9*		
No	*21*	*72.4*	*74*	*73.2*	*95*	*73*	***1.08***	***0.298***
Ventilation								
MV	*6*	*26.1*	*17*	*73.9*	*23*	*17.6*		
NCPAP	*14*	*42.4*	*19*	*57.6*	*33*	*25.3*		
NP	*8*	*12.3*	*57*	*87.7*	*65*	*50*		
NO	*1*	*11.1*	*8*	*88.9*	*9*	*6.9*	***12.2***	***0.008***

This table shows that there is significant increase in incidence of abnormal cranial ultrasound on ventilation .

There is no significant difference between CRP and cranial ultrasound.

(Table 22) : Distribution of outcome in the studied preterm newborn.

Outcome	PRETERM						x^2	P
	Group I (28-32)		Group II (33-36w)		Total (n=130)			
	N	%	N	%	n	%		
Died	15	23.1	5	7.7	20	15.4	12.128	0.002*
MND	22	33.8	13	20	35	26.9		
Normal	28	43.1	47	72.3	75	57.7		

MND= major neuro developmental delay .

This table shows that There is a significant increase in incidence of mortality rate , major neuro developmental delay *in group I as compared with those in group II.*

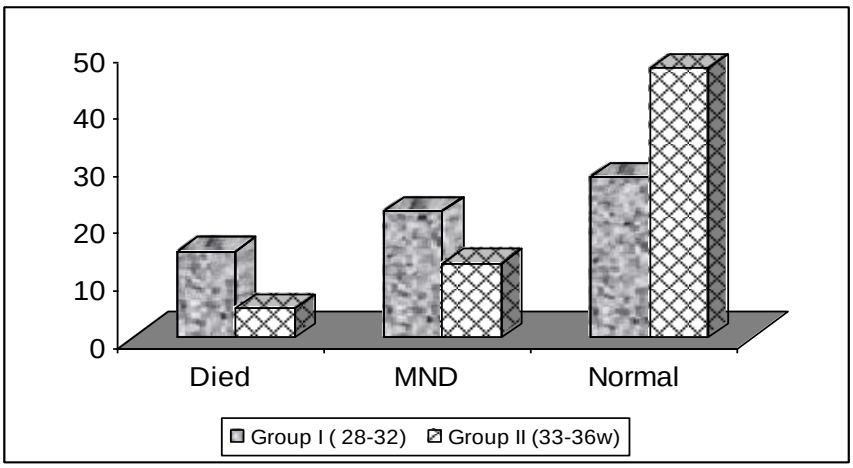


Figure 14: Show significant higher incidence of mortality rate and abnormal neurodevolopmental delay in group I as compared with those in group II.

(Table 23) Effect of abnormal ultrasound data on Outcome.

Outcome	ultrasound data						x2	P
	+Ve (n = 29)		-Ve (n = 101)		Total (n=130)			
	N	%	N	%	n	%		
Died	15	75	5	25	20	15.3	45.3	0.001
MND	10	28.6	25	71.4	35	26.9		
N	4	5.3	71	94.7	75	57.6		

This table shows that there was a highly significant increase in incidence of mortality rate and major neurodevolopmental delay in group with abnormal cranial ultrasound as compared with those without as ***(P<0.01).***

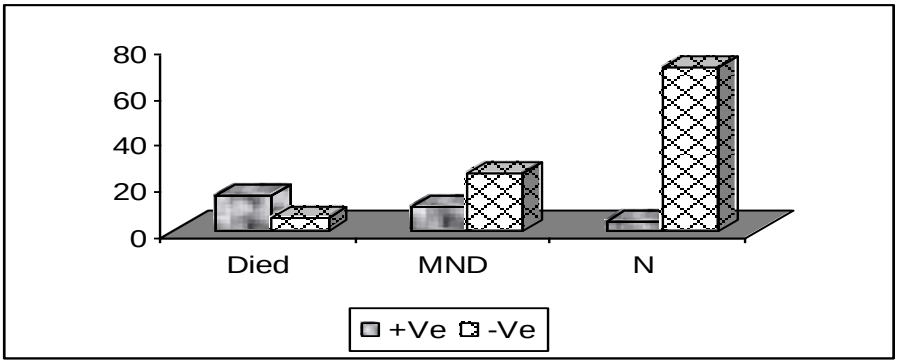


Figure 15: Show significant higher incidence of mortality rate and abnormal neurodevolopmental delay in abnormal cranial ultra sound as compared with those is normal.

(Table 24) Effect of the birth weights on the outcome.

Variables	Outcome								X2	P
	Died		MND		N		Total (n=130)			
	n	%	n	%	n	%	n	%		
Weight <1500	15	23.1	22	33.8	28	43.1	65	50	11.6	0.004
1500-2500gm	5	7.6	13	20	47	72.3	65	50		

This table shows that there was a significant increase in mortality rate and major neurodevolopmental delay in preterm(<1500gm) as compared with those (1500-2500gm).

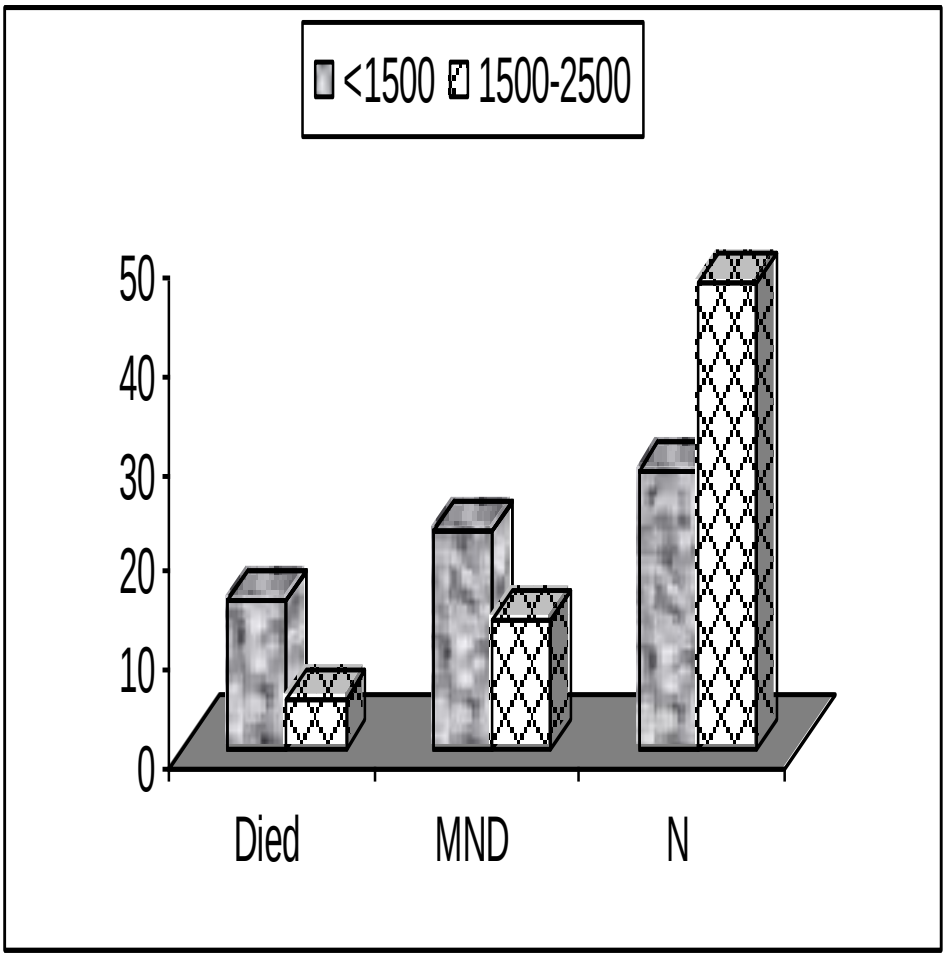


Figure 16: Show significant higher incidence of mortality rate and abnormal neurodevolopmental delay in group I(<1.5) as compared with those in group II(1.5-2.5).

(Table 25) Effect of Maternal diabetes, PROM, PIH, APH and Steroids on Outcome.

Variables	Outcome								X2	P
	Died		Mnd		N		Total (n=130)			
	n	%	n	%	n	%	n	%		
Maternal diabetes										
Yes	19	15.4	33	6.8	71	57.7	123	94.6		
no	1	14.3	2	28.6	4	57.1	7	5.3	**0.014**	**0.993**
PROM										
Yes	2	6.9	9	31	18	62.1	29	22.3		
No	18	17.8	26	25.7	57	56.4	101	77.7	**2.10**	**0.349**
PIH										
Yes	2	13.3	2	13.3	11	73.3	15	11.5		
No	18	15.7	33	28.7	64	55.7	115	88.4	**1.93**	**0.856**
APH										
Yes	2	6.9	10	34.5	17	58.6	29	22.3		
No	18	17.8	25	24.8	58	57.4	101	77.7	**2.536**	**0.534**
Steroids										
Yes	5	15.6	15	46.9	12	37.5	32	24.6		
No	15	15.3	20	20.4	63	64.3	98	75.3	**9.278**	**0.010**

Table 24 shows the effect of the studied perinatal factors on Outcome The table shows that there is a highly significant decrease in mortality rate and major neurodevolopmental delay with maternal Steroid Therapy as ($p<0.01$).

There is no significant difference between Maternal diabetes, PROM, PIH and APH as ($P>0.05$).

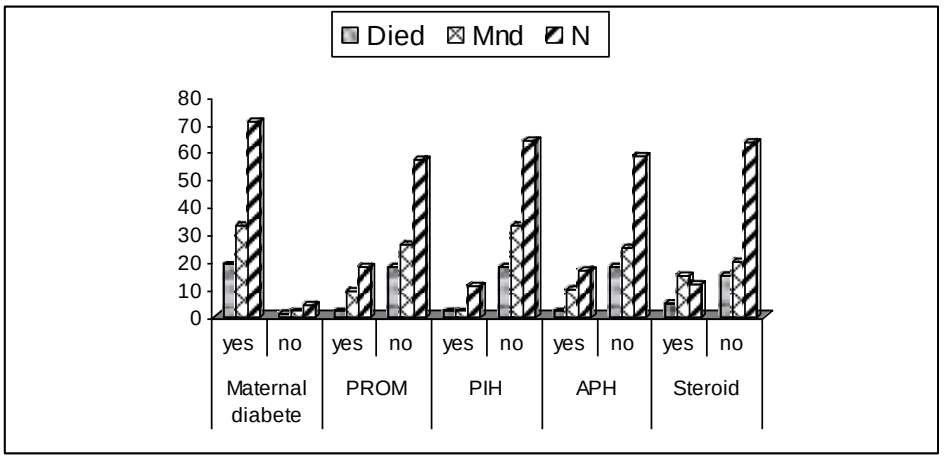


Figure 17: *Shows comparison of Maternal diabetes , Preeclampsia , Ante partum hemorrhage , PROM and Steroid therapy with outcome.*

(Table 26) Effect of presentation and mode of delivery on Outcome.

Variables	Outcome								X2	P
	Died		MND		N		Total (n=130)			
	n	%	n	%	n	%	n	%		
Presentation										
Vertex	14	14.1	22	22.2	63	63.6	99	76.1		
Other	6	19.3	13	41.9	12	38.7	31	23.8	**8.635**	**0.047**
Delivery										
Vaginal	9	16.1	16	28.6	31	55.4	56	43		
CS and other	11	1.35	19	25.6	44	59.4	74	56.9	**5.86**	**0.253**

Table 25 shows the effect of the studied perinatal factors on outcome. This table shows that there is a highly significant increase in incidence of mortality rate and major neurodevelopmental delay in vertex presentation as compared to those with outcome.

Regarding the mode of delivery there is no significant difference as (P >0.05).

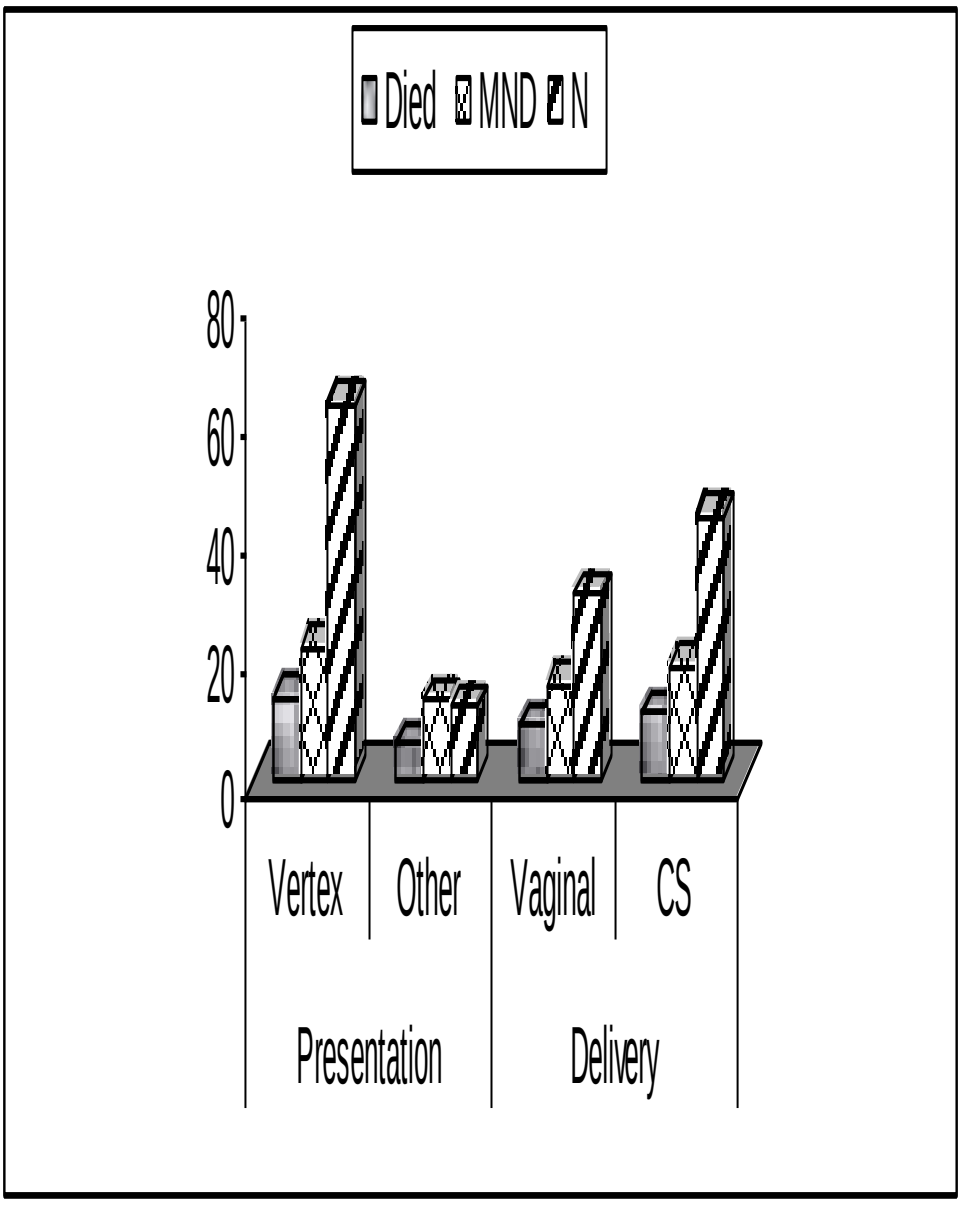


Figure 18: Shows comparison of Mode of Delivery and Presentation with outcome.

(Table 27) Effect of CRP , RDS , Sepsis, air leak and seizure on Outcome.

Variables	Outcome								X2	P
	Died		MND		N		Total (n=130)			
	n	%	n	%	n	%	n	%		
CRP										
+VE	9	25.7	11	31.4	15	42.9	35	26.9		
-VE	11	11.6	24	25.3	60	63.2	95	73	**5.51**	**0.064**
RDS										
Yes	19	15.8	30	25	71	59.2	120	92.3		
No	1	10	5	50	4	40	10	7.6	**2.32**	**0.574**
Sepsis										
Yes	11	27.5	11	27.5	18	45	40	30.7		
No	9	10	24	26.7	57	63.3	90	69.2	**7.133**	**0.022**
Air leak										
Yes	5	35.7	7	50	2	14.3	14	100		
No	15	12.9	28	24.1	73	62.9	116	100	**12.22**	**0.002**
Seizure										
Yes	5	35.7	7	50	2	14.3	14	100		
No	15	12.9	28	24.1	73	62.9	116	100	**12.22**	**0.002**

This table shows that there was a significant increase in mortality rate and major neurodevelopmental delay in preterm with sepsis, +ve CRP, air leak and seizure as compared with those without (P<0.01).

There is no significant difference between RDS (P>0.05) .

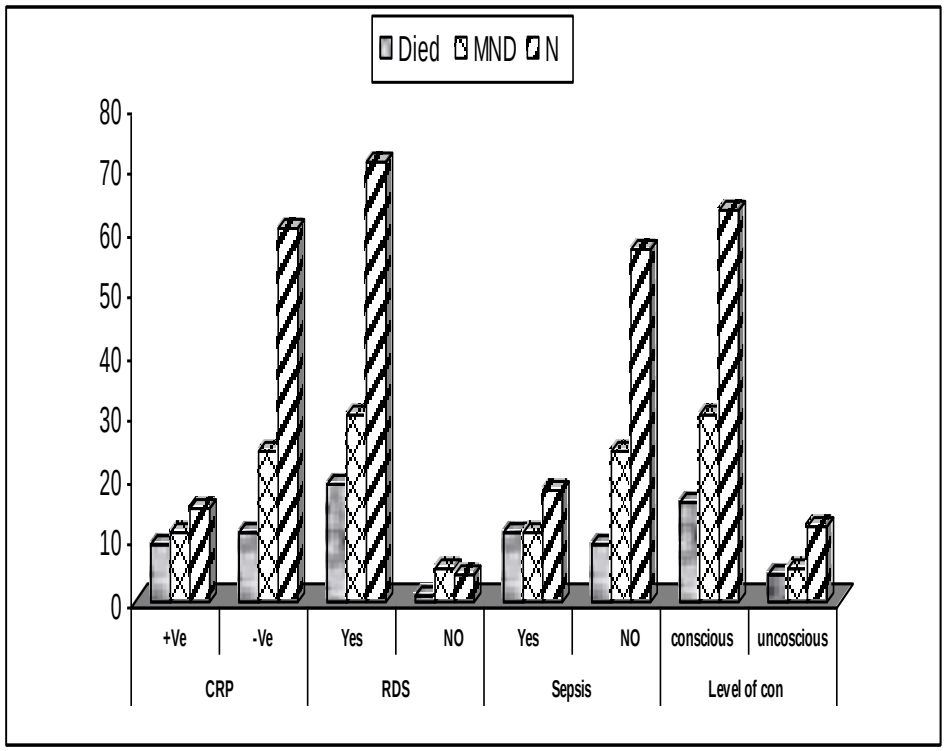


Figure 19: Show Distribution of clinical data as compared with outcome.

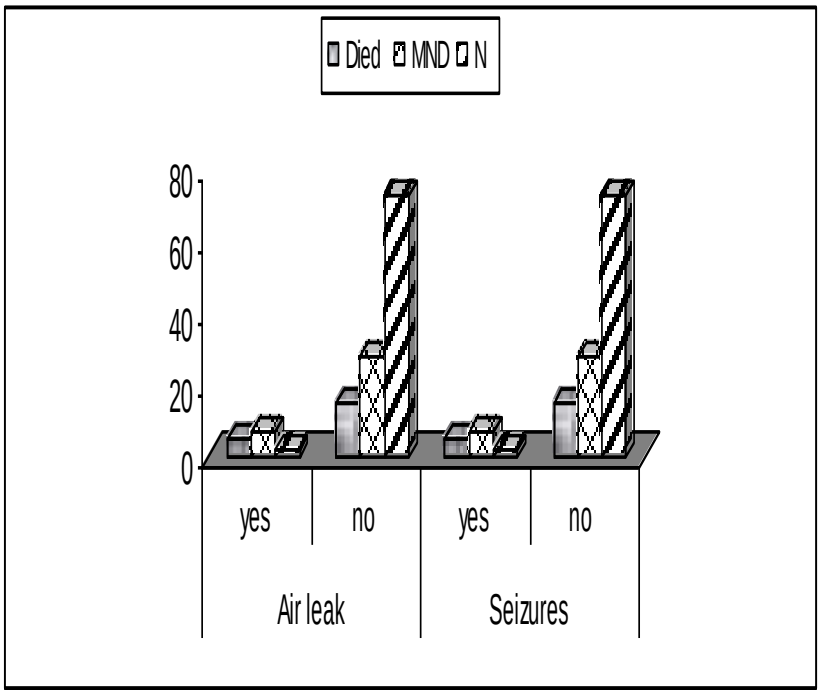


Figure 20:Show effect of air leak and seizure on outcome.

(Table 28) Effect of abnormal ultrasound finding on outcome among the studied newborn.

		OUTCOME			Total	X2	P
		died	MND	N			
1st							
non	N	7	14	45	66	9.325	0.014
	%	10.6	21.2	68.2	100.0		
grade1	N	10	18	28	56		
	%	17.9	32.1	50.0	100.0		
grade2	N	1	1	1	3		
	%	33.3	33.3	33.3	100.0		
grade3	N	1	1		2		
	%	50.0	50.0		100.0		
Brain edema	N	1	1	1	3		
	%	33.3	33.3	33.3	100.0		
Total	N	20	35	75	130		
	%	15.4	26.9	57.7	100.0		
2nd							
non	N	4	10	43	57	21.36	0.001
	%	7.0	17.5	75.4	100.0		
grade1	N	12	20	30	62		
	%	19.4	32.3	48.4	100.0		
grade2	N	1	1	1	3		
	%	33.3	33.3	33.3	100.0		
grade3	N	2	4	1	7		
	%	28.6	57.1	14.3	100.0		
Brain edema	N	1			1		
	%	100.0			100.0		
Total	N	20	35	75	130		
	%	15.4	26.9	57.7	100.0		
3rd							
non	N	4	10	45	59	28.3	0.002
	%	6.8	16.9	76.3	100.0		
grade1	N	12	18	28	58		
	%	20.7	31.0	48.3	100.0		
grade2	N	2	2		4		
	%	50.0	50.0		100.0		
grade3	N	1	4	2	7		
	%	14.3	57.1	28.6	100.0		
Brain edema	N	1			1		
	%	100.0			100.0		
grade 4	N		1		1		
	%		100.0		100.0		
Total	N	20	35	75	130		
	%	15.4	26.9	57.7	100.0		

This table shows that there is a highly significant increase *in mortality rate and major neurodevelopmental delay in preterm with abnormal cranial ultrasound as compared with those with normal cranial ultrasound .* ***(P<0.01).***

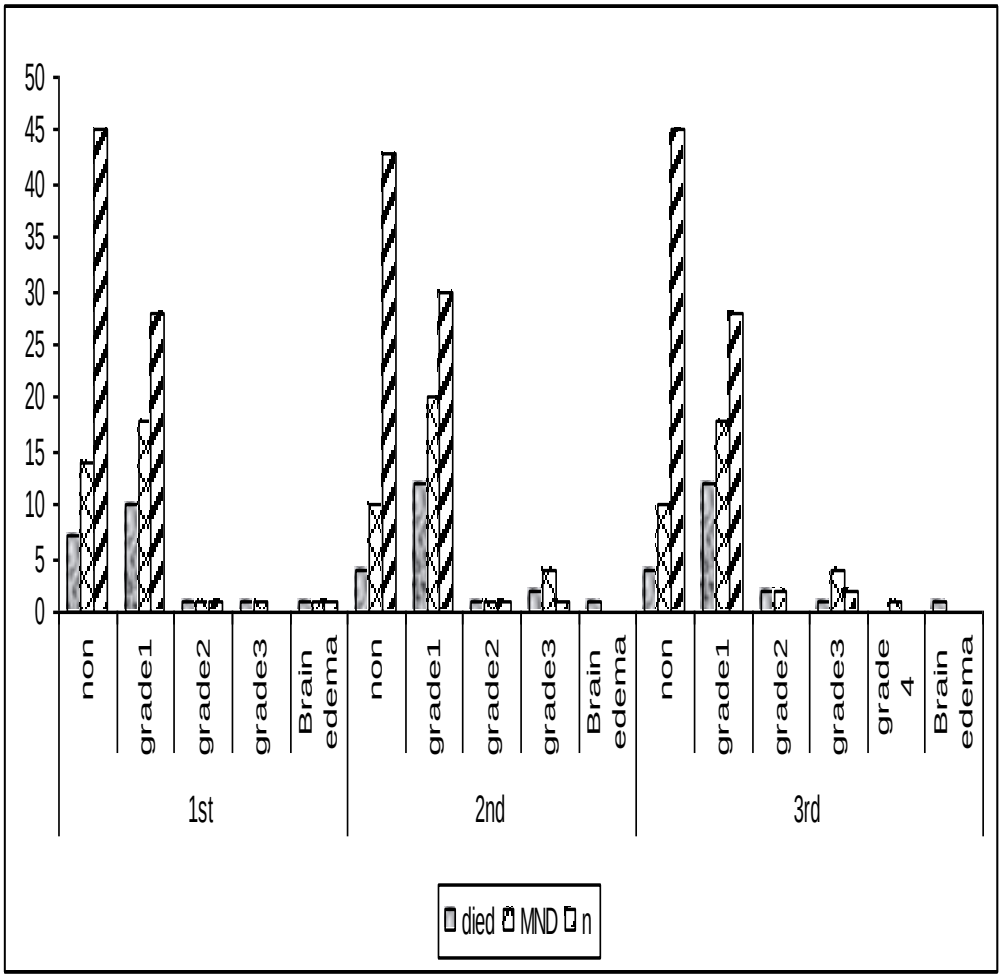
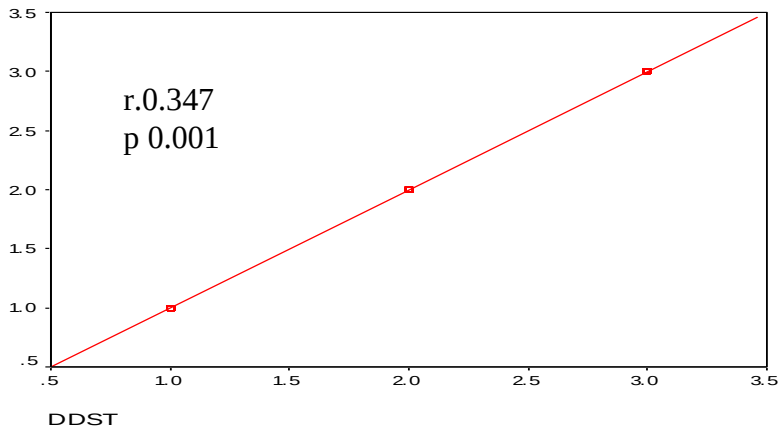


Figure 21: Show comparison between abnormal cranial ultrasound and outcome.

(Table 29) Correlation between Gestational age, Weight, DDST and Outcome .

	Data	r value
OUTCOME	Gestational age	r.0.371 p 0.001
	Weight	r.0.013 p 0.885
	DDST	r.0.347 p 0.001

This table shows Highly significant positive correlation between, Gestational age, Weight and Denver development screening test and outcome.



DDST=*Denver development screening test.*

Figure 22 shows Highly significant positive correlation between Denver development screening test and outcome.

(Table 30) Correlation between abnormal cranial ultrasound and other data .

	Data	*r value*
Abnormal Cranial ultrasound Data	Gestational age	**0.555** P -0.001
	Wieght	**0.480** p-0.001
	sex	0.088
	Maternal diabetes	0.128
	IUGR	0.017
	PROM	0.065
	PIH	0.078
	APH	0.021
	Maternal steroid therapy	0.123
	Presentation	**0.222** p-0.011
	Mode of delivery	**0.010**
	RBCs	**0.128**
	HB	**0.016**
	TLC	**0.257**
	Platelets	**0.088**
	I/T	**0.038**
	Blood culture	**0.021** p-0.022
	CRP	**0.091**
	RDS	**0.016**
	Air leak	**0.171** p-0.05
	Sepsis	**0.123**
	Level of conscious	**0.034**
	Muscle tone	**0.114**
	Moro	**0.076**
	Sucking	**0.140**
	Seizure	**0.171** p-0.051
	Outcome	**0.574** p-0001

Table (30) This table shows that:-

-Highly significant positive correlation between abnormal cranial ultrasound and gestational age.

-Highly significant positive correlation between abnormal cranial ultrasound and weight

-Highly significant positive correlation between abnormal cranial ultrasound and outcome.

- significant positive correlation between abnormal cranial ultrasound and air leak.

-Other data were not significant.

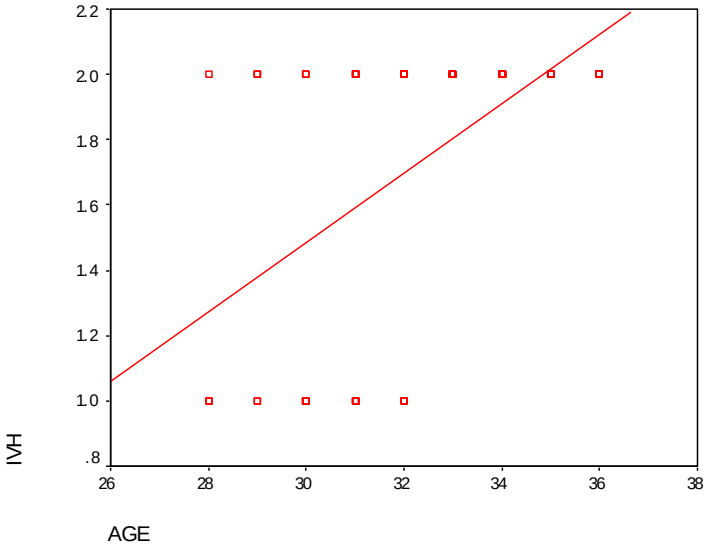


Fig:(23) This figure shows that significant positive correlation between Gestational age and abnormal cranial ultrasound.

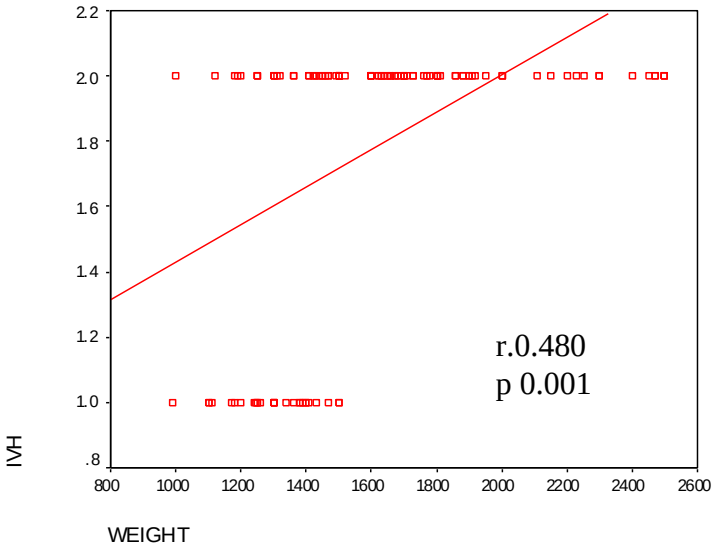


Fig:(24) This figure shows that significant positive correlation between abnormal cranial ultrasound and weight.

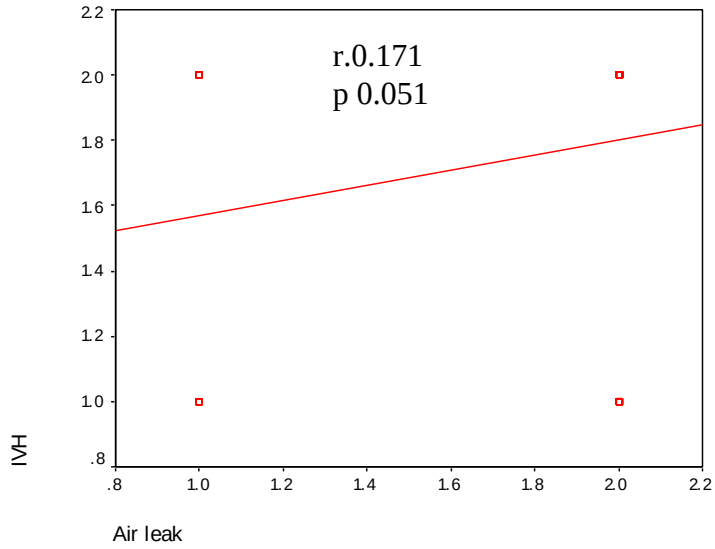


Fig:(25) This figure shows that significant positive correlation between between abnormal cranial ultrasound and air leak.

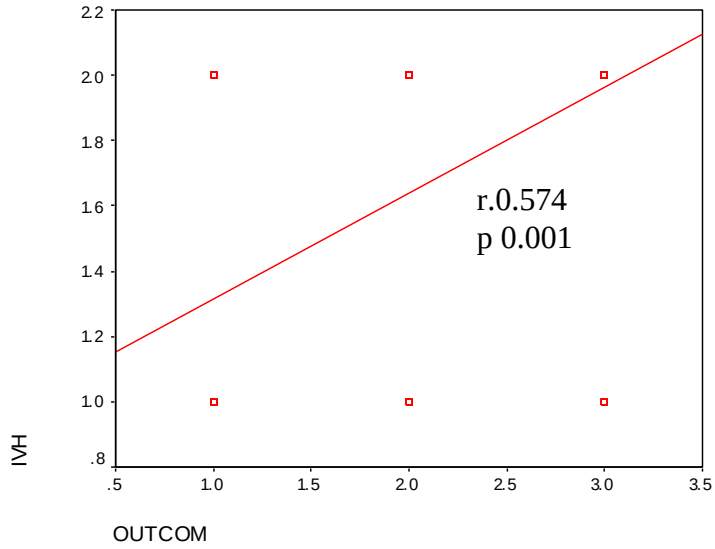


Fig:(26) This figure shows that significant positive correlation between abnormal cranial ultrasound and outcome.