RESULTS

Table (1): Distribution of the studied neonates according to gestational age groups

Studied cases / gestational age groups	No. of neonates	%
Group I (≤ 30 weeks)	18	22.5
Group II (>30 weeks)	62	77.5
Total	80	100.0

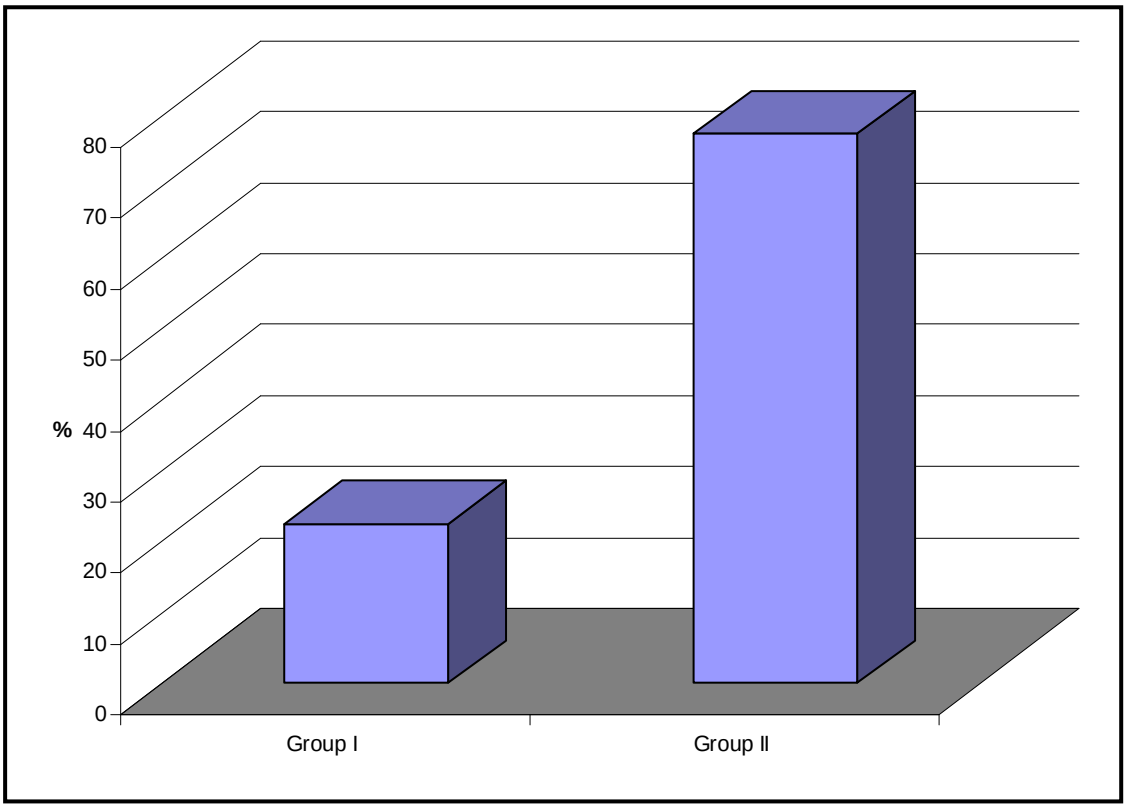

Fig. (1): Distribution of the studied neonates according to gestational age groups

Table (2): Distribution of the studied neonates according to sex

Studied cases / Sex	No. of neonates	%
Males	51	56.7
Females	29	43.3
Total	80	100.0

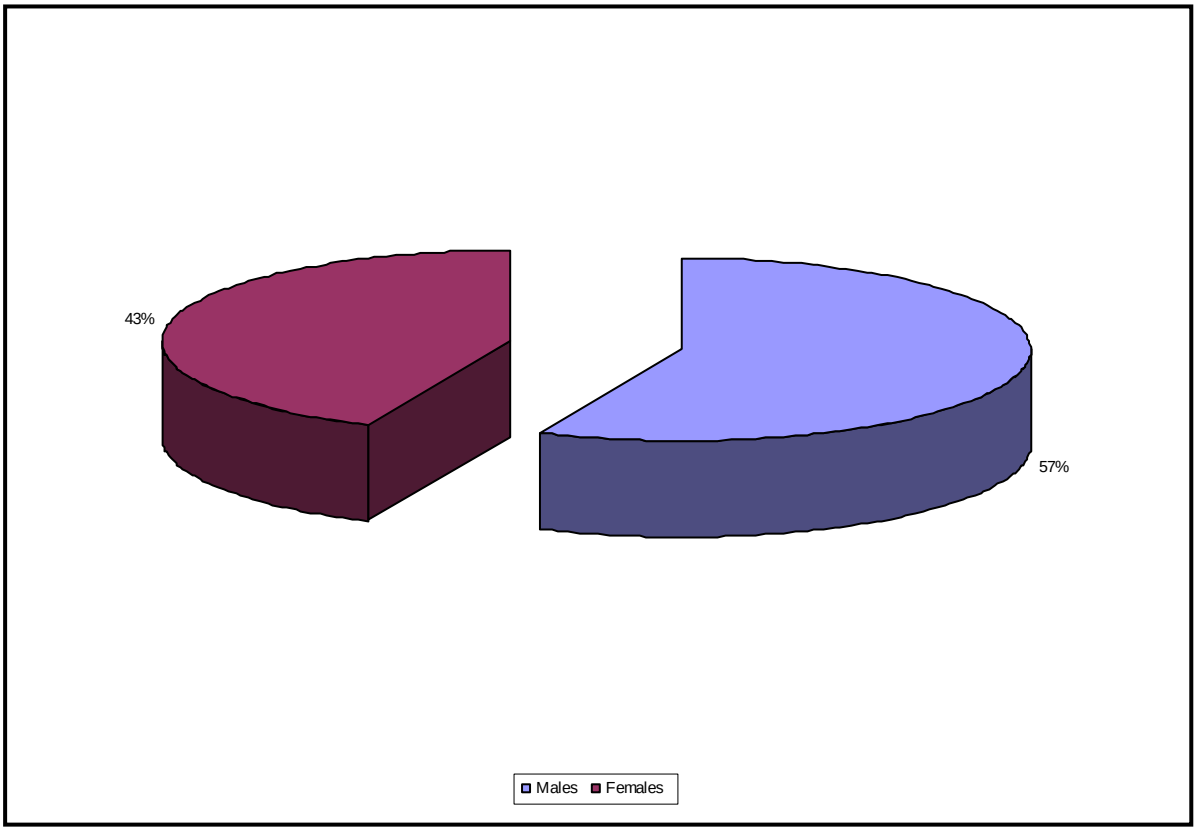

Fig. (2): Distribution of the studied neonates according to sex

Table (3): Clinical finding among the studied preterm neonates

Clinical data	Yes (present)		No (absent)		Total	
	number	%	number	%	number	%
1. Pallor	25	31.25	55	68.75	80	100.0
2. Jaundice	21	26.2	59	73.8	80	100.0
3. Cyanosis	28	35.0	52	65.0	80	100.0
4. Edema	7	8.7	73	91.3	80	100.0
5. Poor reflexes	48	60.0	32	40.0	80	100.0
6. Convulsions	22	27.5	58	72.5	80	100.0
7. Resp.distress	31	38.7	49	61.3	80	100.0
8. Apnea	17	21.2	63	78.8	80	100.0
9.↓A/E	36	45.0	44	55.0	80	100.0
10.Abd.distention	8	10.0	72	90.0	80	100.0
11. HSM	13	16.2	67	83.8	80	100.0

(A/E= Air entry, HSM = Hepato spleenomegally)

From this table: the most common clinical parameter are poor reflexes, ↓A/E, Respiratory distress and Cyanosis respectively.

Table (4): Cranial ultrasonographic data among the studied neonates

Studied neonates / U/S data	No. of cases	%
Normal	45	56.3
IVH	12	15.0
G I	6	
G II	2	
G III	2	
G IV	2	
Brain edema(HIE)	13	16.3
Meningitis (or ventriculitis).	3	3.7
Hydrocephalus	5	6.2
Absent corpus callosum	2	2.5
Total	80	100.0

Table (5): Cranial ultrasonographic data according to sex

Sex / U/S data	Males		Females		Total		z	p
	no	%	no	%	No	%		
- Normal	30	58.8	15	51.7	45	56.3	0.41	>0.05
- IVH	8	15.7	4	13.8	12	15.0	0.21	>0.05
- Brain edema (HIE)	7	13.7	6	20.7	13	16.2	0.74	>0.05
- Meningitis	3	5.9	0	0.0	3	3.7	1.33	>0.05
- Hydrocephalus	2	3.9	3	10.3	5	6.3	1.1	>0.05
-ACC	1	2.0	1	3.5	2	2.5	0.4	>0.05
Total	51	100.0	29	100.0	80	100.0		

- There is no significant difference between patients with normal cranial sonographic finding compared to those with abnormal cranial U/S finding as regard sex distribution.

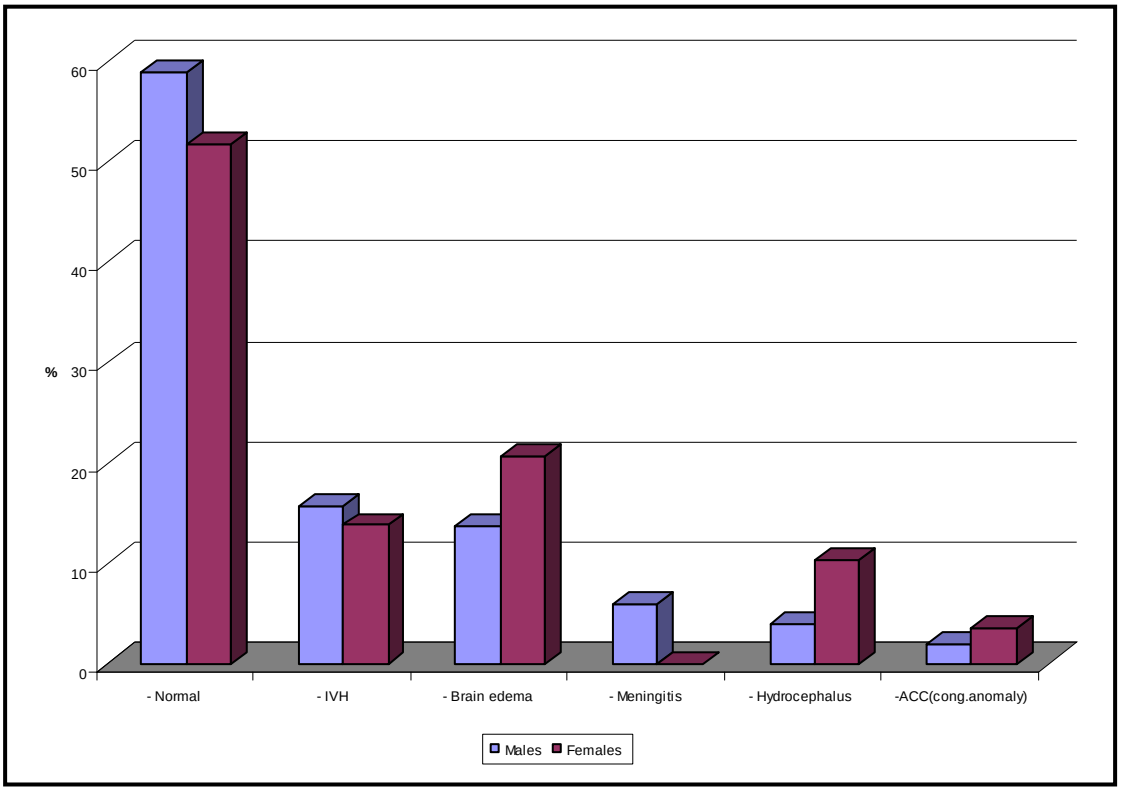

Fig. (3): Cranial U/S data according to sex

Table (6): Relation between weight and cranial ultrasonographic data

Wt. / U/S data	$\overline{X}$ ±SD	T	p
- Normal	2.1 ± 0.6	-	-
- IVH	1.48 ± 0.6	T_1=3.18	<0.01
- Brain edema	2.6 ± 0.6	T_2=2.65	<0.05
- Meningitis	2.7 ± 0.5	T_3=1.99	>0.05
- Hydrocephalus	2.4 ± 0.7	T_4=0.92	>0.05
- ACC	1.95 ± 0.3	T_5=0.65	>0.05

- There is a highly significant statistical difference between patients with IVH compared to others as regard the weight.
- There is a significant statistical difference between patients with HIE compared to others as regard the weight.

Table (7): Cranial ultrasonographic data U/S data according to gestational age goups

GA (weeks) / U/S data	GroupI ≤ 30		GroupII > 30		Total		Z	P
	No	%	No	%	No	%		
Normal	4	8.9	41	91.1	45	100.0	-	-
IVH	7	58.4	5	41.6	12	100.0	3.22	<0.01
Brain edema (HIE)	7	53.9	6	46.1	13	100.0	2.96	<0.01
Meningitis	0	0.0	3	100	3	100.0	0.95	>0.05
Hydrocephalus	0	0.0	5	100	5	100.0	1.24	>0.05
ACC	0	0.0	2	100	2	100.0	0.77	>0.05

- There is a highly significant difference between patients with gestational age ≤ 30 w and others > 30 w as regard the incidence of IVH & brain edema.

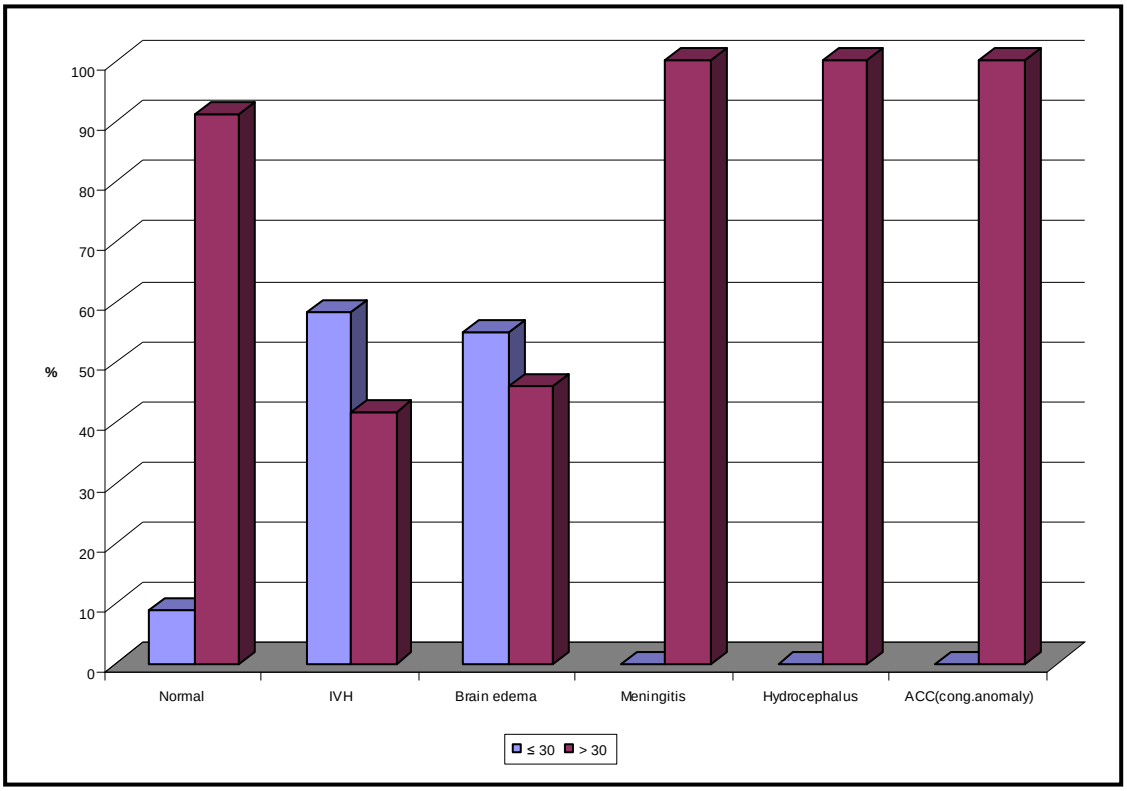

Fig. (4): U/S data according to GA

Table (8): Cranial ultrasonographic data in relation to gestational age

GA / U/S data		$\overline{X}$ ±SD	T	p
- Normal	n=45	34.1±2.2	-	-
- IVH	n=12	31.2±3.4	T_1=2.8	<0.05
- Brain edema (HIE)	n=13	35.2±1.9	T_2=1.77	>0.05
- Meningitis	n=3	36.0±1.6	T_3=1.93	>0.05
- Hydrocephalus	n=5	36.0±2.1	T_4=1.91	>0.05
- ACC	n=2	34.5±2.1	T_5=0.26	>0.05

- There is a significant statistical difference between the mean of gestational age among patients with IVH compared to those without.

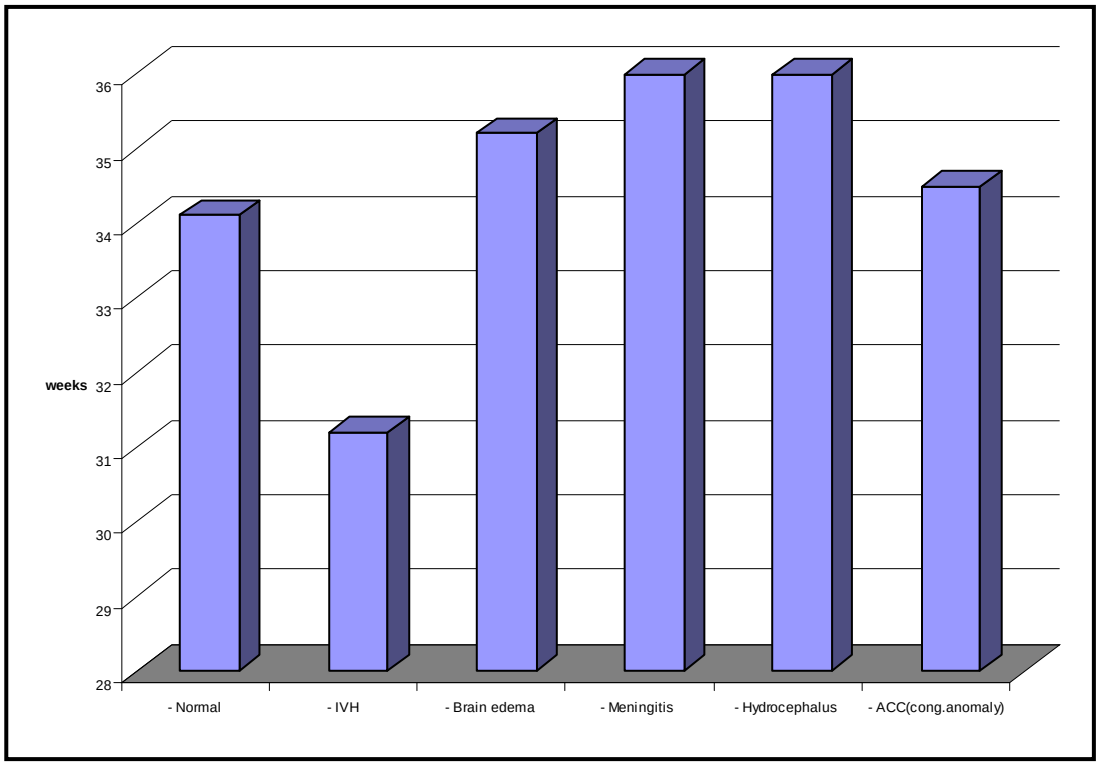

Fig. (5): Cranial ultrasonographic data in relation to gestational age

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Table (10): Outcome of studied cases in relation to gestational age:

G A / Outcome	$\bar{X}$ ± SD	t	p
Survivors N=51	34.6 ± 2.3	2.39	<0.05
Non survivors N= 29	33.1 ± 2.9		

- There is a significant statistical difference between the mean of gestational age among the studied cases as regard mortality.

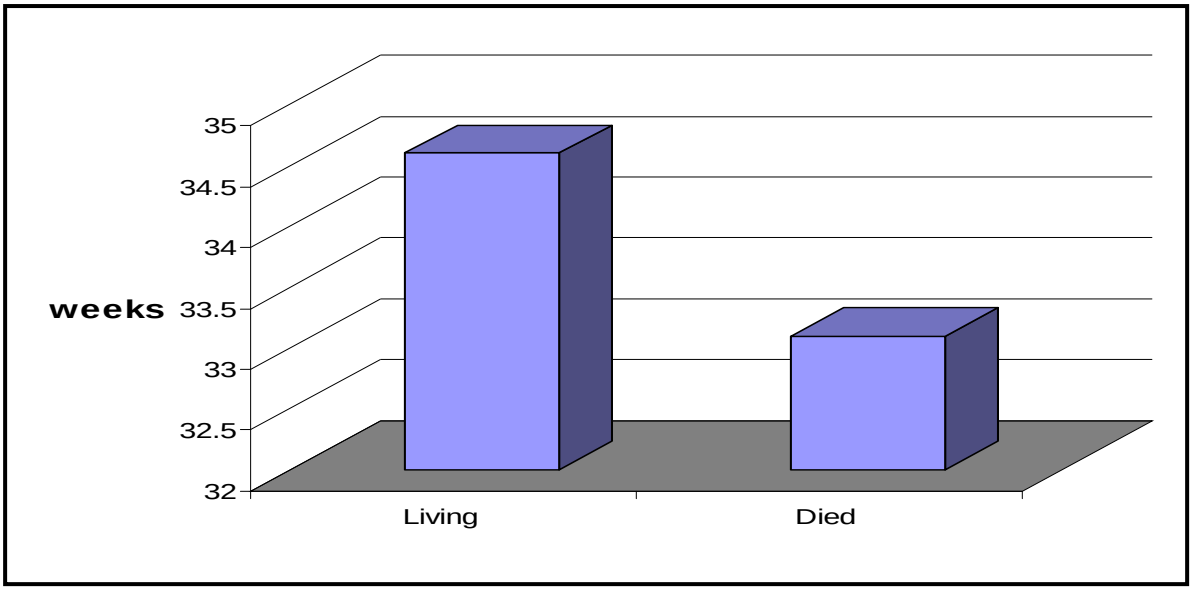


Fig. (6): Means of GA according to outcome

Table (11): IVH grades in relation to gestational age

GA / IVH grades	$\bar{X}$ ± SD	t	P
Normal n=45	34.1±2.2	-	-
G I n=6	33±3.9	t1 = 0.78	>0.05
G II n=2	29±2.4	t2 = 2.95	<0.01
G III n=2	27.2±0.1	t 3= 20.27	<0.001
G IV n=2	27.2±0.1	t 4= 20.27	<0.001

- There is a highly significant statistical difference between the mean of gestational age among patients with IVH grad(II, III & IV) and those with grad I .

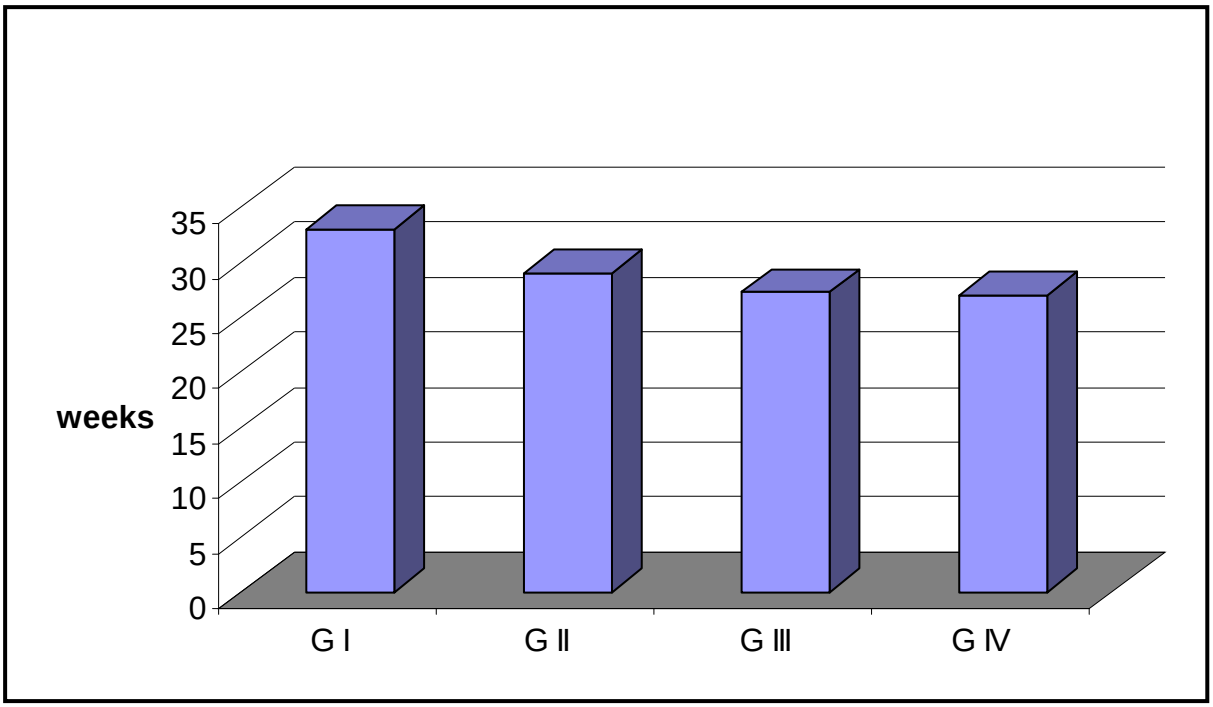


Fig. (7): Means of GA among cases with IVH according to grades

يوجد جدول بالعرض (١٢) Maternal risk factors

Table (13): Premature rupture of membrane (maternal risk factor) among the studied neonates in relation to U/S data:

PROM / U/S data		Yes		Z	p
		number	%		
Normal	n=45	5	11.1	-	
IVH	n=12	4	33.3	Z_1=1.72	<0.05
Brain edema (HIE)	n=13	3	23.1	Z_2=1.1	>0.05
Meningitis	n=3	2	66.7	Z_3=2.44	<0.01
Hydrocephalus	n=5	2	40.0	Z_4=1.64	<0.05
ACC	n=2	0	0.0	Z_5=0.5	>0.05

- There is a significant statistical difference between mothers suffering from PROM and those with out as regard the incidence of IVH and hydrocephalus.
- There is a highly significant statistical difference between mothers suffering from PROM and those with out as regard the incidence of neonatal meningitis.

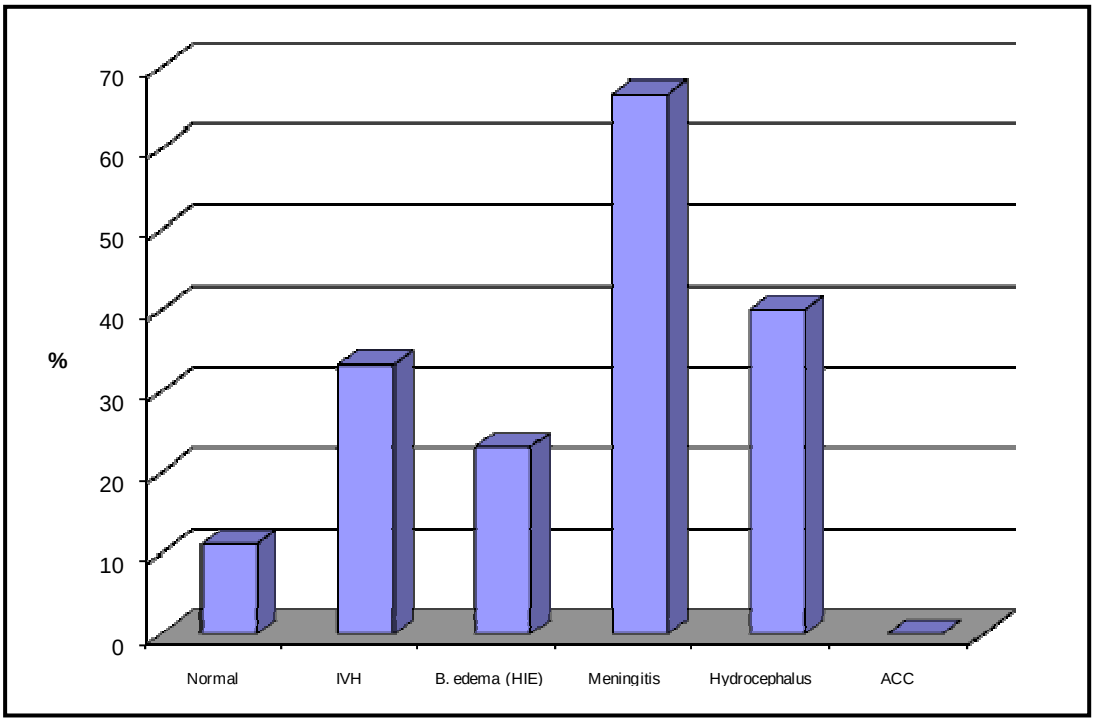


Fig. (8): Premature rupture of membrane (maternal risk factor) among the studied neonates in relation to U/S data

Table (14): Traumatic delivery (maternal risk factor) among the studied neonates in relation to cranial ultrasonographic data:

Traumatic delivery / u/s data		Yes		Z	P
		number	%		
Normal	n=45	2	4.4	-	
IVH	n=12	3	25.0	Z_1=2.14	<0.05
Brain edema (HIE)	n=13	3	23.1	Z_2=2.02	<0.05
Meningitis	n=3	0	0.0	Z_3=0.37	>0.05
Hydrocephalus	n=5	0	0.0	Z_4=0.48	>0.05
ACC	n=2	0	0.0	Z_5=0.31	>0.05

- There is a significant statistical difference between mothers with traumatic delivery compared to others as regard incidence of IVH and brain edema.

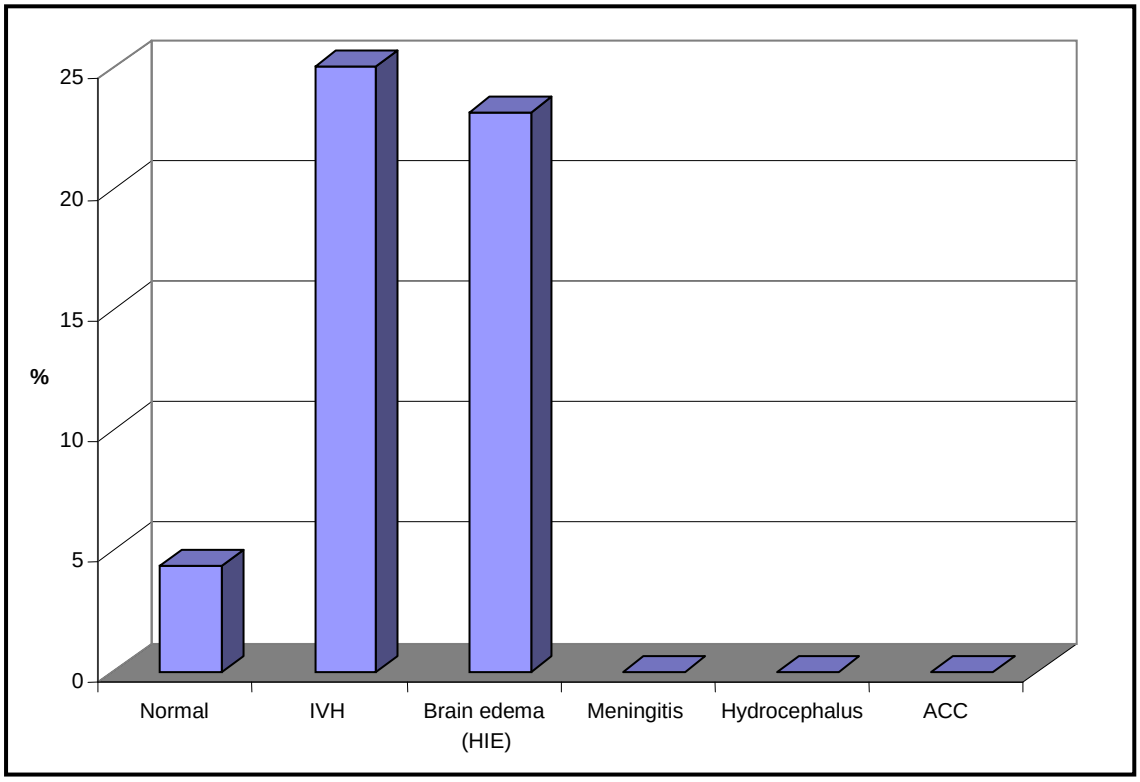


Fig. (9): Traumatic delivery (maternal risk factor) among the studied neonates in relation to cranial ultrasonographic data

Table (15): Chorioamnitis (maternal risk factor) among the studied neonates in relation to cranial ultrasonographic data

Chorioamnitis / u/s data		Yes		z	p
		number	%		
Normal	n=45	1	2.3	-	
IVH	n=12	0	0.0	Z_1=0.52	>0.05
Brain edema (HIE)	n=13	0	0.0	Z_2=0.54	>0.05
Meningitis	n=3	2	66.7	Z_3=4.32	<0.001
Hydrocephalus	n=5	0	0.0	Z_4=0.34	>0.05
ACC	n=2	0	0.0	Z_5=0.21	>0.05

- There is a highly significant statistical difference between mothers suffering from chorioaminitis and those with out as regard the incidence of neonatal meningitis.

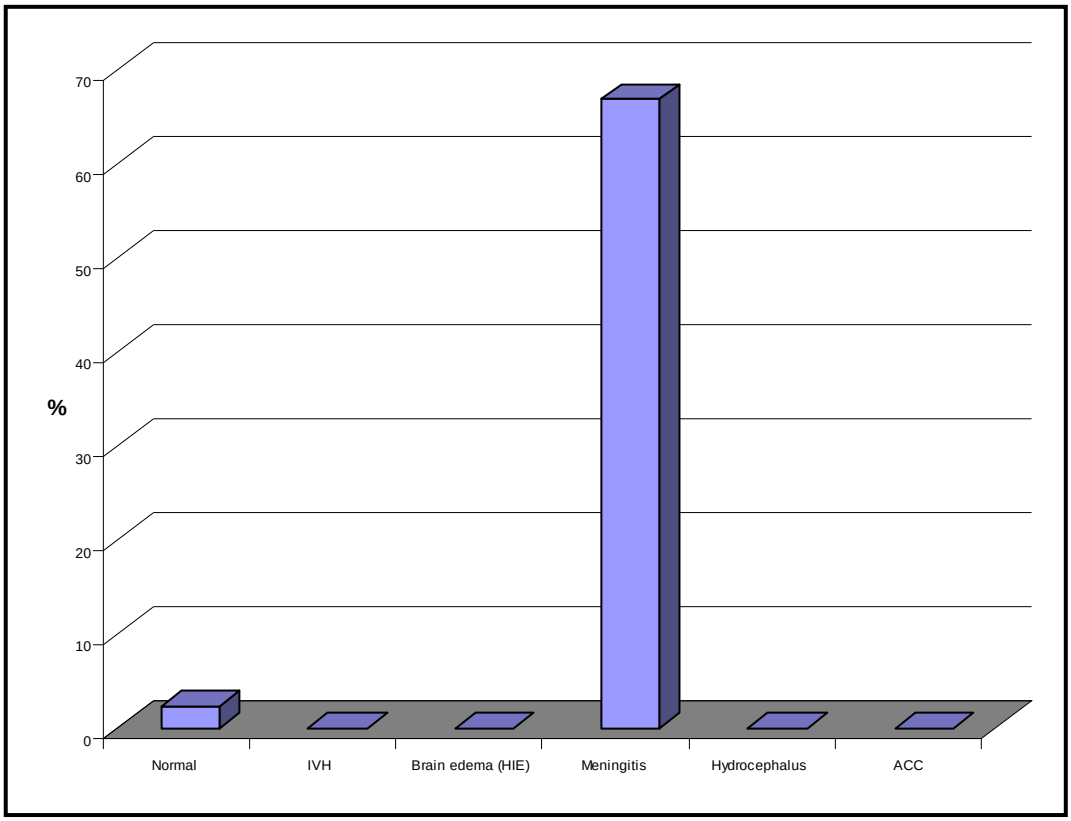


Fig. (10): Chorioamnitis (maternal risk factor) among the studied neonates in relation to cranial ultrasonographic data

Table (16): Polyhydraminous (maternal risk factor) among the studied neonates according to cranial ultrasonographic data:

Polyhydraminous / U/S data	number	%	z	p
Normal n=45	2	4.4	-	-
IVH n=12	0	0.0	Z_1=0.74	>0.05
Brain edema (HIE) n=13	3	23.1	Z_2=2.02	<0.05
Meningitis n=3	0	0.0	Z_3=0.37	>0.05
Hydrocephalus n=5	2	40.0	Z_4=2.67	<0.001
ACC n=2	0	0.0	Z_5=0.31	>0.05

- There is a highly significant statistical difference between mothers suffering from polyhydraminous and those without as regard the incidence of congenital hydrocephalus.
- There is a significant statistical difference between mothers suffering from polyhydraminous and those without as regard the incidence of neonatal brain edema.

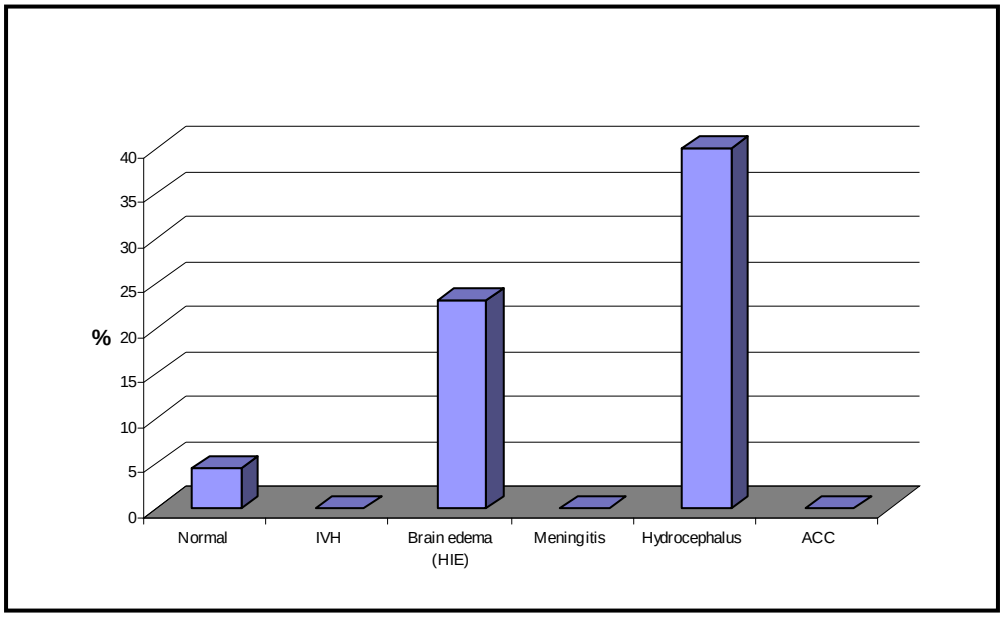


Fig. (11): Polyhydraminous (maternal risk factor) among the studied neonates according to cranial ultrasonographic data

Table (17): Anti-partum hemorrhage (maternal risk factor) among the studied neonates according to cranial ultrasonographic data

APHg / U/S data		number	%	z	P
Normal	n=45	6	13.4	-	-
IVH	**n=12**	5	41.7	Z_1=1.99	<0.05
Brain edema(HIE)	**n=13**	0	0.0	Z_2=1.39	>0.05
Meningitis	**n=3**	0	0.0	Z_3=0.68	>0.05
Hydrocephalus	**n=5**	0	0.0	Z_4=0.87	>0.05
ACC	**n=2**	0	0.0	Z_5=0.55	>0.05

- There is a significant statistical difference between mothers suffering from APHg and those without as regard the incidence of neonatal IVH.

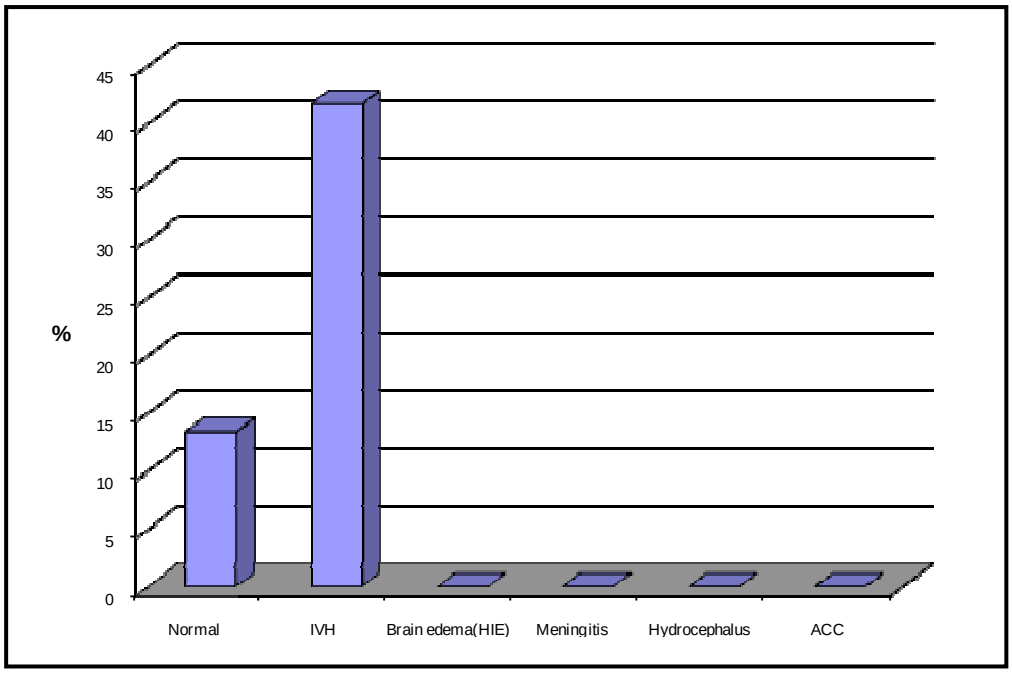


Fig. (12): Anti-partum hemorrhage (maternal risk factor) among the studied neonatea according to cranial ultrasonographic data

يوجد جدول بالعرض (١٨)

Table (19): Apnea (clinical data) among the studied neonates in relation to cranial ultrasonographic data

Apnea / U/S data		Yes		z	p
		number	%		
Normal	n=45	3	6.7	-	
IVH	n=12	3	25.0	Z_1=1.74	<0.05
Brain edema(HIE)	n=13	4	30.7	Z_2=2.05	<0.05
Meningitis	n=3	2	66.6	Z_3=3.12	<0.001
Hydrocephalus	n=5	1	20.0	Z_4=1.0	>0.05
ACC	n=2	1	50.0	Z_5=2.06	<0.05

- There is a highly significant statistical difference between patients with apnea compared to others as regard meningitis.
- There is a significant difference between patients with apnea compared to others as regard IVH , brain edema and ACC.

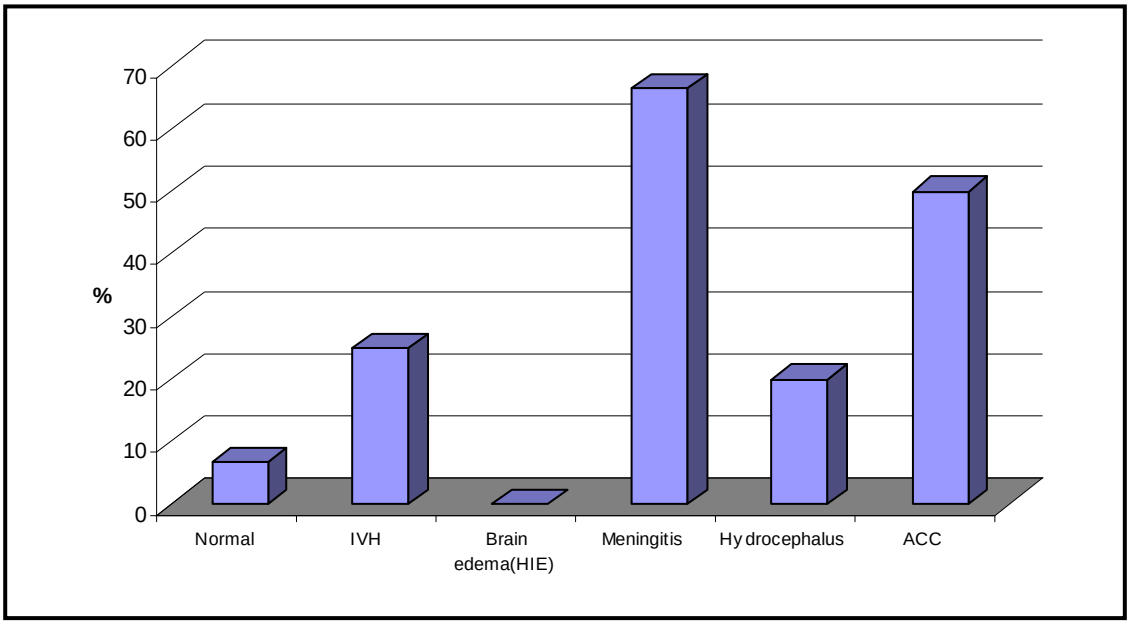


Fig. (13): Apnea (clinical data) among the studied neonates in relation to cranial ultrasonographic data

Table (20): Convulsions(clinical data) among the studied neonates in relation to cranial ultrasonographic data

Convulsions / U/S data		Yes		z	p
		number	%		
Normal	**n=45**	4	8.9	-	-
IVH	**n=12**	4	33.3	Z_1=2.1	<0.05
Brain edema(HIE)	**n=13**	9	69.2	Z_2=4.05	<0.001
Meningitis	**n=3**	2	66.7	Z_3=2.74	<0.001
Hydrocephalus	**n=5**	3	60.0	Z_4=2.9	<0.001
ACC	**n=2**	0	0.0	Z_5=0.44	>0.05

- There is a highly significant statistical difference between patients with convulsions compared to others as regard brain edema, meningitis and hydrocephalus.
- There is a significant statistical difference between patients with convulsions compared to others as regard IVH.

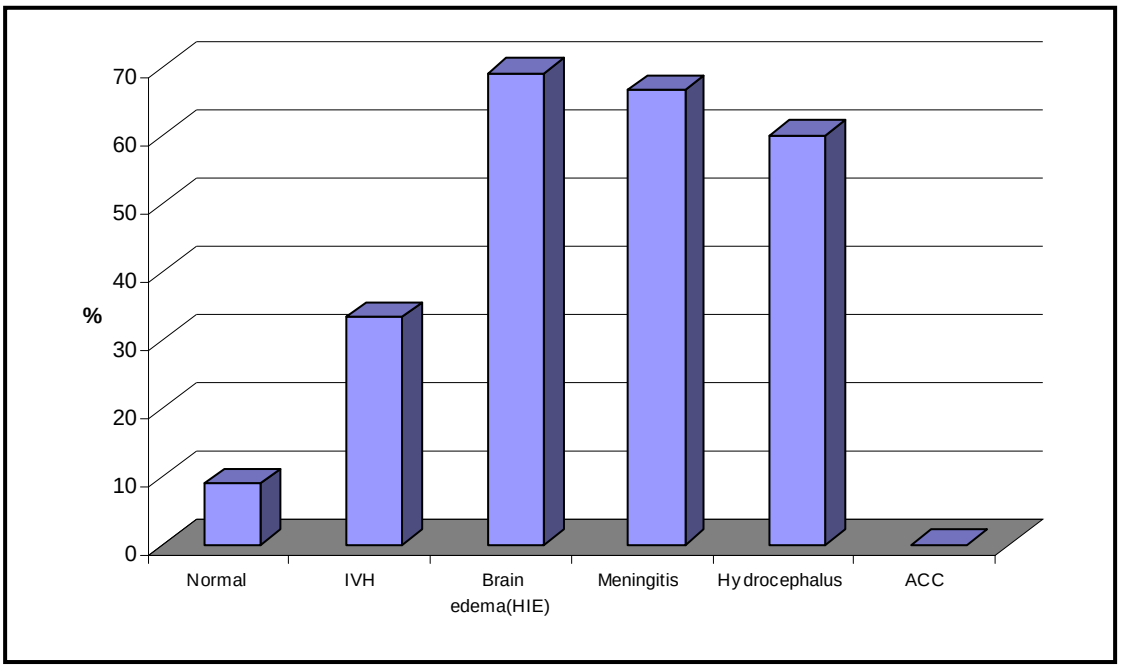


Fig. (14): Convulsions (clinical data) among the studied neonates in relation to cranial ultrasongoraphic data

Table (21): Poor reflexes (clinical data) among the studied neonates in relation to cranial ultrasonographic data

Poor reflexes / U/S data	number	%	z	p
Normal n=45	15	33.3	-	-
IVH n=12	12	100.0	Z_1=2.98	<0.01
Brain edema (HIE) **n=13**	12	92.3	Z_2=2.75	<0.01
Meningitis n=3	3	100.0	Z_3=1.83	<0.05
Hydrocephalus n=5	4	80.0	Z_4=2.04	<0.05
ACC n=2	2	100.0	Z_5=1.92	<0.05

- There is there is a highly significant statistical difference between patients with poor reflexes compared to others as regard IVH and Brain edema.
- There is significant statistical difference between patients with poor reflexes compared to others as regard meningitis, Hydrocephalus and ACC.

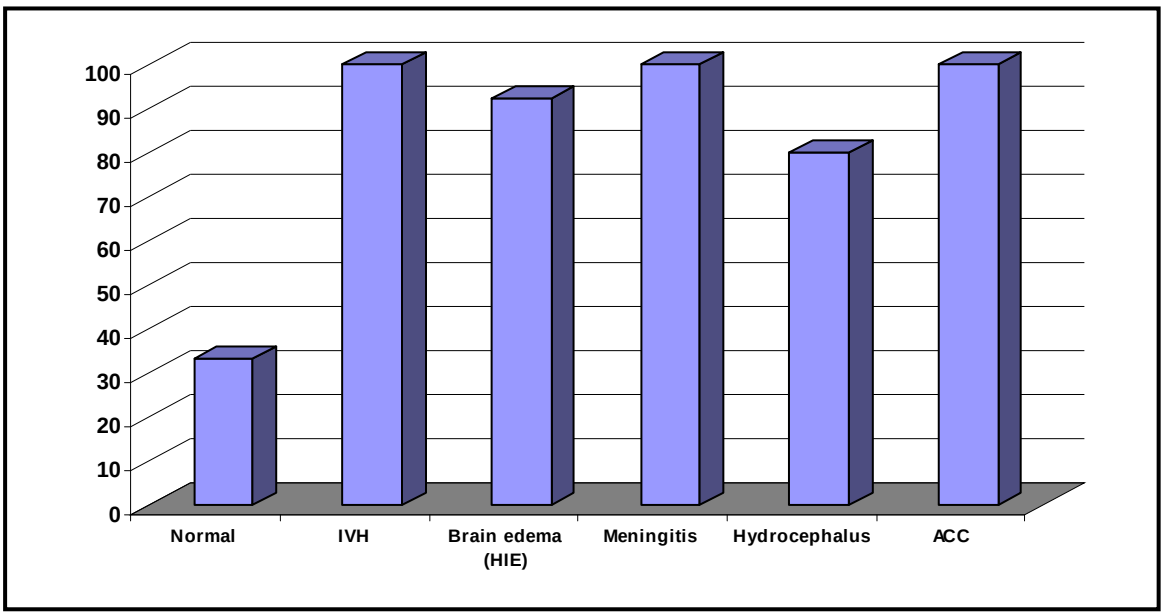


Fig. (15): Poor reflexes (clinical data) among the studied neonates in relation to cranial ultrasonographic data

Table (22): Relation between head circumference among the studied neonates and cranial ultrasonographic data:

↑ H.C / U/S data	Yes		z	p
	number	%		
Normal n=45	1	2.22	-	-
Hydrocephalus n=5	5	100	5.99	<0.001
Other cases n=30	0	0.0	0.82	>0.05

There is a highly significant statistical difference between patients with increase H.C. compared to others as regard the incidence of congenital hydrocephalus .

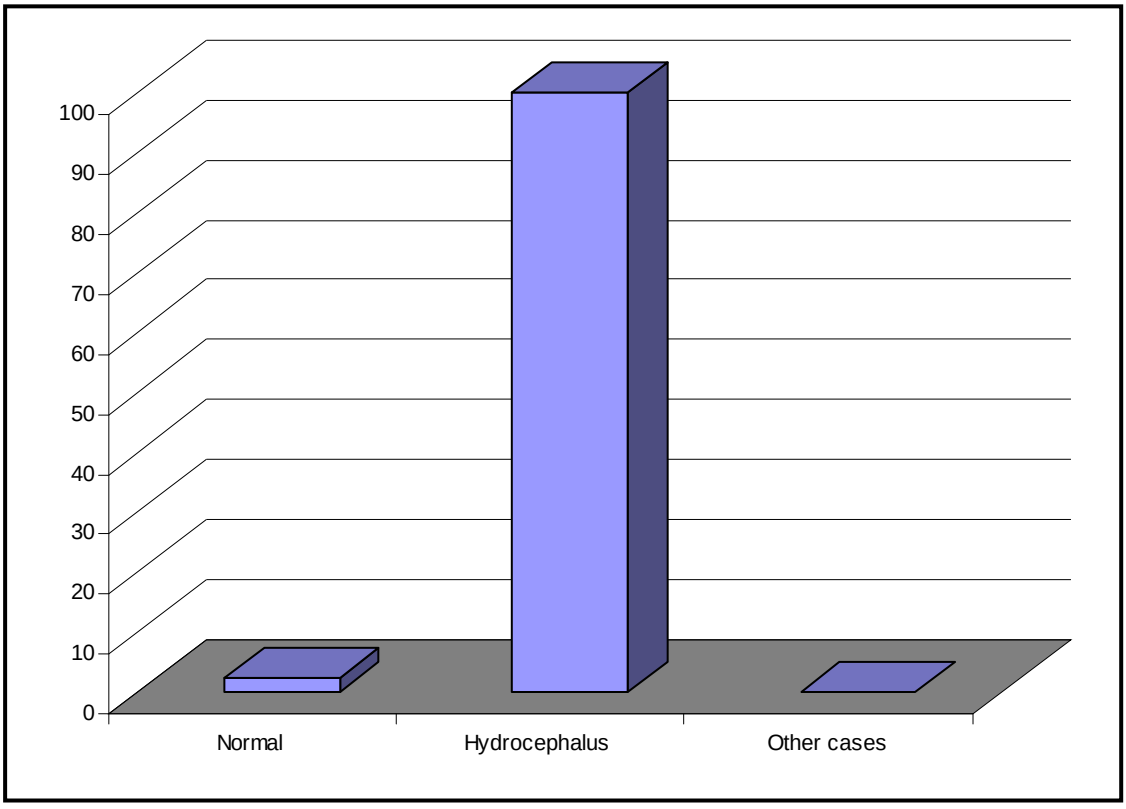


Fig. (16): Head circumference among the studied neonates and cranial ultrasonographic data

Table (23): Relation between total leukocytic count (lab.parameters) and cranial ultrasonographic data:

TLC / U/S data		$\overline{X}$ ± SD	T	P
Normal	n=45	11.42±6.6	-	
IVH	n=12	10.2±4.6	0.57	>0.05
Brain edema (HIE)	n=13	15.9±7.6	1.93	>0.05
Meningitis	n=3	18.3±5.4	2.1	<0.05
Hydrocephalus	n=5	13.1±6.6	0.54	> 0.05
ACC(cong.anomaly)	n=2	10.8±4.2	0.19	>0.05

- There is a significant statistical statistical difference between the mean of TLC among patients with meningitis compared to those without.

Table (24): Neutrophilic shift in relation to cranial ultrasonographic data among the studied neonates

Staff/Seg / U/S data		$\overline{X}$ ±SD	t	P
Normal	n=45	0.09±0.06	-	-
IVH	n=12	0.08±0.07	0.45	>0.05
Brain edema (HIE)	n=13	0.07±0.05	1.21	>0.05
Meningitis	n=3	0.13±0.03	2.05	<0.05
Hydrocephalus	n=5	0.07±0.06	0.71	>0.05
ACC	n =2	0.07±0.09	0.31	>0.05

- There is a significant statistical difference between the mean of neutrophilic shift to left among patients with meningitis compared to those without.

Table (25): Relation between HB (lab.parameters) and cranial ultrasonographic data

HB / U/S data		$\overline{X}$ ± SD	t	p
Normal	n=45	15.1± 3.8	-	-
IVH	n=12	13.6±1.4	2.16	<0.05
Brain edema(HIE)	n=13	14.5±2.8	0.62	>0.05
Meningitis	n=3	14.2±4.3	0.35	>0.05
Hydrocephalus	n=5	13.7±3.8	0.78	>0.05
ACC	n=2	13.8±3.2	0.56	>0.05

- There is a significant statistical difference between the mean of Hb count among patients with IVH compared to those without.

Table (26): Relation between HCT and cranial ultrasonographic data

HCT / U/S data		$\overline{X}$ ± SD	t	P
Normal	n=45	43.8 ± 10.2		
IVH	n=12	39.4 ± 4.6	2.18	<0.05
Brain edema (HIE)	n=13	42.2 ± 8.1	0.59	>0.05
Meningitis	n=3	41.1 ± 9.8	0.46	>0.05
Hydrocephalus	n=5	40.8 ± 11.5	0.56	>0.05
ACC(cong.anomaly)	n=2	41.5 ± 4.9	0.61	>0.05

- There is a significant statistical difference between the mean of Hct value among patients with IVH compared to those without.

Table (27): Relation between platelets count (lab.parameters) and cranial ultrasonographic data

Platelets / U/S data		$\overline{X}$ ± SD	T	p
Normal	n=45	235.1± 125.7	-	-
IVH	n=12	172±85.5	2.04	<0.05
Brain edema(HIE)	n=13	203.7±59.9	1.25	>0.05
Meningitis	n=3	125.7±63.3	2.66	<0.01
Hydrocephalus	n=5	182.8±111.6	0.98	>0.05
ACC	n=2	260.5±229.8	0.16	>0.05

- There is a highly significant statistical difference between the mean of platelets count among patients with meningitis compared to those without.
- There is a significant statistical difference between the mean of platelets count among patients with IVH compared to those without.

Table (28): Relation between PT (lab.parameters) and cranial ultrasonographic data

PT / U/S findings		$\overline{X}$ ±SD	t	p
- Normal	n=45	15.27±1.5	-	-
- IVH	n=12	19.3±3.5	T_1=3.89	<0.001
- Brain edema(HIE)	n=13	14.5±1.3	T_2=1.82	>0.05
-Meningitis	n=3	14.7±0.6	T_3=1.38	>0.05
- Hydrocephalus	n=5	14.8±0.8	T_4=1.35	>0.05
- ACC	n=2	16±1.4	T_5=0.72	>0.05

- There is a highly significant statistical difference between the mean of PT among patients with IVH compared to those without.

Table (29): Correlation between PTT (lab.parameters) and cranial ultrasonographic data

PTT / U/S data		$\overline{X}$ ± SD	T	p
Normal	n=45	37.4±4.7	-	
IVH	n=12	48.7±8.8	4.29	<0.001
Brain edema (HIE)	n=13	35.2±3.1	1.98	>0.05
Meningitis	n=3	35.7±0.6	2.18	<0.05
Hydrocephalus	n=5	34.8±1.3	2.86	<0.01
ACC(cong.anomaly)	n=2	38±2.8	0.29	>0.05

- There is a highly significant statistical difference between the mean of PTT count among patients with IVH compared to those without.

Table (30): Neonatal outcome of different grades of IVH

Outcome / IVH grades	Living n	Died n	Mortality %
GI n=6	3	3	50.0
GII n=2	1	1	50.0
GIII n=2	0	2	100.0
GIV n=2	0	2	100.0

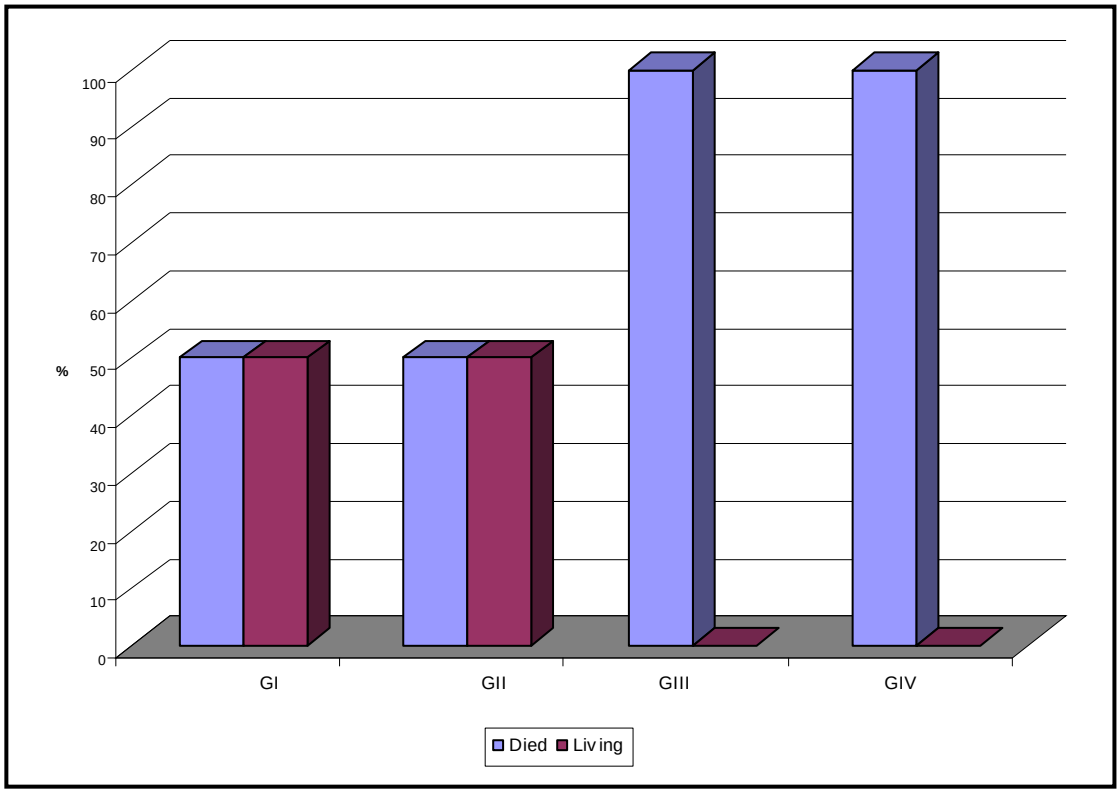


Fig. (17): Neonatal outcome of different grades of IVH

Table (31): Relation between the cranial cranial ultrasonographic data and the neonatal outcome in the studied cases

Out come / U/S data		Living (n)	Died (n)	Mortality %	z	p
Normal	n=45	35	10	22.2	-	-
IVH	n=12	4	8	67.7	2.38	<0.01
Brain edema	n=13	8	5	39.5	0.18	>0.05
Meningitis	n=3	0	3	100.0	2.34	<0.01
Hydrocephalus	n=5	3	2	40.0	0.18	>0.05
ACC	n=2	1	1	50.0	0.41	>0.05

- There is a highly significant difference between patients with IVH and Meningitis compared to those without as regard the outcome.

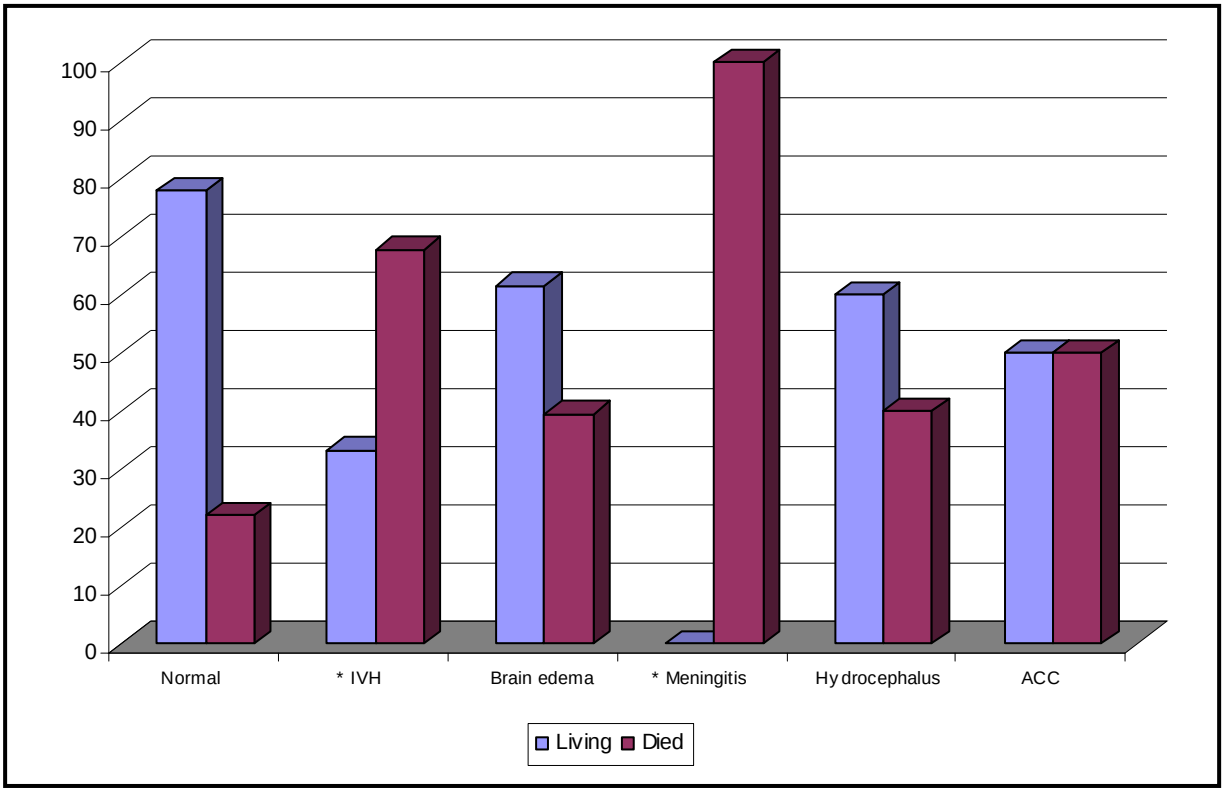


Fig. (18): The cranial U/S data and the neonatal outcome in the studied cases

Table (32): Cranial U/S data (normal & abnormal) in relation to clinical neurological finding and maternal risk factors (persent or absent) in the studied groups.

Studied groups / U/S data	Group I ≤ 30w		Group II > 30w	
	Total cases	**Clinical neurological finding and/or MRF +ve**	**Total case**	**Clinical neurological finding and/ or MRF +ve**
Normal	5	2	40	13
Abnormal U/S data	14	11	21	21
IVH	7	5	5	5
Brain edema (HIE)	7	6	6	6
Meningitis	0	0	3	3
Hydrocephalus	0	0	5	5
ACC	0	0	2	2

(MRF= maternal risk factors, +ve = present)

- Two Cases with IVH (≤ 30w gestational age) were found in this study despite absence of perinatal risk factors or significant clinical data
- One Case with HIE (≤ 30w gestational age) was found in this study despite absence of perinatal risk factors or significant clinical data

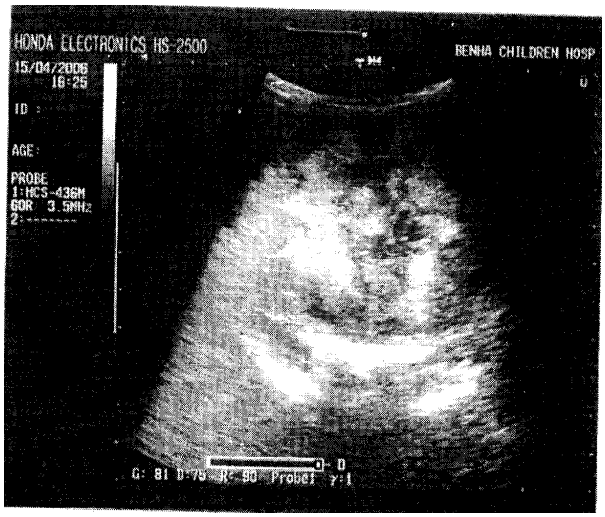
CASE DEMONSTRATION

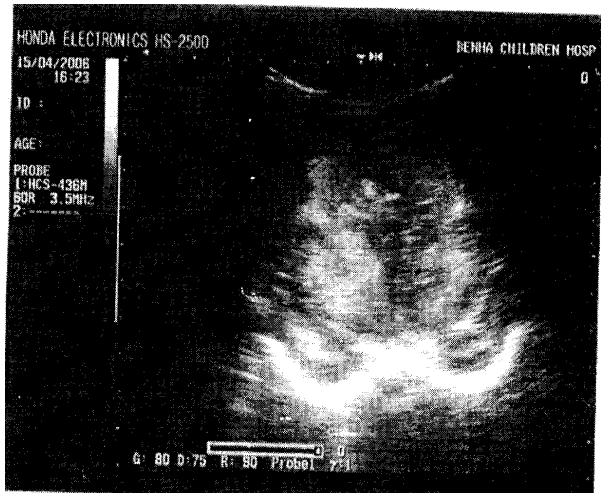
Case (1) , Male patient:

- 29 wks gestational age, birth weight was 1 kg.
- Delivered vaginally with traumatic delivery
- Clinically : convulsions , cyanosis and poor reflexes.
- Diagnosis : intraventricular hemorrhage grad IV.

Cranial ultrasound revealed: -

- Bilateral diffuse periventricular echogenic areas of bright echopattern seen more prominent in right side with marked echogenic areas seen involved both lateral ventricles, the picture denoting (I.V.H grad IV) with perivntricular heamorrhage.
- No midline shift or deformity.
- Normal posterior cranial fossa structures.
- No evidence of extra-axial fluid collection.





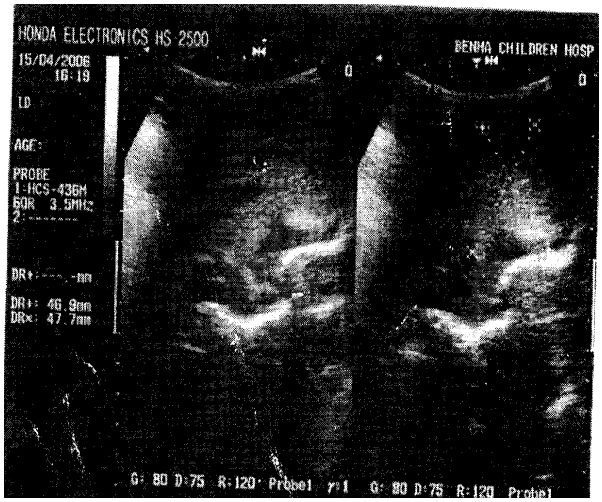


Fig. (19): Cranial ultrasound is consistent with I.V.H.grad IV.

Case (2) , Male patient:

- 36 wks gestational age , birth weight was 2.700 kg.
- Delivered vaginally.
- Clinically : convulsions , poor reflexes and R.D .
- Diagnosis : HIE (brain edema)

Cranial ultra sound revealed:

- Bilateral diffuse bright echopattern of both cerebral hemispheres, with effacement of ventricular system denoting brain edema suggesting hypoxic ischemic brain insult.
- No evidence of intracranial haemorrahage.
- Normal posterior cranial fossa structures.
- No evidence of extra-axial fluid collection.

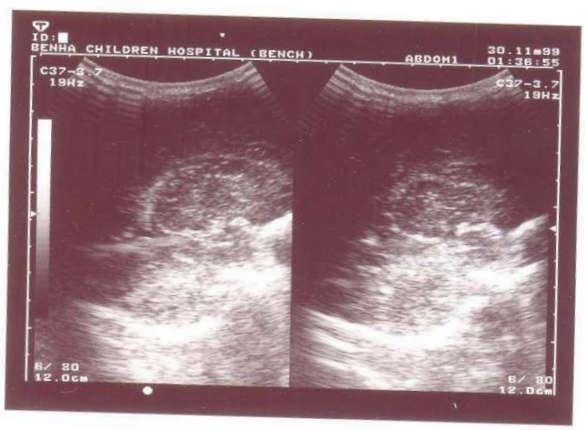


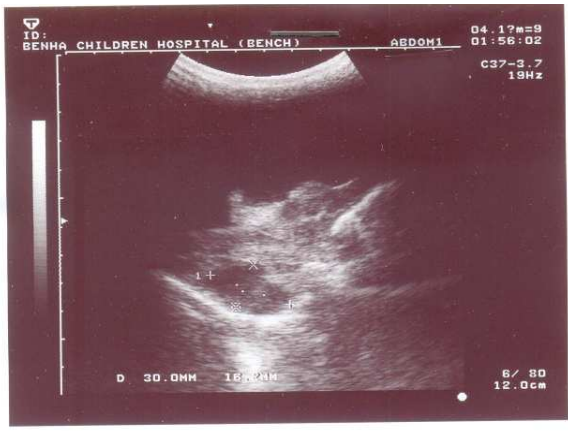
Fig. (20): Cranial ultrasound is consistent with brain edema suggesting early changes of HIE .

Case (3), Male patient:

- 36 wks gestational age , birth weight was 2.790 kg.
- Delivered by C.S.
- Clinically : convulsions , cyanosis , poor reflexes , ↑ H.C ,.↓A/E and R.D .
- Diagnosis : Dandy-Walker syndrome (hydrocephalus)

Cranial ultra sound revealed:

- The posterior fossa is mildly enlarged by cyst that seen communicating anteriorly through hypoplastic cerebellar vermis, it seen measuring about 4*3*1.5 cm.Moderat dilatation ventricular system (both lateral , 3rd & 4th ventricles) with consequent thin cerebral mantle , a picture of Dandy-Walker variant.



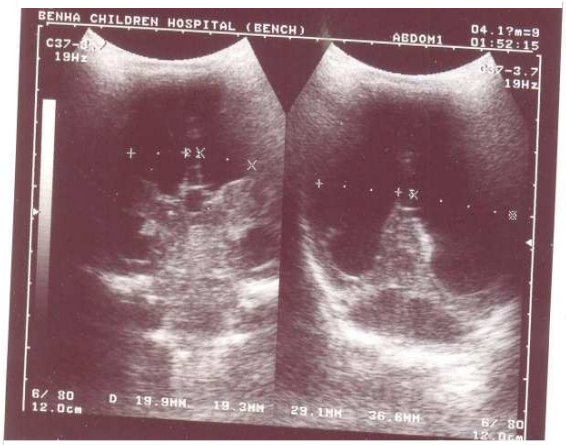


Fig.(21):Cranial ultrasound is consistant with Dandy-Walker variant

Case (4) , Male patient:

- 34 wks gestational age , birth weight was 1.680 kg.
- Delivered vaginally., PROM
- Clinically : pallor , convulsions , cyanosis , poor reflexes , apnea , ↑ H.C ,.↓A/E and R.D .
- Diagnosis : Meningitis with secondary obstructive hydrocephalus.

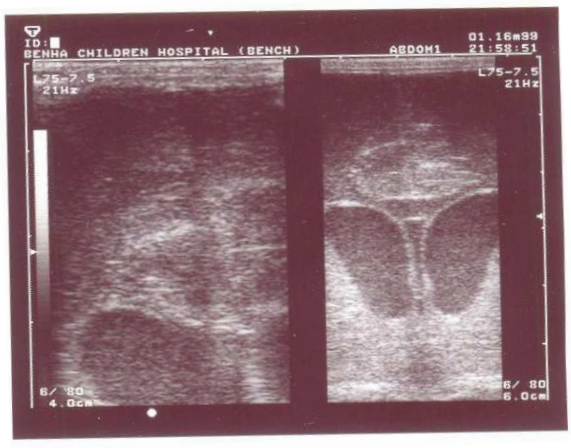
Cranial ultra sound revealed:

- Increased echogenicity of both cerebral hemispheres.
- Mild to moderate dilatation of the ventricular system & subarachnoid space with turbid CSF. TCD of cerebral vessels show increased RI that seen measuring 1 (N: up to 0.67). The previous picture is highly suggestive of meningitis with 2ry obstructive communicating hydrocephalus.
- The measurements:

* The lateral ventricles:

- The forntal horns: about 12mm for each one (N. up to 3mm).
- The body: about 18 & 16 mm for the left & right respectively (N. up to 12 mm).

* The 3rd ventricle: about 11 mm (N.: Slit slike about 2 mm).



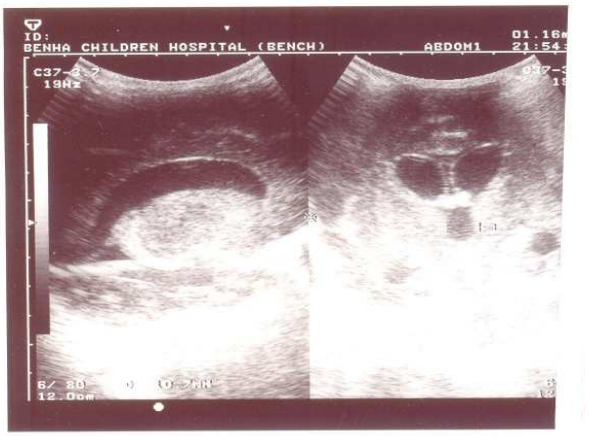


Fig.(22):Cranial ultrasound is consistant with Meningitis with secondary obstructive hydrocephalus

Case (5) , Female patient:

- 30 wks gestational age , birth weight was 1.300 kg.
- Delivered vaginally., PROM
- Clinically : poor reflexes , ↓A/E and R.D .
- Diagnosis : complete agenesis of the Corpus Callosum(ACC).

Cranial ultra sound revealed:

- The ventricular system shows parallelism of lateral ventricles & high 3rd ventricle, the picture denoting ACC with dilatd posterior horn of both lateral ventricles (Colpocephaly).
- Bilateral periventricular dense echogenic areas (periventricular leukomalcia), with prominent choroids plexus. The previous picture is related to immature brain tissue of pretem baby. Follow up is recommended.

*Fig.(23):*Cranial ultrasound is consistant with complete agenesis of the Corpus Callosum(ACC)

Table (9): Relation between mode of delivery and cranial U/S data:

U/S data / Mode of delivery	Normal N = 45		IVH N = 12		Brain edema N = 13		Ventriculitis or (meningitis) N = 3		Hydrocephalus N = 5		ACC N = 2		Total N = 80	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
CS	19	42.2	5	41.7	5	38.5	1	33.3	4	80.0	1	50.0	35	43.75
NVD	26	57.8	7	58.3	8	61.5	2	66.7	1	20.0	1	50.0	45	56.25

Table (12): Relation between the maternal risk factors and cranial U/S data:

U/S data / M. Risk factor	Normal N=45		IVH N=12		P*	B. Edema N= 13		P*	Ventriculitis or (meningitis)N=3		P*	Hydrocephalus N=5		P*	ACC N=2		P*	Total N=80	
	N	%	N	%		N	%		N	%		N	%		N	%		N	%
1. Eclampsia	2	4.5	1	8.3	NS	1	7.7	NS	1	33.3	NS	0	0.0	NS	0	0.0	NS	5	6.3
2. DM	0	0.0	0	0.0	NS	1	7.7	NS	1	33.3	NS	0	0.0	NS	0	0.0	NS	2	2.5
3. Chorioamnitis	1	2.3	0	0.0	NS	0	0.0	NS	2	66.7	HS	0	0.0	NS	0	0.0	NS	3	3.7
4. A.P. hemorrhage	6	13.4	5	41.7	S	0	0.0	NS	0	0.0	NS	0	0.0	NS	0	0.0	NS	11	13.7
5. Polyhydraminous	2	4.5	0	0.0	NS	3	23.1	S	0	0.0	NS	2	40.0	HS	0	0.0	NS	7	8.7
6. Old age	0	0.0	0	0.0	NS	0	0.0	NS	0	0.0	NS	1	20.0	NS	0	0.0	NS	1	1.2
7. PROM	5	11.1	4	33.3	S	3	23.1	NS	2	66.7	HS	2	40.0	S	0	0.0	NS	16	20.0
8. Traumatic delivery	2	4.5	3	25.0	S	3	23.1	S	0	0.0	NS	0	0.0	NS	0	0.0	NS	8	10

There is +ve relationship between mothers with chorioamnitis and incidence of neonatal meningitis

There is +ve relationship between mothers with A.P. hemorrhage and incidence of neonatal IVH.

There is +ve relationship between mothers with polyhydraminous and incidence of neonatal brain edema and congenital hydrocephalus

There is +ve relationship between mothers with PROM and incidence of neonatl IVH, ventriculitis and congenital hydrocephalus

There is +ve relationship between mothers with traumatic delivery and incidence of neonatal IVH and neonatal brain edama.

Table (18): Relation between clinical data and cranial U/S data:

U/S data / Clinical data	Normal N=45		IVH N=12			Brain Edema N=13			Meningitis N=3			Hydrocephalus N=5			ACC N=2		
	No	%	n	z	p	n	z	p	n	z	p	n	z	p	n	Z	p
1. Pallor n=25	10	22.2	10	1.61	<0.05	2	0.48	>0.05	2	1.49	>0.05	1	0.39	>0.05	0	0.45	>0.05
2. Jaundice n=21	16	35.6	3	0.56	>0.05	1	1.63	>0.05	1	0.06	>0.05	0	0.67	>0.05	0	0.65	>0.05
3. Cyanosis n=28	8	17.8	7	2.43	<0.01	9	3.02	<0.01	2	1.8	<0.05	2	1.8	<0.05	0	1.45	>0.05
4. Edema n=7	4	8.9	2	0.74	>0.05	1	0.64	>0.05	0	0.65	>0.05	0	0.97	>0.05	0	1.53	>0.05
5. Poor reflexes n=48	15	33.3	12	2.98	<0.01	12	2.75	<0.01	3	1.83	<0.05	4	2.67	<0.01	2	1.75	>0.05
6.Convulsions n=22	4	8.9	4	2.01	<0.05	9	4.05	<0.001	2	2.74	<0.01	3	4	<0.001	0	1.43	>0.05
7.Resp.distress n=31	14	31.1	6	0.98	>0.05	7	1.2	>0.05	1	0.07	>0.05	3	1.94	<0.05	0	1.34	>0.05
8. Apnea n=17	3	6.7	3	1.74	<0.05	4	2.05	<0.05	2	3.12	<0.01	1	1.55	>0.05	1	2.06	<0.05
9. ↓A/E n=36	21	46.7	6	0.15	>0.05	4	0.77	>0.05	1	0.33	>0.05	3	1.26	>0.05	1	0.07	>0.05
10.Abd.distention n=8	5	11.1	2	0.49	>0.05	0	0.78	>0.05	0	0.54	>0.05	0	0.78	>0.05	1	1.51	>0.05
11. HSM n=13	7	15.6	1	0.59	>0.05	2	0.01	>0.05	1	0.73	>0.05	1	0.73	>0.05	1	1.16	>0.05

There is +ve relation ship between pallor and incidence of neonatal IVH

There is +ve relation ship between cyanosis and incidence of neonatal IVH, brain edema, meningitis and hydrocephalus

There is +ve relation ship between poor reflexes and incidence of neonatal IVH, brain edema, meningitis and hydrocephalus

There is +ve relation ship between convulsions and incidence of neonatal IVH, brain edema, meningitis and hydrocephalus

There is +ve relation ship between apnea and incidence of neonatal IVH, brain edema, meningitis and ACC