Summary

Major advantages of CUS are the following: It can be performed bedside, It can be initiated at a very early stage, even immediately after birth, It is safe, It can be repeated as often as necessary, It is a reliable tool for detection of most hemorrhagic, cystic, and ischemic brain lesions as well as calcifications, cerebral infections, and major structural brain anomalies, both in preterm and full-term neonates and CUS is relatively inexpensive compared with other neuro-imaging techniques For all these reasons it is an excellent tool for serial brain imaging during the neonatal period.

The aim of this work is to study the role of cranial ultrasound in detection of intracranial abnormalities in preterm neonates and correlates with neurodevelopmental outcome for 6 months in preterm aged 28 -36 weeks of gestation .

This study included 130 preterm newborn infants, 65 preterm(28-32wks), and 65 preterm neonates (33-36wks), recruited from El Gamaia El Sharaia neonatal intensive care unit (Almaza) hospital, in the period from September 2009 to Mars 2010.

In this study we found 29 out of 130 preterm having abnormal cranial ultrasound (22.3%) , 20% suffering from PIVH and 2.3% with HIE and we could prove that the incidence of IVH and HIE increased with both decreasing birth weight and

gestational age.

The present study demonstrated that presentation was proved to increase the risk of IVH and HIE.

The present study showed that the incidence and severity of IVH increased with both decreasing birth weight and gestational age.

The present study demonstrated that complete blood count parameters including platelets were significantly lower in the preterms with abnormal cranial ultrasound than preterms without abnormal cranial ultrasound.

The present study demonstrated that Seizures and peumothorax are significantly increased in preterm with abnormal cranial ultrasound.

In present study the duration of O2 therapy and duration of mechanical ventilation is significant increase incidence of cranial U/S abnormalities.

In this study, percentage of cranial U/S abnormalities was significantly higher in neonates on mechanical ventilation.

As regards outcome the non-survivors constituted 15.4% of the studied infants in both groups while survivors constituted 87.6% with 26.6% suffer from major neurodevelopmental delay and normal cases 57.7%.

In group I (28-32wk) mortality cases were 15 (23.1%) , major neurodevelopmental delay cases 22 (33.8%) and normal cases 28 (43.1%) . However, In groupΠ (33-36wk) mortality cases were 5 (7.7%) , major neurodevelopmental delay cases 13 (20%) and normal cases 47(72.3%) .

In present study the mortality cases with abnormal cranial ultrasound were 15 (51.7%) out of 29 cases , MND were 10 (34.5%) and normal were 4 (13.8%). However, the mortality cases with normal cranial ultrasound were 5 (4.7%) out of 101 cases , MND were 25 (24.7%) and normal were 71 (70.2%). This difference was statistically highly significant.

The birth weight in present study seems to be significantly related to outcome. As lower birth weight was significantly lower among neonates who died compared to those who survived.

The gestational age in the present study significantly affects the outcome, as lower gestational age was significantly lower among neonates who died compared to those who survived.

In present study there is significant decrease in mortality rate and neurodevelopmental delay as regard maternal steroid therapy.

In present study there is significant increase in mortality rate and neurodevelopmental delay with Neonatal seizures.

In the current study, the relation between abnormal cranial ultrasound findings and out come as regards mortality was significant.

In present study, the intial ultrasound seemed to be the most significant one in predicting the outcome.

In the present study highly significant relationship was found between cranial ultrasound findings and neurological score.

CONCLUSIONS

Cranial ultrasound is safe and accurate practical method for detection of preterm neonates at risk for brain injury. Furthermore, it does not require transportation or sedation of the infant which provide safety for preterm neonates.

Ultrasound is indicated in all preterm neonates as a screening protocol, in cases of sepsis, RDS, ventilation, even in an absence of abnormal clinical findings.

Serial ultrasound is important in diagnosis of intracranial abnormalities, as these were 1st diagnosed at 1st year of life.

Neonatal neurologic examination is an important tool for assessment of neonates at risk of developing brain injury to assess the integrity of newborn nervous system. Neurological examination should be repeated to assess any persistent neurologic abnormality.