

Original article:

Study of clinical manifestations of perinatal asphyxia: Observational study in YCM Hospital , Pimpri , Pune

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Abstract:

Introduction: The clinical diagnosis of perinatal asphyxia is based on several criteria, the two main ones being evidence of cardiorespiratory and neurological depression and evidence of acute hypoxic compromise with acidaemia .

Methodology: This was Descriptive Longitudinal Prospective study conducted in Neonatal Intensive Care Unit at Paediatric Department during the period of six months.. In our period 30 neonates having perinatal asphyxia was studied to evaluate the usefulness of Cranial Ultrasonogram in diagnosis of various lesions in symptomatic neonates with history of birth asphyxia. We studied clinical manifestations of it in details.

Results: The mean gestational age was 36.33 weeks \pm SD 1.87 wks. The median gestation age was 37.8 weeks.

Conclusion: From this study we may conclude, incidence of perinatal asphyxia is one of the most important aspect in in delivery management.

Introduction:

The clinical diagnosis of perinatal asphyxia is based on several criteria, the two main ones being evidence of cardiorespiratory and neurological depression (defined as an Apgar score remaining less than 7 at 5 minutes after birth) and evidence of acute hypoxic compromise with acidaemia .

In many settings, especially resource-poor countries, it may be impossible to assess fetal or neonatal acidaemia. In the immediate postpartum period when resuscitation is being undertaken, it may not be possible to determine whether the neurological and cardiorespiratory depression is secondary to hypoxia-ischaemia, or to another condition such as fetomaternal infection, or metabolic disease. Consequently, resuscitation and early management will often be of suspected rather than confirmed perinatal asphyxia.^{1,2,3}

Methodology:

Present study was Prospective study conducted in Neonatal Intensive Care Unit at Paediatric Department during the period of six months at YCM Hospital , Pune . The sample size was estimated with the help of expert.

In our period 40 neonates having perinatal asphyxia was studied to evaluate the usefulness of Cranial Ultrasonogram in diagnosis of various lesions in symptomatic neonates with history of birth asphyxia.

All cases of Birth asphyxia fulfilling inclusion criteria were included in the study.

INCLUSION CRITERIA

A. All Inborn term and preterm neonates with features suggestive of perinatal asphyxia.

B. Criteria for asphyxia includes

1. Apgar score of ≤ 3 at 1min.
2. Positive pressure ventilation for more than 1 min at resuscitation.
3. Fetal heart rate abnormalities (Fetal bradycardia <100 beats/minute or fetal tachycardia >160 beats/minute) and/or presence of meconium stained amniotic fluid.
4. Abnormal neurological findings including altered muscle tone, altered sensorium and seizures.
5. Need for chest compression during resuscitation.

EXCLUSION CRITERIA:

- Neonates with major congenital malformations.
- Neonates who are extremely low birth weight (<1000 gms)
- Neonates of extreme prematurity (less than 28 weeks of gestation)
- Neonates which failed resuscitation.

Informed consent was obtained from the parents/guardian regarding inclusion of the neonate in the study.

All babies received standard care during and after resuscitation.

The relevant maternal and neonatal data was recorded in the proforma.

Results:

Table 1: Distribution of asphyxiated neonates according to Gender.

| Number (n=40) | | Percentage (%) |
|----------------|----|----------------|
| Male | 24 | |
| Female | 16 | |

Table 2: Distribution of perinatal asphyxia by Gestation

| Maturity (Gestational age) | Perinatal asphyxia | Percentage (%) |
|----------------------------|--------------------|----------------|
| 28-36 weeks | 8 | |
| ≥ 37 weeks | 32 | |
| Total | 40 | 100 |

Gestational age

The mean gestational age was 36.33 weeks \pm SD 1.87 wks. The median gestation age was 37.8 weeks.

Table 3: Distribution of asphyxiated neonates according to Mode of delivery

| Mode of delivery | No. of neonates (n=40) | Percentage (%) |
|------------------|---------------------------|-------------------|
| LSCS | 16 | |
| Vaginal | 21 | |
| VACCUM | 3 | |
| TOTAL | 40 | 100 |

The incidence of perinatal asphyxia was 1.49%.

Discussion:

Perinatal asphyxia results most commonly from a drop in maternal blood pressure or some other substantial interference with blood flow to the infant's brain during delivery.

This can occur due to inadequate circulation or perfusion, impaired respiratory effort, or inadequate ventilation. Perinatal asphyxia happens in 2 to 10 per 1000 newborns that are born at term, and more for those that are born prematurely. WHO estimates that 4 million neonatal deaths occur yearly due to birth asphyxia, representing 38% of deaths of children under 5 years of age.^{4,5}

Perinatal asphyxia can be the cause of hypoxic ischemic encephalopathy or intraventricular hemorrhage, especially in preterm births. An infant suffering severe perinatal asphyxia usually has poor color (cyanosis), perfusion, responsiveness, muscle tone, and respiratory effort, as reflected in a low 5 minute Apgar score. Extreme degrees of asphyxia can cause cardiac arrest and death. If resuscitation is successful, the infant is usually transferred to a neonatal intensive care unit.

There has long been a scientific debate over whether newborn infants with asphyxia should be resuscitated with 100% oxygen or normal air. It has been demonstrated that high concentrations of oxygen lead to generation of oxygen free radicals, which have a role in reperfusion injury after asphyxia. Research by Ola Didrik Saugstad and others led to new international guidelines on newborn resuscitation in 2010, recommending the use of normal air instead of 100% oxygen.⁶

Perinatal asphyxia occurs still with great incidence whenever delivery is prolonged, despite improvements in perinatal care. After asphyxia, infants can suffer from short- to long-term neurological sequelae, their severity depend upon the extent of the insult, the metabolic imbalance during the re-oxygenation period and the developmental state of the affected regions. Significant progresses in understanding of perinatal asphyxia pathophysiology have achieved. However, predictive diagnostics and personalised therapeutic interventions are still under initial development.^{7,8}

Conclusion:

From this study we may conclude, incidence of perinatal asphyxia is one of the most important aspect in in delivery management.

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