RISK FACTORS OF PERINATAL ASPHYXIA AT NISHTAR HOSPITAL MULTAN.

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ABSTRACT: Objectives: To determine the antenatal and intrapartum risk factors for perinatal asphyxia among babies delivered by women admitted as emergency obstetric referrals. Study Design: Cross-sectional study. Setting: Pediatric Unit 1, Nishtar Hospital Multan, Pakistan. Period: From May 2017 to April 2018. Material & Methods: A total of 150 newborn term babies (and their mothers) with a 1, 5, & 10-minutes Apgar score 4 or less (perinatal asphyxia) were considered for the study. Antepartum and intrapartum risk factors were noted among newborn babies (and their mothers) from socio-demographic characteristics, obstetric complications or labour management. Results: Out of 150 neonates, 57(38%) were presented with perinatal asphyxia at the age of 1 minute, 62(41.3%) at the age of 5 minutes and 31(20.1%) neonates were presented at the age of 10 minutes. In these cases, 45(30%) were related to maternal causes, 71(47.3%) to placental causes and 34(22.7%) to fetal cause. Conclusions: Early recognition of antepartum and intrapartum risk factors for perinatal asphyxia among emergency obstetric referrals, followed by prompt and appropriate management, may reduce the perinatal deaths from perinatal asphyxia.

Key words: Apgar Score, Antepartum, Fetal, Intrapartum, Maternal, Neonates, Perinatal Asphyxia.

INTRODUCTION

Perinatal asphyxia is a respiratory failure in the newborn, a condition caused by inadequate intake of oxygen before, during and or just after birth. In normal state, infant starts to breathe without any assistance and usually cries after delivery. Within one minute, infants can breathe normally. If infants fail to breathe normally, this condition is known as Birth asphyxia/Perinatal asphyxia.1,2 According to a survey conducted by the World Health Organization (WHO) in 2005, perinatal asphyxia is one of the leading causes of neonatal deaths within the first week of life.3 Perinatal asphyxia is a leading cause of mortality and morbidity in neonates in developing countries, with an incidence of 1 to 6 per 1,000 live full-term births.4 Incidence is usually related to gestational age and birth weight. The incidence is higher in prematures. Incidence in developed countries is 1.0-1.5% and in Pakistan is about 3.3%.5

American Association of Obstetrics and Gynecologists defines birth asphyxia when the following criteria are fulfilled: severe metabolic or mixed acidosis (PH. <7.00) obtained on umbilical arterial blood if available, a persistent >5 minutes Apgar score of 03, evidence of neurological involvement altered consciousness tone and seizures, other multi organ involvement.6 There are two types of asphyxia that are primary apnoea and secondary apnoea. In primary apnoea, the infant is blue but the blood pressure is maintained although the heart rate is falling. This is called blue asphyxia or asphyxia livida.6 In secondary apnoea, the blood pressure is found extremely low and deteriorating. Peripheral Perfusion is poor and the baby lies limp. At this stage, the infant is white and in the state of shock which is described as asphyxia pallida or white asphyxia.7

The American Academy of Pediatrics classified
severe asphyxia when the Apgar score at 1 minute is 0-3 and moderate asphyxia is when Apgar score at 1 minute is 4-6.\(^6\)

Infants who fail to breathe after birth may do so as a result of a deprivation of oxygen and blood supply to the brain before birth (hypoxia-ischemia or asphyxia), or because they have a central nervous system or muscle disease, or because they are systemically ill with infection.\(^2\)

Risk factors of perinatal asphyxia are divided into three categories i.e. maternal, placental and fetal. Maternal factors are Hypertension (eclampsia and pre-eclampsia), pelvic abnormality (cephlopelvic disproportion), diabetes mellitus, nephritis, hypotension, infections, uterine tetany (due to excessive oxytocin), maternal hypoxia from cardiac and pulmonary disease.\(^2\) Placental factors are “Abruptio placenta, and placental insufficiency due to toxemia or post-Maturity.\(^8\) Fetal risk factors include “cord prolapsed or compression, abnormal lie or presentation, post-maturity, anemia, infections, cerebral abnormalities, hypoxia due to pulmonary or cardiac problems.\(^9\) Condition of perinatal asphyxia can be assessed by APGAR score. “The condition of infants shortly after birth is recorded using the APGAR score at 1, 5 and 10 minutes.\(^10\)

There are also some other conditions with low Apgar score but these infants are not asphyxiated. It should not be assumed that all babies requiring resuscitation have experienced perinatal asphyxia. Other causes of infants failing to establish respiration at birth include trauma, analgesia and anesthetic agents given to the mother during labor or at delivery, caesarean section, when there is often delay in clearance of lung liquid, meconium aspiration, the very low birth weight infant, problems within the infant e.g diaphragmatic hernia.\(^11-18\)

In Pakistan, the magnitude of the problem is reflected by the fact that mortality data from a large community based prospective study in Lahore showed that nearly 50% of all neonatal deaths in the first week were due to perinatal asphyxia.\(^19\) Both hospital and community based data from different parts of the country have identified perinatal asphyxia as leading cause of hospital admissions and neonatal mortality.\(^20-23\)

Birth asphyxia is more common in high risk groups (such as mothers with no antenatal care, multiple pregnancies, and breech presentation and home deliveries by untrained personnel).\(^24\)

The present study can-led out to see that despite lot of efforts being made to reduce maternal and neonatal deaths, why is perinatal asphyxia being seen so often at a teaching hospital.

This study was conducted to determine the risk factors of perinatal asphyxia in patients managed at Nishtar hospital Multan. By identifying these risk factors, we can work aggressively to manage these patients and may decrease the incidence of perinatal asphyxia.

MATERIAL AND METHODS

This was a cross-sectional study conducted at the Labor room and pediatric unit 1 of Nishtar Hospital Multan, Pakistan. The duration of this study was 12 month, from May 2017 to April 2018.

A total number of 150 newborn term babies (and their mothers) with fetal distress on cardiotocography with low 1, 5 and 10 minutes Apgar score (4 or less) were included in the study. All newborns with trauma, prematurity, any syndromic or dysmorphics, born to mothers who are given GA were excluded from the study. Informed consent of all the patients was taken prior to their inclusion in the study. Before delivery Cardiotocography and Ultrasonography of every patient was done and after delivery Apgar score of every infant was taken. Antepartum and intrapartum risk factors among newborn babies (and their mothers) from socio-demographic characteristics, obstetric complications or labour management were noted.

SPSS (Statistical package for social sciences, USA) version 20.0 was used for data entry and analysis. Frequency and percentages of risk factors were noted.
RESULTS
Out of 150 neonates, 57(38%) were presented with perinatal asphyxia at the age of 1 minute, 62(41.3%) at the age of 5 minutes and 31(20.1%) neonates were presented at the age of 10 minutes. In these cases, 45(30%) were related to maternal causes, 71(47.3%) to placental causes and 34(22.7%) to fetal cause.

Maternal risk factors found were pregnancy induced hypertension (PIH) (11.33%) followed by oligohydramnios (06%), polyhydramnios (04.66%), diabetes mellitus (04%), eclampsia (02.66%), PROM (02%) and UTI (02%).

The most common placental risk factor was placental insufficiency (28%) followed by abruptio-placenta (18%).

The most common fetal risk factor was IUGR (08.66%) followed by fetal distress (06.66%), MAS(04%) and malpresentations (03.33%).

Martínez, et al, examined perinatal morbidity and the rate of asphyxia and found that premature placental abruption, which occurred in 11%, was

DISCUSSION
This research is conducted in labour room and pediatric unit 1 of Nishtar Hospital Multan. The purpose of this research is to assess the risk factors of perinatal asphyxia and how these risk factors are managed in Nishtar Hospital Multan.

In this study 150 patients were taken as a sample. There were 57(38%) neonates who were presented with perinatal asphyxia at the age of 1 minute, 62(41.3%) at the age of 5 minutes and 31(20.1%) neonates were presented at the age of 10 minutes. In these cases, 45(30%) were related to maternal causes, 71(47.3%) related to placental causes and 34(22.7%) related to fetal causes. Maternal risk factors found were PIH (11.33%) followed by oligohydramnios (06%), polyhydramnios (04.66%), diabetes mellitus (04%), eclampsia (02.66%), PROM (02%) and UTI (02%). The most common placental risk factor was placental insufficiency (28%) followed by abruptio-placenta (18%). The most common fetal risk factor was IUGR (08.66%) followed by fetal distress (06.66%), MAS (04%) and malpresentations (03.33%).

Martínez, et al, examined perinatal morbidity and the rate of asphyxia and found that premature placental abruption, which occurred in 11%, was
significantly associated with the development of hypoxic ischemic encephalopathy.\textsuperscript{25} It was found that triggers of a prolonged phase, such as abnormal fetal presentations (breech presentation, instrumental delivery, dystocia, persistent occiput posterior presentation, head circumference greater than the 97th percentile), was related to the occurrence of perinatal asphyxia.\textsuperscript{25} In a descriptive study at Hospital Universitario del Valle in 2008, perinatal asphyxia prevalence was 19\%, and the most frequent pathology in the mother was hypertensive disorder (36.1\%).\textsuperscript{26} Aslam et al, in their study maternal risk factors for perinatal asphyxia found primigravidae 56.9\% Anemia 48\% and oligoydramnios in 7.3\% cases.\textsuperscript{27} Uterine rupture was the underlying cause in 38\% of perinatal asphyxia cases among parous women with a previous caesarean.\textsuperscript{28}

Obstetric emergencies, including placental abruption, eclampsia, umbilical cord prolapse, uterine rupture, and shoulder dystocia, are the most prominent intrapartum risk factors for HIE.\textsuperscript{29,30,31} Incidence of Birth asphyxia is usually related to gestational age and birth weight. The incidence is higher in premature.\textsuperscript{2}

Lake of knowledge about fetomaternal health as well as lack of facilities at health centers are thought to be the main reasons of perinatal asphyxia. Health centers are also insufficient according to patients need. Reducing the causes of perinatal asphyxia can save the lives of many neonates. Proper monitoring of fetal movements by CTG can guide the health professionals to take proper steps to save the lives of neonates. Deliveries at proper setups of hospitals can also be helpful to prevent perinatal asphyxia. Well trained midwives and obstetricians can prevent from perinatal asphyxia. Community awareness programs should be conducted about fetomaternal health and birth asphyxia.

**CONCLUSION**
The main reason of perinatal asphyxia is lake of knowledge about fetomaternal health as well as lack of facilities at health centers. Health centers are also insufficient according to patients need. Further studies are needed to evaluate the frequency and risk factors of perinatal asphyxia.

**REFERENCES**


Victory is reserved for those who are willing to pay its price.

“Sun Tzu”