MEDICAL CHANNEL

Original Article

RISK FACTORS IN BIRTH ASPHYXIA AT LIAQUAT UNIVERSITY HOSPITAL HYDERABAD

1. **SURESH KUMAR**
2. **M. AKBAR NIZAMANI**
3. **SHAZIA MEMON**

1. ***Trainee Medical Officer,***
   Paediatric Unit II,
   LIAQUAT UNIVERSITY OF MEDICAL SCIENCES, HYDERABAD/JAMSHORO
2. ***Professor of Paediatrics,***
   Paediatric Unit II
   LIAQUAT UNIVERSITY OF MEDICAL SCIENCES, HYDERABAD/JAMSHORO
3. ***Assistant Professor***
   Paediatrics Department-II
   LIAQUAT UNIVERSITY OF MEDICAL SCIENCES, HYDERABAD/JAMSHORO

CORRESPONDENCE:
DR. SURESH KUMAR
Aabid Manzil, Plot # 2027,
Flat # 5, 3rd Floor, Tando Wali Muhammad, Hyderabad.
Cell # 0300-3232997
e-mail: drsureshpk@yahoo.com

ABSTRACT

Introduction: Perinatal asphyxia contributes greatly to neonatal mortality and morbidity. In developing countries, the need for risk factor assessment in perinatal asphyxia is obvious because of the high birth rate and limited perinatal resources[1].
Objectives: To assess risk factors of birth asphyxia in babies born at LUH Hyderabad.
Study design : Descriptive.
Setting : Department of Peadiatric medicine and department of Gynecology & obstetric, Liaquat University Hospital, Hyderabad.
Duration with dates : 2 years (01-06-2007 to 31-05-2009)
Subjects and methods : In this study 300 patients were analyzed/admitted at Paediatric unit II as case of birth asphyxia on basis of delayed cry after birth along with APGAR score of =3 at 1 and 5 minutes after birth has been evaluated for risk factors of birth asphyxia. Data of each patient was collected on preformed Proforma and analyzed on SPSS version 10. Frequency and percentages of different variables were computed. Mean and standard deviation was computed for quantitative variables like age of baby, weight of baby. Chi-square test was applied to compare different proportion at level of significance of $p < 0.05$.
Results : Risk factors in this study leading to birth asphyxia with decreasing frequency are irregular antenatal visits (46%), decreased inter pregnancy interval (28%), prolonged rupture of membrane (40%), prolonged labor (40%), previous bad obstetrical history (30%), anemia (24%), preeclampsia (17%) and antepartum hemorrhage (13%).
Conclusion : Burden of birth asphyxia in our society is mainly increased due to improper perinatal care, late diagnosis and referral of high-risk pregnancy to proper place.

Key words : Risk factors, birth asphyxia, delivery and resuscitation.

INTRODUCTION

Birth asphyxia is a perinatal event, in serious cases leading to a dismal outcome with risk of death or permanent sequelae. Perinatal mortality, morbidity and long term sequelae have not only been related to maternal risk factors like age, maternal illness, smoking and socioeconomic status but also to obstetric risk factors, like factors related to the management of labor and fetal abnormalities like malformations and intrauterine growth retardation[2]. In developing countries incidence of birth asphyxia is considerably higher because of negligible antenatal care and poor perinatal services[3]. In developing countries there are approximately 4-9 million cases of birth asphyxia per year, out of them only 1-2% are resuscitated correctly and total of 1 million newborns with birth asphyxia are dying annually[4].

Birth asphyxia and its sequalae are major public health problem in developing countries including Pakistan[5, 6]. Both hospital and community based data from different parts of the Pakistan have identified birth asphyxia as leading cause of hospital admissions and neonatal mortality[3]. In Pakistan, out of 4.5 million total births annually, 500,000 newborns develop birth asphyxia out of them 200,000 newborns became handicapped each year[7].

In order to implement preventive action, knowledge of risk factors leading to particular condition is essential; by identifying these risk factors we can be able to intervene by modifying or avoiding these risk factors in order to reduce the incidence of birth asphyxia.

MATERIAL AND METHOD

SETTING : Department of Pediatric unit II, LUH Hyderabad.
DURATION OF STUDY : 2 years (1st June 2007 to 31st May 2009)
SAMPLE SIZE : 300 cases.
SAMPLING TECHNIQUE : Non-probability purposive.
STUDY DESIGN : Descriptive.

SAMPLING SELECTION

Inclusion criteria

1 All newborns irrespective of sex having birth asphyxia diagnosed on basis of history and examination
2, Referred or admitted to pediatric ward.
3, Having no major congenital anomaly
4, Baby should be full term.

Exclusion criteria

1, Baby with congenital anomaly
2, Baby with me conium aspiration
3, Age more than 24 hours
4, Pre- or post- term baby

OPERATIONAL DEFINITION

Birth asphyxia

Failure to initiate and sustained breathing for more than 1 minute.

DATA COLLECTION

Data was collected on preformed Proforma by interviewing mothers, and investigations of mother if available/applicable as well as examination of the newborn. Birth asphyxia defined as failure to establish respiration with in 1 minute after cutting of cord. Newborns diagnosed on basis of history and examination, irrespective of sex and race, full term, weighing in between 2.0-3.5 Kg, with no congenital anomaly, admitted to pediatric ward and/ or attended at obstetric ward/ labor room or operation theatre, with in first 24 hours of life. Pre-term newborns, patients with age more than 24 hours and meconium aspiration excluded. It is categorical, nominal data.

DATA ANALYSIS

Data was analyzed on SPSS version of 10.0. Frequency and percentages computed for presentation of all categorical variables including sex of baby, maternal age, and weight gain during pregnancy, maternal height, antenatal care, parity, time interval in between two pregnancies. Complications during pregnancy, previous bad obstetrical history, place of delivery, mode of delivery, delivery-conducting person, duration of labor, weight of baby and resuscitation measures at the time of delivery. Mean and standard deviation computed for quantitative variables like age of baby, weight of baby. Chi- square test was applied to compare the proportions for maternal age, height of mother, antenatal visits, time interval between two pregnancies, complication during pregnancy, place of delivery, mode of delivery, mode of resuscitation $p < 0.05$ as level of significance.

RESULT

During the period of 2 years (1st June 2007 to 31st May 2009).302

TABLE 1
Frequency distribution of antenatal visit (n = 300)

Antenatal Visit	Numbers	Percentage
Regular (= 6)	96	32 %
Irregular (< 6)	138	46 %
No visit	66	22 %

TABLE 2
Frequency of distribution of complications during pregnancy (n = 300)

Problems	Number	Percentage
Anemia	72	24 %
Prolonged rupture of membrane	120	40 %
Preeclampsia	51	17 %
Antepartum hemorrhage	39	13 %
Urinary tract infection	24	08 %
Polyhydramnios	27	09 %
Oligohydramnios	15	05 %
Hypotension	09	03 %
Hypertension	15	05 %

TABLE 3
frequency of distribution of place of delivery (n = 300)

Place Of Delivery	Number	Percentage
Hospital	114	38 %
Private center	129	43 %
Home	57	19 %

TABLE 4
Frequency distribution of mode of delivery (n = 300)

Mode Of Delivery	Numbers	Percentage
Normal	195	65 %
Episiotomy	30	10 %
Cesarean section	75	25 %

TABLE 5
frequency of distribution of delivery conducting person (n = 300)

Delivery conducting person	Numbers	Percentage
Doctor	222	74%
LHV/ Nurse	30	10%
TBA	48	16%

TABLE 6.
Frequency distribution of maternal age (n = 300)

Maternal Age	Numbers	Percentage
18- 20 Years	42	14 %
21- 25 Years	60	20 %
26- 30 Years	66	22 %
31- 35 Years	84	28 %
36- 40 Years	30	10 %
≥ 41	18	06 %

Mean = 27.26 years

cases had fulfilled the inclusion criteria and exclusion criteria of study. Out of these 302 cases, 134 cases were attended and assessed at delivery room and operation theatre of obstetric and gynae ward. 168 cases were referred from other private centers and who delivered at home, diagnosed on basis of history of delayed cry/ failure to establish respiration within 1 minute, and/ or history of resuscitation steps taken by delivery conducting person or pediatrician. Results were found as under.

Regarding antenatal visit, in this study 32% mothers had regular antenatal visits during pregnancy, 46 % had irregular visits while 22 % had no antenatal visit at all. Frequency of distribution is given in table number 1

Regarding complications during pregnancy, 45 % of mothers showed different problems during pregnancy out of them in few there is more than one problem. Most common problems were found to be anemia, prolong rupture of membrane, antepartum hemorrhage, preeclapsia, polyhydramnios, UTI and other problems. Frequency of distribution is given in table number 2

Place of delivery is also one of risk factor if delivery is conducted at home, in this study only 38 % deliveries held at hospital while remaining 62 % deliveries held out side the hospital. Frequency of distribution of place of delivery is given in table number 3.

Mode of delivery carries important risk for birth asphyxia. In this study 65% delivery conducted normally without instrumentation, 10% needed episiotomies and in 25 % cesarean section done. Frequency of distribution is given in table 4

Delivery conducting person also carries importance in risk factor of birth asphyxia. In this study 74% deliveries conducted by doctor, 16 % by TBA and 10% by nurse/ LHV. Frequency of distribution is given in table number 5

Maternal age also play role in birth asphyxia, mean maternal age came out to be 27.26 years with minimum of 18 years and maximum of 43 years. Frequency of distribution is shown in table 6

Regarding duration of labor, in this study 35 % had prolonged first stage of labor and 40 % had prolonged second stage of labor. Induction of labor may be given in the form of oxytocin infusion or artificial rupture of membrane. In this study induction was given in the form of oxytocin infusion in about 70 % of cases.

DISCUSSION

Antenatal visits of mothers during pregnancy carries importance in relation to detect high risk pregnancy and proper referral of that mother to proper place for safe delivery in order to decrease the chances of problem to baby during or after delivery. In this study only 34 % of mothers had shown regular antenatal visits, 46 % had irregular visits and 22 % had no visit at all. In one study from Larkana there was only 3% mothers had shown regular antenatal visits, 27 % had irregular visits and 70 % had no antenatal visit at all[8]. In relation to antenatal visit, study conducted at Lahore results show only 23 % mothers had proper antenatal visits to trained medical professionals, 39 % had visited to untrained birth attendants, 37 % had visited to semi-trained midwives, LHV, nurse[9]. Study held at Multan in which 39 % had no antenatal visit at all, 51 % had regular antenatal visits and 10 % had irregular visits[10].

In this study 45 % of mothers showed different complications/ illnesses during pregnancy most of the mothers had 2 or more than 2 illnesses. Most common problems noted in mothers during pregnancy were anemia in 22 %, Preeclampsia in 17%, antepartum hemorrhage in 14 %, UTI in 8 %, polyhydramnios in 9 % and prolonged rupture of membrane in 41 %. Compared with one study held at Lahore by Maqbool in 33 % there was prolonged rupture of membrane, in 18.5 cephalopelvic disproportion, in 14.8 % antepartum hemorrhage, in 7.4 % preeclampsia, in 3.7 % hypertension[11]. In one study from Multan problems during pregnancy were, in 33 % prolonged rupture of membrane, pregnancy induced hypertension in 20%, oligohydramnios in 17 %, antepartum hemorrhage in 14 %, polyhydramnios in 6 %[10].

In this study, only 38 % deliveries held at hospital, 43 % at private centers and 19 % at home. Compared with other local studies like on study at Karachi showed 24.6 % deliveries held at home and remaining at hospitals[8], at Lahore showed 38 % deliveries at home, 36 % at maternities and 26 % at hospital[12], at Nawab Shah showed 59.4 % at home, 24.3 % at private centers and only 16.3 % at hospital[13].

In this study in 65 % of cases newborns delivered normally, 10 % with episiotomies and 25 % with cesarean section. Compared with other local studies held at different places like Nawab Shah showed 89.8 % delivered normally and 10.2 % with cesarean section[13]. Study at Lahore showed 83 % delivered normally and 17 % with cesarean section[12], at Karachi showed 85.9 delivered normally and 14.1 % with cesarean section, at Larkana showed 51.3 % delivered normally, 5.3 % with use of forceps and 13.3 % with cesarean section[8].

Delivery-conducting person has also part, in this study 74 % deliveries conducted by doctor, 10 % by LHV/ nurses and 16 % by TBA. According to one study LHWs, form the back bone of community based reproductive health delivery, is responsible for the vast majority of birth in rural setting and a large proportion of births even in urban areas[7].

In this study mean maternal age was 27.26 years. 14% were less than 20 years, 44 % in between 20- 30 years and 42 % were above 30 years. According to one study done at Multan which shows, the distribution of age of mothers is 14 % less than 20 years, 55 % in between 20- 30 years and 31 % above 30 years[10]. Mean age of mother is compared with one study conducted at North Western Saudi Arabia shows mean age of mother is 26.05 years [14].

In this study in 90 % of deliveries presenting part of newborn at time of delivery was found to be cephalic while in 10 % it was breech. This result had compared with study held at Multan in which 8 % of babies presenting part at time of delivery were breech while in 92 % presenting part was cephalic[10].

In this study total of 45% mothers had history of prolonged labor, most of them had prolongation of both stages of labor, in 35% of

mothers had history of prolonged 1st stage of labor and 40% had prolonged 2nd stage. Results were compared with one study conducted at Multan, 17 % delivered in less than 12 hours, 14 % in between 12- 24 hours, 69 % in more than 24 hours of duration[10].

CONCLUSION

In this study the risk factors, which had been seen frequently were improper antenatal visits, anemia, prolonged rupture of membrane, preeclampsia, antepartum hemorrhage. Problems during delivery like delivery at home by TBAs, LHV/ nurse, absence of technical person to resuscitate baby in case of emergency, unnecessary use of induction therapy like oxytocin infusion, delayed diagnosis/referral of high-risk pregnancy.

GLOSSERY

LHV Lady Health Visitor
LHW Lady Health Worker
LUH Liaquat University Hospital
TBA Trained Birth Attendant
UTI Urinary Tract Infection

REFERENCES

1. Kolatak T, Vanprapar N, Thitadilok W. Perinatal asphyxia: multivariate analysis of risk factors. J Med Assoc Thai 2000 Sep; 83: 1039-44
2. Milsom I, Ladfors L, Thiringer K, Niklasson A, Odeback A, Thornberg E, et al. Influence of maternal, obstetric and fetal risk factors on the prevalence of birth asphyxia at term in a Swedish urban population. Acta Obstet Gynecol Scand 2002; 81: 909-17
3. Parkash J, Ibrahim S. Birth asphyxia- Analysis of 235 cases. J Pak Med Assoc 2002; 52: 553- 556.
4. World Health Organization report, 1998; Life in 21st century. A vision for all W.H.O. Geneva Switzerland
5. Shah PM. Birth asphyxia: A crucial issue in prevention of developmental disabilities. Midwifery1996; 6. 99- 107.
6. Maqbool S, Saeed M, Khan SR. Birth asphyxia. J Pak Med Assoc, 1988; 38: 217- 19.
7. Bhutta ZA, Nabeela A, Hyder A, Wajid A. Perinatal and newborn care. In Bhutta ZA, editor. Maternal and child health in Pakistan. Karachi: Oxford university press; 2004. 19- 46.
8. Abbasi KA, Mirani PH, Parsram, Sarwar A. Causes, clinical features and outcome of 150 newborns with birth asphyxia at Larkana hospital. Pak Peadiatr J 1998; 21: 121- 125.
9. Sultan T, Maqbool S. Doe's early referral to tertiary care decreases the mortalty related to birth asphyxia. J Coll Physicians Surg Pak, 2006; 16: 220-222
10. Azam M, Malik FA, Khan PA. Birth asphyxia; risk factors. www.yahoo.com (prof-817)
11. Maqbool S. Saeed M, Khan SR. Birth asphyxia. J Pak Med Assoc 1988; 38: 217- 219.
12. Chishty AL, Iqbal MA, Anjum A, Maqbool PS. Spectrum of multi organ involvement in birth asphyxia. Pak Peadiatr J 2002; 25: 81- 87.
13. Nizamani MA, Nizamani SM. An audit of mortality in hospitalized neonates and young infants at pediatric department Peoples Medical College Nawab Shah. Med Channel 2005; 11:7-15.
14. Itoo B.A, Al-Hawsawi Z.M, Khan A.H. Hypoxic schemic encephalopathy, Incdence and risk factors in North Western Saudi Arabia. Saudi Med J 2003; 24: 147-53