

RISK FACTORS FOR DEATH FROM BIRTH ASPHYXIA

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INTRODUCTION

Birth Asphyxia

- ▶ Leading cause of perinatal death – developing and developed countries
- ▶ 5th most common cause of death under 5 years (Lawn et al.)

- ▶ 23% of estimated 4 million neonatal deaths
- ▶ 26 % of 3.9 million still births (Lawn et al.)

- ▶ Western Pacific Region – 14% of 230 000 neonatal deaths annually (WHO/Unicef – Action Plan, healthy Newborn Infants 2014 –2020)

- ▶ PNG: leading cause of death: 45% of neonatal deaths. CFR of 16% (2013 NDOH Annual Report on Child Morbidity and Mortality).

- ▶ Port Moresby – incidence 5.5/1000, mortality 31/1000 (G. Oswyn et al. 2000)

- ▶ Leading cause of neonatal deaths ,SPH ,2012 –2014 (Annual reports)

- ▶ In resource rich countries the incidence is about 1/1000 live births
- ▶ Resource poor countries with data from hospital based studies suggests an incidence of 5–10/1000 live births.

INTRODUCTION: DEFINITIONS

Birth Asphyxia

WHO: “the failure to initiate and sustain breathing at birth”

- Mostly used in community based studies (home deliveries)
- Screens/identifies need for resuscitation
- Does not really predict the out come of birth asphyxia (Lincetto, Geneva, 2007)

Asphyxiated neonate: (American College of O&G and American Academy of Paediatrics – 1996)

- (1) Umbilical cord pH of < 7
- (2) Apgar score of 0 – 3 for longer than 5 minutes
- (3) Neurological manifestations (e.g. seizures, coma, or hypotonia)
- (4) Multi-organ dysfunction e.g. cardiovascular, gastrointestinal

Apgar score and neurological manifestations have been used as criteria for the definition of birth asphyxia in our setting

LITERATURE REVIEW

AUTHOR COUNTRY	PLACE OF STUDY	Definition	FINDINGS (RISK FACTORS) Morbidity/Mortality	Incidence Mortality rate
Oswyn G PNG 2000	Tertiary Hospital	Abnormal neurological manifestations Apgar of < 6 at 5/60	Risk factors to morbidity Previous still birth/ NND, fetal heart abnormalities, PROM, maternal fever, pre/post term, operative delivery	5.5/1000 31/1000
Anne CC Lee Nepal 2007	Community Based	All births	Risk factors to mortality low paternal education, primiparity, multiple births, maternal fever	10.5/1000 X
Ekta A Dalal India 2008	Tertiary Care Centre	Apgar <7 at 1/60	Risk factors to morbidity maternal anaemia, primipara, meconium stained liquor,	6.6/1000

LITERATURE REVIEW

AUTHOR COUNTRY	PLACE OF STUDY	DEFINITION	FINDINGS (Risk factors)	INCIDENCE MORTALITY RATE
Badawi et al Australia 1995	Population based	Term infants with moderate or severe neonate encephalopathy	Maternal fever, persistent OP position, acute intrapartum event	3.8/1000
Ellis et al Cameroon 2013	Tertiary Hospital	Apgar < 7 at 5/60	Single, place of antenatal visits, malaria, PET, Prolonged labour, PROM, non- cephalic presentation	80.5/1000 6.7/1000

Incidence range: 3.8 –80.1/1000 (Cameroon)
Mortality rate range: 6.7 – 31/1000

Tertiary Hospitals/ Community Based studies

AIM

- ▶ Identify risk factors for death from birth asphyxia, antenatally, perinatally and post-partum

OBJECTIVES

- ▶ To review the antenatal and delivery records and identify risk factors
- ▶ To make recommendations and take preventive measures to reduce no of babies born with birth asphyxia and improve the outcome.

METHODOLOGY

TYPE OF STUDY– Retrospective Descriptive Study

SETTING – Sandaun Provincial Hospital / Vanimo

STUDY POPULATION – 84 neonates admitted to Special Care Nursery with the diagnosis of Birth Asphyxia over 36 months: 2012 – 2014

INCLUSION CRITERIA

Neonates with apgar of <7 at one minute admitted to SCN

EXCLUSION CRITERIA

BBAs (n=2)

Babies born with congenital defects

METHODOLOGY

PROCEDURE

1. Collection and review of maternal and neonatal clinical records
2. Required data extracted using a prepared case questionnaire
3. Information gathered divided antenatal, perinatal, and post partum variables

DATA ANALYSIS

Data analysed using SSPS and Excel

RESULTS

BIRTH ASPHYXIA 2012 –2014

VARIABLE	TOTAL
Total deliveries	3232
Total live births	3152
Still births	80
SBR	24.7/1000
Total admission to SCN	832
No of birth asphyxia	107
No in study	84
Incidence of Birth Asphyxia	33/1000
Birth asphyxia mortality rate	21.4/1000

RESULTS

- ▶ A total of 107 babies admitted with Dx of birth asphyxia
- ▶ 2 BBAs excluded
- ▶ 21 maternal charts missing
- ▶ 84 included in study, 66 survived and 18 deaths
- ▶ 45 neonatal charts found (16 deaths/ 29 survivors)
- ▶ 5 minute Apgar recorded: 28
- ▶ 5 with 5/60 apgar scores of < 6 / all died
- ▶ 13% hypoglycaemia, 26.6% seizures, 13.3% apnoeas

ANTENATAL

Characteristic	Total with characteris (if categorical) Or Median (IQR) if continuous (n= 84)	No characteristic who died Or median (IQR) if continuous among those who died (n = 18)	No with characterics who survived Or median (IQR) if continuous among those who survived (N = 66)	Observation
Maternal age	Median 27 IQR 22 – 30	Median 27 IQR 22 – 28	Median 27 IQR 22 – 30	Not statistical sig.
Parity	Median 2	Median 2	Median 2	No statistical sign.
Gestational age	IQR 37 – 40	IQR 36 – 39	IQR 37– 40	Not statistical sig.
Booking status	72(85.7%) BKD	15(83.3%) BKD	57(86.36%) BKD	No statistical sig.
Hx of NND	7 (8.3%)	1 (5.5%)	8 (12.12 %)	Not statistical sig.
Hx of PV bleeding	2 (2.38%)	1 (5.5%)	1 (1.5%)	Not staistical sig.
Severe anaemia/ transfused	16 (19.04%)	9 (50%)	7 (10.60%)	Chi square P value <0.001

PERIPARTUM FACTORS

Characteristic	Total with characteris (if categorical) Or Median (IQR) if continuous N = 84	No with characteristic who died Or median (IQR) if continuous among those who died (n=18)	No with characteristics who survived Or median (IQR) if continuous among those who survived (n = 66)	Observations
Prolonged labour	27 (32)	11(61)	18 (27)	Chi - square P value 0.007
PROM	23 (27)	16 (89)	17(26)	Chi - square P value <0.001
Degree of stain	Median 3.5	Median 3	Median 3	NS
Sign of fetal distress	15 (18)	1 (6)	14 (21)	NS
Prolonged 2nd stage	32 (38)	5 (27)	27 (40)	NS
c/section	20 (24)	3 (17)	17 (26)	NS
Cord around neck	20 (24)	5 (28)	15 (23)	NS
Apgar score (0-3)	Median 1	Median 2	Median 2	NS

POST PARTUM

Characteriscs	Total with characteristic (if categorical) Or Median (IQR) if (continuous	No characteristic who died Or median (IQR) if continuous among those who died (n = 18)	No with characterics who survived Or median (IQR) if continuous among those who survived (n = 66)	Observations
Male	54 (64)	12(67)	42(64)	NS
Bt weight	Median 4 ICR 3-4	Median 3.5 IQR 3-4	Median 4 IQR 4	NS
Resus/ measure	3 intubated	2 intubated	1 intubated	NS
Consult to paedts team	20 (24)	2 (11)	18 (27)	NS
Lenght of stay	Median 2	Median 1	Median 2	NS

SUMMARY

- ▶ Birth asphyxia makes up 10% of all SCN admissions
 - ▶ Incidence 33/1000 births
 - ▶ Still birth rate 24/1000 births
 - ▶ Mortality from birth asphyxia $18/84 = 21\%$
 - ▶ Risk factors – prolonged labour, PROM and severe anaemia/transfused
 - ▶ Only 62% had a 5 minute Apgar score recorded
 - ▶ Foetal heart rate monitored but rarely recorded as abnormal
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- ▶ Further multi-variable analysis of risk factors in DCH thesis
 - ▶ Limited by small sample size

DISCUSSION

Incidence

33 / 1 000 – this study
80.5 / 1 000 – Ellis et al (Cameroon Study)

- ❖ *High incidence of birth asphyxia*

Mortality rate

21 / 1 000 – this study
Globally – 23 %
Western Pacific region – 14 %
NDOH – 16 %
POM GEN – 31 %

- ❖ *The mortality rate of BA continues to be high*

▶ Risk factors

1 Severe anaemia/Transfusion

- Ekta al Dalal, India, 2008

2. PROM

- Owsyn G et al, 2000, PNG
- Ellis et al, 2013, Cameroon

3. Prolonged Labour

- Ellis et al, 2013 Cameroon

OTHERS – risk factors not identified
primiparity, maternal fever, Multiple births

- *Small sample size*
- *Missing charts*
- *Missing data – retrospective*

CONCLUSION

- ▶ Risk factors for death from birth asphyxia:
 1. Severe anaemia/transfusion
 2. PROM
 3. Prolonged labour

RECOMMENDATION

1. In House Training

- ❑ Understanding/Identifying risk factors for death from BA
- ❑ Quality care and monitoring a pregnant women antenatally,peripartum,postpartum
- ❑ Importance of recording 5 and 10 minute apgar scores

2. Essential Early Newborn Care be conducted (neonatal resuscitation)

3. At Risk Attendance by paediatric team for resuscitation and stabilisation

4. Develop a standard definition of birth asphyxia be used in admission book

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THANKYOU