International Journal of Current Advanced Research
ISSN: O: 2319-6475, ISSN: P: 2319 – 6505, Impact Factor: SJIF: 5.995
Available Online at www.journalijcar.org
Volume 6; Issue 5; May 2017; Page No. 3728-3730
DOI: http://dx.doi.org/10.24327/ijcar.2017.3730.0357

Research Article

PREVALENCE AND CONSEQUENCES OF PRETERM ADMISSIONS AT THE NEONATAL INTENSIVE CARE UNIT OF TERTIARY CARE CENTRE IN SOUTH INDIA: A RETROSPECTIVE STUDY

Ankur Gupta[1]., Dhrithiman Shetty[1] and Kamath K Madhava [2]

[1]Department of Paediatrics K.s.Hegde Medical College and Hospital, Deralakatte, Mangalore, Karnataka 575018
[2]Department of Pediatrics, Adichunchungiri Institute of Medical Sciences, Mandya District, Karnataka, India

A R T I C L E I N F O

Article History:

Received 17th February, 2017
Received in revised form 26th March, 2017
Accepted 7th April, 2017
Published online 28th May, 2017

Key words:

Preterm, Risk factors, Gestational age

A B S T R A C T

Background: Preterm babies have increased risk of morbidity and mortality which is inversely related to both gestational age and birth weight.
Objectives: To study the prevalence and consequences of preterm neonates admissions in NICU, K.S. Hegde hospital Mangalore as well as their morbidity pattern and risk factors for preterm birth.
Methodology: All preterm babies admitted from March 2014 to February 2016 were retrospectively studied. Information obtained included gestational age at birth, gender, risk factors for preterm birth, medical problems during admission and outcome.
Results: Preterm admissions constituted 14 % of the total admissions with a male to female ratio of 0.84:1.The commonest risk factor for preterm birth was premature rupture of membranes (40%) followed by Previous preterm delivery and Hypertension in pregnancy (10%) and multiple pregnancy (8%) respectively. The commonest medical conditions were Neonatal jaundice (36%) followed by respiratory distress syndrome in 27 (27%) and sepsis in 15 (15%). The case fatality rate was highest in neonates with neonatal seizure and Asphyxia (50%) followed by respiratory problems (30%) and birth defects (25%). The overall survival rate was 95% and was significantly higher in the mild preterm category compared to the very preterm and extremely preterm births.
Conclusion: Preterm births constituted a significant percentage of neonatal admissions with the case fatality being highest among those with neonatal seizure and Asphyxia and survival rate of 95 %.

INTRODUCTION

Preterm birth is defined as child birth occurring at less than 37 completed weeks and is a major determining factor of neonatal morbidity and mortality with long term consequences.[1,2] Preterm deaths constitute 28% of the 4 million annual new born deaths with 99% of these deaths happening in developing countries worldwide.[3] The World Health Organization (WHO) estimated 9.6% of all births worldwide to be preterm.[4] Causative factors of preterm birth include medical conditions of the mother or fetus, genetic causes, environmental exposure, and socio-economic factors.[5] Pennell *et al* suggested that 45% to 50% of preterm births are idiopathic, 30% are due to preterm rupture of membranes and another 15% to 20% result from maternal medical problems or elective preterm deliveries.[6] Factors influencing success in the management of prematurity include level of perinatal care, gestational age at birth, gender, resource availability and adequate and well trained personnel.[7]

Corresponding author:* **Ankur Gupta
Department of Paediatrics K.s.Hegde Medical College and Hospital, Deralakatte, Mangalore, Karnataka 575018

Preterm infants compared to term infants will have more difficulty with feeding, hypoglycemia, neonatal jaundice, hypothermia, apnoea of prematurity, respiratory distress and sepsis.[8] It is important to carry out neonatal audit regularly as disease patterns vary from place to place and from time to time in the same place.[9] The present study was therefore carried out at the NICU, K.S.Hegde hospital mangalore ,Karnataka with the goal of determining the risk factors for preterm births as well as the prevalence and outcome of preterm admissions in order to improve survival of this vulnerable group.

MATERIALS AND METHODS

A retrospective study was conducted in the Department of Paediatrics NICU, K.S.Hegde medical college and hospital, Deralakatte, Mangalore, karnataka where in numbers of all preterm admissions over the 24 month period (March 2014 to february 2016) were obtained. All preterm babies in the NICU of the K.S.Hegde hospital born at gestational ages of less than 37 completed weeks of gestation were included into the study. Information obtained from the hospital records include gestational age at birth, place of birth, gender, birth weight,

risk factors for preterm birth, medical problems during the period of admission and outcome. The gestational ages at birth were calculated using the first date of the mother's last menstrual period. The preterm babies were classified into 3 main categories according to gestational age at birth with those born from 32 to 36 weeks categorized as mild preterms, 28 to 31 weeks very preterm and less than 28 weeks classified as extremely preterm for birth.

Data Analysis

Data was entered into an excel spreadsheet and was analyzed using SPSS version 22. Test of significance between proportions was determined using Chi-square at a 95% confidence interval with a p value of less than 0.05 considered statistically significant.

RESULTS

General Characteristics

During this study period, 720 babies were admitted in NICU of K.S. Hegde hospital of which 101 (14%) were preterm. There were 46 males and 55 females with a male to female ratio of 0.84:1. Their gestational age at birth ranged from 26 to 36 weeks+ 6 days. 23 (23 %) of the neonates were born at 34 weeks gestation followed by 28 (28%) born at 35 weeks gestation. Most of the neonate, 99 (98%) were born between gestational ages of 26 and 36 weeks. Their birth weights ranged from 800 g to 2600 g.

Table 1 Clinical outcome as per gestational age

Gestational age at birth (weeks)	Total number (%)	Discharged	Died	Survival rate (%)
26	1	-	1	0
28	3	1	2	33
29	3	1	2	33
30	1	-	1	0
31	2	2	0	100
32	8	6	2	75
33	8	8	0	100
34	22	20	2	91
35	26	26	0	100
36+6 days	27	27	0	100

Risk Factors for Preterm Birth

The commonest risk factor for preterm birth was premature rupture of membranes (40%) followed by Previous preterm delivery (12%) and Hypertension in pregnancy (11%) and multiple pregnancy (8%) respectively.

Table 2 Risk factors for preterm delivery

Risk factor	Number	Percentage
Preterm rupture of membranes	40	40
Previous preterm delivery	10	10
Hypertension in pregnancy	10	10
Multiple pregnancy	8	8
Idiopathic	7	7
Ante-partum hemorrhage	6	6
Gestational Diabetes mellitus	4	4
Maternal febrile illness	4	4
Teenage mother	4	4
Maternal chorioamnionitis	4	4
Birth defect	3	3

Morbidity and Mortality Pattern

The commonest medical conditions were Neonatal jaundice (36%) followed by respiratory distress syndrome in 27 (27%) and sepsis in 15 (15%).The case fatality rate was highest in neonates with seizures and Asphyxia (50%) followed by respiratory problems (30%) and birth defects (25%).The overall survival rate was 95%.

Table 3 Morbidity and Mortality Pattern

Problem	Number	Percentage n = 101	Number who died	Case fatality rate (%)
Neonatal Jaundice	36	36	0	0
Respiratory distress syndrome	27	27	8	30
Sepsis	15	15	1	7
Asphyxia	4	4	2	50
Apnea of prematurity	4	4	0	0
Congenital heart disease	6	6	0	0
Seizures	2	2	1	50
Hypoglycemia	4	4	0	0
Birth defect	4	4	1	25

Clinical Outcome: The overall survival rate was 95%. The survival rate was significantly higher in the mild preterm category compared to the very preterm and extremely preterm for birth categories with p value <0.001.

Table 4 Survival rate according to degree of prematurity

Category	Total number	Percentage of total n = 101	Number who survived	Survival rate %	p value
<28 weeks	1	1	0	0	<0.001
28 to 31 weeks+6 days	9	9	5	56	
32 to 36 weeks+6 days	91	90	91	100	

DISCUSSION

In present study preterm admissions constituted 14% of all admissions at NICU of K.S. Hegde hospital. This is less than the 16.4% reported by McGil Ugwu *et al*.[10]

The reason for this disparity is not clear but can be due to difference in the incidence of preterm birth in the various parts of world due to geographical and ethnic variations in study populations.

There were more preterm females than males in the present study similar to the study by McGil Ugwu *et al* and Zeleke *et al*.[10,11] The commonest risk factor for prematurity was preterm rupture of membranes. Multiple pregnancy ranked fourth as a risk factor for preterm delivery in the present study. Etuk *et al* and attah *et al* have also reported multiple pregnancy as a risk factor for preterm delivery.[12,13] The popular hypothesis is that multiple pregnancy leads to over distension of the uterus which may stimulate premature uterine contractions resulting in preterm delivery.[14,15] Rate of preterm delivery was significantly higher in the hypertensive mothers compared to the mothers with normal blood pressure.[16,17,18] Hypertensive disorders in pregnancy ranked third risk factor for preterm birth in the present study. Hypertension in pregnancy is believed to predispose to acute or chronic utero-placental insufficiency resulting in antepartum and perinatal hypoxia with associated adverse outcomes of which preterm delivery is one.[19] The commonest morbidity in the babies in present study was Neonatal Jaundice followed by respiratory distress syndrome and sepsis. This is similar to reports by Khan *et al* who reported jaundice and sepsis as the commonest morbidities in preterm neonates.[20] Onalo *et al* also reported jaundice as the commonest morbidity in preterm babies.[21] This highlights the importance of infection control in the

management of preterm babies who are a high risk group for sepsis because of their immature immune system.[22] In the present study, overall survival rate was 90 % with the survival rate improving with increasing gestational age.

CONCLUSION

Preterm deliveries constituted a significant percentage of neonatal admissions at the NICU, K.S. Hegde hospital, mangalore, karnataka with the case fatality being highest among those with Birth asphyxia, Birth defect and Respiratory problems, survival rate of 90 %. There is an urgent need for greater awareness of increased risk of preterm morbidity in medical specialities.

Acknowledgements

We would like to thank the department of pediatrics and NICU of K.S. Hegde medical college and hospital for their active participation and constant support.

References

1. Huddy, C.L., Johnson, A. and Hope, P.L. (2001) Educational and Behavioral Problems in Babies of 32 - 35 Weeks Gestation. Archives of Disease in Childhood. F *et al* and Neonatal Edition, 85, 23-28.
2. Wang, M.L., Dorer, D.J., Fleming, M.P. and Catlin, E.A. (2004) Clinical Outcomes of Near-Term Infants. *Pediatrics*, 114, 372-374.
3. Federal Ministry of Health (2011) Saving Newborn Lives in Nigeria. Newborn Health I the Context of the Integrated Maternal, Newborn and Child Health Strategy. Revised 2nd Edition, 2011
4. Beck, S., Wojdyla, D., Say, L., betran, A.P., Merialdi, M., Requejo, J.H., *et al*. (2010) The Worldwide Incidence of Preterm Birth: A Systematic Review of Maternal Mortality and Morbidity. *Bulletin of the World Health Organization*, 88, 31-38.
5. Goldenberg, R.L., Culhane, J.F., Iams, J.D. and Romero, R. (2008) Epidemiology and Causes of Preterm Birth. *Lancet*, 371, 75-84.
6. Pennell, C.E., Jacobsson, B., Williams, S.M., Buus, R.M., Muglia, L.J. and Dolan, SM. (2007) Genetic Epidemiologic Studies of Preterm Birth: Guidelines for Research. *American Journal of Obstetrics & Gynecology,* 196, 107-118.
7. Baron, L., Hodgaman, J.E. and Pavlova, Z. (1999) Causes of Death in the Extremely Low Birth Weight Infant. *Pediatrics*, 103, 446-451.
8. Engle, W.A., Tomashek, K.M., Wallman, C. and the Committee of Fetus and Newborn (2007) "Late-Preterm" Infants: a Population at Risk. A Clinical Report. *Pediatrics*, 120, 1390-1401.
9. Abbasi, K.A. (1995) Neonatal Disease Profile in Larkana before and after Establishment of Neonatal Ward. *Journal Pakistan Medical Association*, 45, 235-236.
10. McGil Ugwu, G.I. (2012) Pattern of Morbidity and Mortality in the Newborn Special Care Unit in a Tertiary Institution in the Niger Delta Region of Nigeria: A Two Year Prospective Study. *Global Advanced Research Journal of Medicine and Medical Sciences*, 1, 133-138
11. Zeleke, B.M., Zelalem, M. and Mohammed, N. (2012) Incidence and Correlates of Low Birth Weight at a Referral Hospital in North-West Ethiopia. *The Pan African Medical Journal*, 12, 4.
12. Etuk, S.J., Etuk, I.S. and Oyo Ita, A.E. (2005) Factors Influencing the Incidence of Preterm Birth in Calabar, Nigeria. *The Journal of Physiological Sciences*, 20, 63-68.
13. Omole-Ohonsi, A. and Attah, RA. (2012) Risk Factors of Preterm Deliveries at Aminu Kano Teaching Hospital, Kano, Nigeria. *South Asian Journal of Management Sciences*, 1, 3-10
14. Wood, N.S., Marlow, N., Costeloe, K., Gibson, A.T. and Wilkinson, A.R. (2000) Neurological and Developmental Disability after Extreme Preterm Birth. EPICure Study Group. *The New England Journal of Medicine*, 343, 378-384.
15. Gyetvai, K., Hannah, M.E., Hodnett, E.D. and Ohisson, A. (1999) Tocolysis for Preterm Labour: A Systematic Review. *Obstetrics & Gynecology*, 94, 869-877.
16. Shrestha, S., Dangol Singh, S., Shrestha, M. and Shrestha, R.P.B. (2010) Outcome of Preterm Babies and Associated Risk Factors in a Hospital. *Journal of Nepal Medical Association*, 49, 286-290.
17. Charearnsutsiri, R. (2004) Outcomes of Very Low Birth Weight Infants at Prapokklao Hospital in the First Four Years of the New Millennium. *The Journal of Prapokklao Hospital Clinical Medical Education Center*, 21, 175-183.
18. Onyiriuka, A.N. and Okolo, A.A. (2007) Neonatal Morbidity Pattern in Infants Born in Benin City to Nigerian Mothers with Hypertensive Disorders in Pregnancy. *Nigerian Journal of Clinical Practice*, 10, 294-299.
19. Ferrer, R.L., Sibai, B.M., Mulrow, C.D., Chiquette, E., Stevens, K.R. and Cornell, J. (2000) Management of Mild Chronic Hypertension during Pregnancy: A Review. *Obstetrics & Gynecology*, 96, 849-860.
20. Khan, M.R., Maheshwari, P.K., Shamim, H., Ahmed, S. and Ali, S.R. (2012) Morbidity Pattern of Sick Hospitalized Preterm Infants in Karachi, Pakistan. *Journal of Pakistan Medical Association*, 62, 386-388.
21. Onalo, R. and Olateju, K.E. (2013) Trend and Seasonality in Admissions and Outcome of Low Birth Weight Infants in Gwagalada Abuja, Nigeria. *International Journal of tropical disease & Health*, 3, 190-198.
22. McGuire, W., Clerihew, L. and Fowlie, P.W. (2004) Infection in the Preterm Infant. *British Medical Journal*, 329, 1277-1280.

How to cite this article:

Ankur Gupta *et al* (2017) 'Prevalence And Consequences Of Preterm Admissions At The Neonatal Intensive Care Unit Of Tertiary Care Centre In South India: A Retrospective Study', *International Journal of Current Advanced Research,* 06(05), pp. 3728-3730. DOI: http://dx.doi.org/10.24327/ijcar.2017.3730.0357