

Causes of Neonatal Deaths In Al- Kadhymia Teaching Hospital

Lamia Abdul Karim Al- Saady , *CABP*.

Abstract

Background: neonatal death is the death take place in the first 28 days of life.

Although the neonatal mortality has been declining more rapidly than the post neonatal mortality in the recent decades, neonatal mortality continue to account for close to two third of all infants death.

Aim: to review the main causes of neonatal death among the neonates admitted to the nursery care unit (NCU) in Al- Kadhymia Teaching hospital for ten years period. in order to prevent or treat the treatable ones.

Patients and Methods: Through a retrospective study, analysis of the medical records of all the admitted neonates to the NCU in Al- Kadhymia Teaching Hospital during the period between 1995 -2005, the medical information were analyzed to find the important causes of neonatal deaths.

Results: the number of admitted cases during this period was 2683 cases and the total numbers of deaths were 982 cases (36.6%). We found that the main causes of death were Respiratory distress syndrome (RDS), neonatal sepsis, birth asphyxia,

congenital anomalies, meconium aspiration and infant of diabetic mother.

Conclusion: the most important causes of deaths were sepsis, birth asphyxia and congenital anomalies. Prevention of prematurity as a major cause for RDS will lead to a decrease in neonatal mortality and morbidity, and a significant reduction will depend on genetic counseling and prevention of congenital anomalies.

Key Words: Neonatal Death, NCU, RDS .

IRAQI J MED SCI, 2007; VOL. 5 (2):44-48

Introduction

Neonatal mortality now account for approximately 2\3 of the eight Million deaths in children less than one year of age, its highest level occurs in the first 24 hour of life. World wide 98%of deaths occur in the developing countries and largely attributed to infections, birth

asphyxia, a consequences of prematurity and low birth weight and congenital anomalies. There are important variations in the leading causes of deaths noted for neonatal and post neonatal periods. The leading cause of death for 2000were congenital malformations, deformities and chromosomal abnormalities, disorders related to short gestational age and low birth weight, respiratory distress, bacterial sepsis, intrauterine hypoxia and birth asphyxia^{1,2}.

Aim

To find the main causes of death in Al – Kadhymia Teaching Hospital and to see where further

Dept. of pediatric, Medical College of Al – Nahrian University.

Address Correspondence to Dr. Lamia Al- Saady.
Lecturer in College of Medicine in Al- Nahrain University.

Received 26th April 2006: Accepted 11st October 2006.

improvement may be possible and preventive measures can be applied to decrease the mortality and morbidity.

Patients and Methods

This is a retrospective study through which analysis of the medical records of all the admitted neonates to the NCU in Al-Kadhymia Teaching Hospital during the period between 1995- 2005 to find the major causes of deaths among the admitted cases also we study the gestational age of the admitted cases Although the detailed data were not available due to inadequate collection of health information during this period.

Results

The study showed that the total no. Of the admitted cases were 2683 live born and the no. Of the died cases were 982(36.6%) of all the admitted neonates.

The main causes of deaths were RDS, sepsis, birth asphyxia and congenital anomalies (lethal), these results shown in table (1).

The cases of RDS occur mainly in the premature neonates 524(97.76%) while there were only 10cases(1.90%) in the term neonates. The distribution of prematurity and RDS were shown in table (2).

The cases of birth asphyxia occurred mainly in preterm neonates (65) cases while the Term neonates were constituted only 15 cases of birth asphyxia.

The cases of meconium aspiration occur mostly in term infants (27) cases, 3 cases post term and only 5 cases were preterm.

Discussion

The major cause of death was RDS which constitute 536(54.52%) of all the deaths there are similar results which agree with our study that problems of RDS, preterm birth, sepsis, lethal malformations, asphyxia were still the main causes of neonatal deaths and account for 95% of deaths^{3,4,5}.

For the RDS it is estimated that 30% of all neonatal deaths result from RDS or its complications, it occur primarily in

preterm infants, the incidence inversely related to gestational age and birth weight, it occur in 60-80%of infants <28 weeks gestation, in15-30%of those between 32-34weeks, in about 5% beyond 37 weeks and rarely at term⁶. In our study 48.09% of the cases occur in neonates < 28 weeks, 29-32weeks were 155(29.58%), 33-36 weeks were 107 (20.41%) and only 10 cases beyond 37 weeks (1.90%). Most of cases of RDS were preterm 524(97.76 %), similar results of prematurity and its complications is the leading cause of neonatal mortality and substantial portion of all birth related short and long-term morbidity⁷.

The incidence of sepsis is 1-8\1000 live births, the mortality rate is high (13-25%), higher in premature and those with early fulminante disease⁸.

Infections in the neonates still constitute a significant cause of death in our study I was 22.5% of all deaths, in a study done in Gambia, West Africa, infections accounted for 37% of all deaths⁹.

As many as 2% of fetuses are infected in utero, and up to 10% of infants are infected during delivery or the first month of life. The infant acquired the organisms from the delivery room (contaminated equipments), in the nursery care unit (hospital personnel, or visiting families) and it can be transmitted by direct contact or indirect contact with contaminated vehicles (intravenous fluid, respiratory equipments), antibiotics interfere with colonization by normal flora, crow dining and inadequate infections control techniques (hand washing between patients examination) may also contribute to the problem, also low birth weight , long stay in the nursery , invasive procedures and catheters , endotreachal tubes and alterations in the skin and mucous membranes barrier all these may contribute to high incidence of infections¹⁰.

Neonatal mortality due to congenital malformations or genetic disorders has no decrement despite a decrease in overall

neonatal mortality with recent advances in medical technology, as a consequence an increase in percentage of neonatal deaths attributable to congenital malformations and genetic disorders.

In our study the congenital anomalies were not specified in most of the cases and didn't give the precise diagnosis, it was found that it constitute to 9.57% of all deaths. While in another retrospective study reviewed the neonatal deaths in NCU at Kosair Children Hospital, Kentucky. The congenital malformations were responsible for approximately 45% (range 32-61%), other major causes of deaths were extreme prematurity, respiratory disorders, sepsis, asphyxia and primary pulmonary hypertension¹¹.

Another cause of death was birth asphyxia which constitute for 3.76% of all neonatal deaths, the distribution of cases were 65 cases preterm and 15 cases term infants in a study done in south Africa found complications of prematurity and hypoxia were the most common final cause of death in neonates. This occur in spite of major advances in monitoring technology and knowledge of fetal and neonatal pathologies, perinatal asphyxia or more appropriately hypoxic-ischemic encephalopathy (HIE) remain a serious cause of perinatal mortality and long term morbidity in developing countries¹².

The death rate in term infant with severe hypoxia is about 11% and about 0.3 in 1000 live term births are severely affected. The incidence of hypoxic-ischemic encephalopathy, death and handicap rates all are significantly high in preterm infants¹³.

Although the incidence of HIE and its consequences in term infants has fallen significantly, meconium aspiration (represent fetal asphyxia and distress) which usually occur in term and post term infants 5% of these infants develop aspiration pneumonia of which 30% require mechanical ventilation and 5-10% may expire⁶. In our study there were only 3.76% of all deaths were due to this

condition the term infants were 27, postterm 5 and 5 preterm. The ultimate prognosis depend on the extent of CNS injury from asphyxia. The passage of meconium in an asphyxiated infants < 34 weeks gestation is unusual and may represent bilious secretion secondary to intestinal obstruction (ileus)¹⁴.

Of the less common causes of neonatal deaths were infant of diabetic mothers which contribute to only 1.42% of all deaths which may be explained by the fact that good control of maternal diabetes is the key factor in determining the fetal outcome. Data indicate that perinatal mortality and morbidity in the neonates have improved with dietary management and insulin therapy¹⁵.

The mortality rate is over 5 times higher for non diabetic mothers and is higher at all gestational age and in every birth weight for gestational age category^{16, 17}.

These infants are three times the risk for malformations compared with offspring of non-diabetic mothers, it present in about 1 in 2000 delivery¹⁸. Poor control in the first trimester is associated with higher percentage of congenital malformations, it account now to 50% of perinatal deaths and include cardiac, GIT and CNS defects¹⁹.

Conclusion Of the important causes of deaths were RDS, sepsis, birth asphyxia, and congenital anomalies.

Prevention of preterm delivery and low birth weight continue to be a priority for reducing neonatal mortality.

Genetic counseling could lead to further decline in neonatal mortality.

The diagnosis, treatment and prevention of congenital anomalies are critical for reducing over all neonatal mortality.

Important factors for prevention of infections are scrub suits for the nurses and residents, hand washing hands between the patients adequate nursing staff and avoidance of overcrowding.

Recommendations: Early provision of intensive observation and caring to high-

risk newborn infants can significantly reduce morbidity and mortality. Provision of experienced and skilled personnel especially designed and organized regional hospital units, proper equipments. Prevention of premature birth should be more emphasized to decrease neonatal mortality and morbidity.

Prevention and early diagnosis and intervention of the causes of death and regionalization of perinatal care with more comprehensive transport system are mandatory.

Better antiseptic measures would significantly reduce sepsis as a major cause of death,

Table (1): The major causes of death in the NCU.

Cause of death	No.	%
RDS	536	54.58%
Sepsis	221	22.5%
Congenital Anomalies	94	9.57%
Birth asphyxia	80	8.14%
Meconium Aspiration	37	3.76%
Infant of diabetic mother	14	1.42%

Table (2): The distribution of RDS cases according to the gestational age.

%	No.	Gestational Age
48.09%	252	<28week
29.58%	155	29-32 week
20.41%	107	33-36 week
1.90%	10	>37 week

Refrences

1- Anderson R-N. Deaths. Leading causes for 2000.Nat – Vital- Stat- Rep.2002. Sep 16; 50(16): 1-85.
 2-Finan-A, Clarke-TA, Matthews-Tg, et al. Strategies for reduction of neonatal mortality. Ir-j- Med- Sci.1999.Oct –Dec: 168(4): 265-7.
 3-Tsao-TY, Chen-Sn, Chang-BL, etal. Neonatal mortality and morbidity in a neonatal unit: impact

of improved perinatal care in recent 10 years. Chung-Hua-Mui-Kuo-Hsiao-Erh-Ko-I-Hsueh-Hui-Tsa-Chil: 1995Nov-Dec; 36(6): 405-10.
 4- Daw oad, -A,Varady, -E, Verghese, etal. Neonatal audit in the United Arab Amirates: Acommunity with a rapidly developing economy. East-Mediter- Health- J. 2000 Jan; 6(10): 55-64.
 5- Costella, -A-M, Osrin,-D. Micronutrient status during pregnancy and outcome for newborn infants

in developing countries . J-Nutr-2003 May; 133(5Suppl): 1757S-1764S.

6-Walsh – Sukysmc, bauer RE, Cornell DJ ,et al . Severe respiratory failure in neonates; mortality and morbidity rates and neurodevelopment outcomes .J. Pediatr. 1994; 125:104.

7-Goldenberg –R-L. The management of preterm labor. Obstet- Gynecol. 2002 Nov.; 100 (5 pt): 1020-37.

8- Garcia- Prats J, et al . The critically ill neonates with infection: management consideration in term and preterm infants. Pediatric. Infect. Dis. 2003; 4:4.

9- Leach –A, Mcardle-TF, Banya-WA, etal. Neonatal mortality in rural area of Gambia . Ann-Trop- Pediatr. 1999 Mar; 19 (1): 33-34.

10- Samual P. ,Robert G.,Kliengman M, Beherman RE. The fetus and the neonatal infant. The neonatal infections, epidemiology, Nelson text book of Pediatrics 16th edition, USA by W.B. Saunders, 2000- chapter 105: 542

11- Stewart-DL; Hersh-JH. The impact of major congenital malformations on mortality in a NICU . J-Ky-Med-Assoc. 1995 Aug; 93(8): 329-32.

12- Pattenson,-R-c. Why babies die – a perinatal care survey of South Africa, 2000-2002. S-Afr-med-J 2003 Jun; 93(6): 445-50.

13- American Collage of obstetricians and gynecologists ; ACOG technical Bulletin: Fetal and neonatal neurological injury . American college of Obstetricians and gynecologists, 1992.

14- Wiswel TE etal: Intratracheal suctioning, systemic infection and meconium aspiration syndrome. Pediatrics 1992; 89: 203.

15- Rosem B, Tsong RC, The effect s of maternal diabetes on the fetus and neonates. Ann-Cli- lab-Sci. 1991(Suppl 3): 153.

16- Koh. THH G , Aynsley –Green A,Tarbit M,etal ;Nrenal dysfunction during hypoglycemia . Arch.Dis. Child, 1988; 63:1353.

17- Cundy- T, Gamble-G, Town and –K;etal . Perinatal mortality in type 2 diabetes mellitus, Diab-Med. 2000 Jan; 17(1): 33-9.

18- Aseim; diagnostic Dysmorphology . Plenum, 1990.

19-Tricia Lacy Gomella, infant of diabetic mother, Lange clinical manual Neonatology, 15th edition, 2004 part 66: 419.