Descriptive Study of Neonatal Death in Neonatal Care Unit of Baghdad Teaching Hospital / Medical city / Baghdad (2007-2009)

Numan N. Hameed* FIBMS, DCH, MRCPCH, MAAP
Baraa N. Abed** MBChB

Summary:

Background: In developing countries, neonatal death accounts for 99% of neonatal deaths in the world. In Iraq, neonatal death rates are still unknown.

Objectives: To assess the death rate and the major causes of neonatal death in the neonatal care unit (NCU) in Baghdad Teaching Hospital-Medical City/ Baghdad.

Patients & Methods: A descriptive study of 564 neonatal deaths in the neonatal care unit (NCU) from 1st of January 2007 to 31st of December 2009 in Baghdad Teaching Hospital-Medical City/ Baghdad was carried out, and the causes of death as registered in the neonatal medical records and death certificates were studied.

Results: Neonatal death rate relative to admission was (18.5%). The neonatal death rates were lower in 2007 (15%) than 2008 (20%) and 2009 (19.2%), of 564 total neonatal deaths, males were 329 (58.3%), 235 (41.7%) were females with male to female ratio was 1.4:1. Eighty percent of neonatal deaths were preterm deliveries and (79%) were low birth weight (< 2.5 kg). Major causes of death were: Respiratory problems (62.8%), followed by congenital anomalies (17%), neonatal infections (11.2%) and birth asphyxia (9%).

Conclusions: The Neonatal death rate was lower in 2007 than 2008 and 2009. There was a high male to female ratio, and high percent of preterm deliveries and LBW. The main causes of death were respiratory problems, congenital anomalies and neonatal infections.

Keywords: Neonatal Deaths, Neonatal Care Unit, Neonatal mortality.

Introduction:

The neonatal mortality rate includes all infants dying during the period from birth to the first 28 days of life and is expressed as the number of deaths per 1000 live births. (1) Neonatal mortality, amounting to an estimated 4 million deaths worldwide each year, comprises nearly two thirds and two fifths of infant and under – 5 childhood mortality, respectively in developing countries, and 98% of global neonatal mortality occurs in developing countries. (2) Causes of neonatal death can be summarized into: Immaturity related including multiorgan immaturity, hyaline membrane disease or clinical respiratory distress in the absence of any other detectable cause, Birth asphyxia: when a normally formed term baby is unable to initiate and sustain respiration at birth or has low Apgar score, Congenital abnormalities: including fatal chromosomal & somatic malformations and Infections: sepsis, pneumonia or meningitis. (3,4) In Iraq, deaths in neonatal period account for more than half of under-five children deaths, highlighting urgent need to introduce health interventions to improve essential neonatal care and effective treatment for neonatal conditions. (5)

This study aimed to know the death rates and major causes of neonatal death in the neonatal care unit (NCU) in Baghdad Teaching Hospital-Medical City/ Baghdad.

Patients & Methods:

A descriptive study over 3 years period was done on the medical records of neonates admitted to NCU in Baghdad Teaching Hospital-Medical City and died in the period from 1st of January 2007 to the 31 of December 2009. The data regarding the (name, gender, birth weight, gestational age, mode of delivery, cause of admission to NCU, age and the cause of death), all were gathered from neonates medical records and death certificates. Analysis of data was carried out using the available statistical package of SPSS-18 (Statistical Packages for Social Sciences-version 18). Data were presented in simple measures of frequency, percentage. (6)

Results:

The neonates admitted to NCU during 3 years period were 3043 and the admission rate of the total live births was (12.2%). The year 2007 was of highest percent of admission (13.43%) and lowest number and percent of death from total live births 103(15%). table 1
Total neonatal admissions was (3043), (564) neonates died, and the death rate was (18.5%).
Males forming 329 deaths (58.3%) & females were 235 (41.7%), male to female ratio was 1.4:1.
Table 2
According to gestational age, of 564, 451(80%) of neonatal deaths were preterm and 113(20%) were term.
According to body weight, 445 (79%) were < 2.5 kg and 119 (21%) were >2.5kg.
Main causes of neonatal deaths were respiratory problems (62.8%), followed by congenital anomalies (17%), neonatal infections (11.1%), and birth asphyxia (9%).
From 62.8% of respiratory problems, respiratory distress was diagnosed in 48.8%, meconium aspiration 9.6%, pneumonia 2.5%, and pneumothorax 1.9%.
Table 4: The main causes of neonatal death

<table>
<thead>
<tr>
<th>Causes</th>
<th>2007 n. (%)</th>
<th>2008 n. (%)</th>
<th>2009 n. (%)</th>
<th>% from Total neonatal death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory</td>
<td>354(62.8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RDS</td>
<td>127(57.5)</td>
<td>116(48.3)</td>
<td></td>
<td>275(48.8)</td>
</tr>
<tr>
<td>meconium aspiration</td>
<td>10(4.5)</td>
<td>29(12)</td>
<td>7(2.9)</td>
<td>54(9.6)</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>4(1.8)</td>
<td>2(0.9)</td>
<td>0.9</td>
<td>14(2.5)</td>
</tr>
<tr>
<td>Pneumothorax</td>
<td>43(19.5)</td>
<td>34(14.2)</td>
<td></td>
<td>96(17)</td>
</tr>
<tr>
<td>Congenital Anomalies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infections</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Septicemia</td>
<td>17(8.6)</td>
<td>27(11.3)</td>
<td>19(8.6)</td>
<td>63(11.1)</td>
</tr>
<tr>
<td>meningitis</td>
<td>15(7.2)</td>
<td>26(11.3)</td>
<td>17(7.2)</td>
<td>58(10.3)</td>
</tr>
<tr>
<td>Birth asphyxia</td>
<td>16(7.2)</td>
<td>23(9.6)</td>
<td></td>
<td>51(9)</td>
</tr>
<tr>
<td>Total</td>
<td>103(100%)</td>
<td>240(100%)</td>
<td>221(100%)</td>
<td>564(100%)</td>
</tr>
</tbody>
</table>
Table 5: Distribution of neonatal deaths according to onset of infection

<table>
<thead>
<tr>
<th>Onset of infection</th>
<th>2007 n.</th>
<th>2008 n.</th>
<th>2009 n.</th>
<th>Total n.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early onset</td>
<td>14</td>
<td>23</td>
<td>17</td>
<td>54</td>
<td>85.7</td>
</tr>
<tr>
<td>late onset</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>9</td>
<td>14.3</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>27</td>
<td>19</td>
<td>63</td>
<td>100</td>
</tr>
</tbody>
</table>

Discussion:
Of the estimated 130 million infants born each year worldwide 4 million died in the first 28 days of life(7) ,three- quarters of neonatal deaths occur in the first week, and more than one- quarter occur in the first 24 hours.(3, 7)
Neonatal deaths account for 40% of deaths under the age of 5 years worldwide. Therefore, efforts to achieve the UN Millennium Development Goal 4 of reducing childhood mortality by two- thirds by 2015 are focused on reducing neonatal deaths in high mortality countries.
The current study showed that the neonatal death rate of (18.5%) which is higher than Rashid et al study in Bangladesh 2010 (15.5%)(8) and Adeolu AA et al study in Nigeria 2010(10.8%)(9). Death rate decreased in 2009 which may be due to improved health services.
The high male to female ratio of 1.4:1, which was similar to Adeolu AA et al study in Nigeria 2010(1.5:1)( 9), this may be due to the fact that male neonates have approximately two folds higher incidence of sepsis and respiratory distress syndrome than females. (10, 11)
Regarding body weight, (79%) of neonatal deaths were in neonates less than 2.5kg, which is lower than Foram H study in Ireland 2002(12) (88%), but higher than Rashid study in 2010(67.12%)(8), and Jehan I et al study in Pakistan 2009 (54%). (13)
In the current study, (44.7%) were delivered by C/S, which is higher than Rashid study in Bangladesh 2010 (35%) (8).
In the current study, respiratory problems were the most common cause of neonatal deaths (62.8% of total deaths), which differs from Rashid study in 2010 in which immaturity – related and birth asphyxia were the most common cause of neonatal death (26%) (8) for each and differ from Adeolu AA et al study in Nigeria 2010 in which infection was the most common cause of neonatal death (26.1%)(9).
According to gestational age relation to neonatal death, 80% of deaths were pre term, which is higher than Rashid study in Bangladesh 2010 (59.59%). (8)
Death from congenital anomalies formed (17%) of total deaths which is higher than Jehan I et al study in Pakistan 2009 (8%). (13)
Neonatal infections formed (11.2%) of total deaths, which is lower than Rashid study in Bangladesh (28.77%) (8) And Adeolu A A et al study in Nigeria 2010, (26.1%). (9)
Birth asphyxia caused (9%) of total neonatal deaths, which is lower than Jehan I et al study in Pakistan 2009 (26%) (13), this may be due to more hospital deliveries in the current study.

Conclusions:
The Neonatal deaths rates were lower in 2007 than 2008 and 2009. There was high male to female ratio, and high percent of preterm deliveries and LBW. The main causes of death were respiratory problems, congenital anomalies and neonatal infections.
We recommend better care of preterm and low birth weight babies, especially those with respiratory problems and steps to prevent or decrease neonatal infections and congenital anomalies.

References: