

Original Research Article

Descriptive Study for Neonatal Death in Neonatal care Unit in of Maternity and Children Teaching Hospital in Al-Diwaniya

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Accepted 28 December, 2015

Abstract

Approximately more than ten million die in the first month of life over all the world (with more than one hundred million born annually) , also approximately 75 % of death in neonate occur in the first seven days of life and more than 25% of them occur in the first day of life. the death during neonatal life represent approximately more than 35% of death that occur below five years in the world .This study was analytical prospective study , included all the infants hospitalized in NICU of maternity and children teaching hospital in Al-diwaniah governorate from first of September 2013 to the end of august 2014.About 1466neonate patients was admitted to the neonatal care unit directly either from the labor room or from the operation room and the neonate only in contact with health personnel ; from those we study all 193 hospitalized neonates that died due to different causes. In this study, of 1466 neonates , were hospitalized in NICU (neonatal intensive care unit) in maternity and children teaching hospital from first of September 2013 through august 2014 ; from which 193 (13.1%) cases were died . Those infants died in the hospital with male to female ratio approximately 2:1[male 64.25% and female 35.75% respectively] ; 36.8% of them were full term and 63.2 % were premature . the most common cause of the neonatal death were the RDS (respiratory distress syndrome) 93 (48.1%) and the second most common cause were the complication of prematurity other than the RDS which form 55 (28.4%) like apnea , extreme immaturity with low birth weight , hypoglycemia and hypothermia and necrotizing enterocolitis. The other causes were birth asphyxia 7.7 % , congenital anomalies 4.1% and sepsis 5.6% r, the meconium aspiration syndrome infant represent about 9 (4.6 %)and miscellaneous causes(least or rare causes) like hydropsfetalis and intraventricular hemorrhage and congenital heart disease was 3 (1.5 %). The final conclusion shows the common cause of neonatal death was sever immaturity with its complications and mainly the respiratory distress syndrome .almost the death occur in sever low birth weight associated with prematurity. The study proves the relations between certain maternal and neonatal factors and neonatal mortality. Good antenatal care especially in third trimester to avoid prematurity should be provided to any pregnant woman.

الخلاصة

حوالي اكثر من عشرة ملايين طفل في العالم يموتون في الشهر الاول من الحياة (بما يقارب مئة مليون يولدون .ان بما يقارب ٧٥% من وفيات حديثي الولادة تحدث في الأسبوع واكثر من ٢٥% من هم في اليوم الأول من الحياة . الوفيات عند حديثي الولادة يمثلون ما يقارب ٣٥% من الوفيات التي تحدث في الخمس سنوات الاولى من العمر في العالم (حسب إحصائيات منظمة الصحة العالمية). تعتبر هذه الدراسة دراسة تحليلية لحديثي الولادة الداخليين في وحدة العناية بالخدج الداخليين في مستشفى النسائية والاطفال التعليمي في الديوانية من الاول من ايلول ٢٠١٣ الى نهاية اب ٢٠١٤ . حوالي ١٤٦٦ طفل حديث الولادة ادخل الى هذه الوحدة من غرفة العمليات القيصرية او من صالة الولادة وتم دراسة ١٩٣ حالة وفاة لأسباب مختلفة. من خلال متابعة وتحليل حالات الوفيات في وحدة عناية حديثي الولادة تبين ان نسبة الذكور للإناث هي تقريبا ٢:١ (الذكور ٦٤.٢٥% اما الاناث بما يقارب ٣٥.٧٥%) : منهم ٣٦.٨% من هم كاملتي النمو و ٦٣.٢% غير كاملتي النمو. ان السبب الاكثر شيوعا للوفيات هو متلازمة عسر التنفس

الولادي اما السبب الرئيسي الثاني هي مضاعفات المتلازمة مع الاطفال غير كاملي النمو باستثناء عسر التنفس الولادي ونزف الدماغ (توقف التنفس لدى الاطفال الخدج, ونقص السكر والانخفاض الحاد لحرارة الجسم , والخداج الشديد مع نقص الوزن الحاد التهاب معوي قولوني ناخر عند الخدج) والتي تشكل ٢٨.٤ % (٥٥ مريض). الاختناق الولادي , التشوهات الولادية ,تسمم الدم الجرثومي تشكل ١٥ مريض (٧.٧%), ٨ مريض (٤.١%), ١١ مريض (٥.٦%) بالتتابع. متلازمة استنشاق العنق تشكل ٩ مريض ٤.٦% واسباب اخرى (نزف تجويف الدماغ ,تشوهات القلب الولادية ,الموه الجنيني) تشكل ٣ مريض بما يقارب ١.٥ % . ان السبب الرئيسي للوفيات عند حديثي الولادة هو الخداج الشديد مع مضاعفات الولادة قبل الاوان ومتلازمة عسر التنفس الولادي . تحدث الوفيات عند الاوزان القليلة جدا من الاطفال الخدج. اثبتت الدراسة العلاقة بين عوامل خاصة بالأم والطفل ووفيات الخدج. العناية بالمرأة الحامل خصوصا الثلاث الاشهر الاخيرة من الحمل هي من اهم العوامل لمنع الولادة قبل الاوان ومضاعفتها.

Introduction

Approximately more than ten million die in the first month of life over all the world (with more than one hundred million born annually), also approximately 75 % of death in neonate occur in the first seven days of life and more than 25% of them occur in the first day of life [1]. The death during neonatal life represent approximately more than 35% of death that occur below five years in the world [2].The difference between western and middle east and Asian countries persists and in some cases has widened and this may be related to the availability of medical facilities [3].Neonatal deaths account for a major proportion of child deaths globally. The main causes of neonatal deaths are immaturity, birth asphyxia, neonatal sepsis, congenital pneumonia, anomalies, tetanus and others [4].

A study was done about neonatal death in the United States, shows 15.1 for each one thousand normal birth in 1970, 8 for each one thousand normal birth in 1980 [5,6]. The neonatal death decrease in the last few years between those low birth weight because of improvement of antenatal care [7]. The most prominent factors that increase the risk of neonatal death include antenatal infections, the mothers age (very young or very old), socioeconomic state ,caesarian sections an etc.. [8,9].

The other study shows that the lowest level of gestational age required for survival is 22 in some Centre, but in general the gestational age below twenty five carry low survival rate[10-11].

The hospital outcome of the neonatal unit and statistical rate of death in the neonatal unit differ from center to other according to the rate of management and availability of facilities and instrument required [12] ,[13].the gestational age had a direct relation with neonatal death [14] .

study of united nations Organization shows that each year nearly more than three million babies are stillborn, and also more than three million more die within the neonatal life of coming into the world. [2] The aim of this study is to identify the main causes of neonatal death.

Materials and Methods

This study was an analytical prospective study, included all the infants hospitalized in neonatal unit of maternity and children teaching hospital in Al-Diwaniah governorate from first of September 2013 to the end of august 2014. About 1466 neonate patients was admitted to the neonatal care unit directly either from the labor room or from the operation room and the neonate only in contact with health personnel; from those we study all 193 hospitalized neonate that died due to different causes.

The questionnaire include many question related to both baby and his mother (questions about the gender (male or female), birth order, the weight at birth, time of pregnancy, etiology of neonatal mortality, at which age the death occur, cause of, mode of delivery Caesarean section or normal vaginal delivery and it's risk factor and time of death (early neonatal

death or late neonatal death that occur in the second ,third or fourth week) .

All neonatal deaths were hospitalized at the neonatal care unit shows the major cause of death was related to obstetrical or antenatal cause ; the circumstances of the death were determined by asking the mother or family by complete medical history and by reviewing hospital records . Frequencies and rates were calculated for each month determined for neonatal mortality causes. Relative risks were calculated to evaluate the associations between potential risk factors and neonatal death .

Results

In this study, of 1466 neonate, were hospitalized in NICU (neonatal intensive care unit) in maternity and children teaching hospital from first of September 2013 through the end of august 2014; from which

193 (13.1%)cases were died .approximately more than190 infants died in the hospital with male to female ratio 2:1 [male 64.25% and female 35.75% respectively].

the most common cause of the neonatal death were the RDS (respiratory distress syndrome) 93 (48.1%) and the second most common cause were the complication of prematurity other than the (RDS and IVH)like apnea ,extreme prematurity with low birth weight, hypothermia and hypoglycemia and necrotizing enterocolitis which form55 (28.4%). The birth asphyxia, congenital anomalies and sepsis represent 15 (7.7 %), 8 (4.1%), 11 (5.6%) respectively. the meconium aspiration syndrome mainly in post term infant represent about 9 (4.6 %)and miscellaneous causes(hydropsfetalis and intraventricular haemorrhage IVH) was 3 (1.5 %) . as shows in figure -1

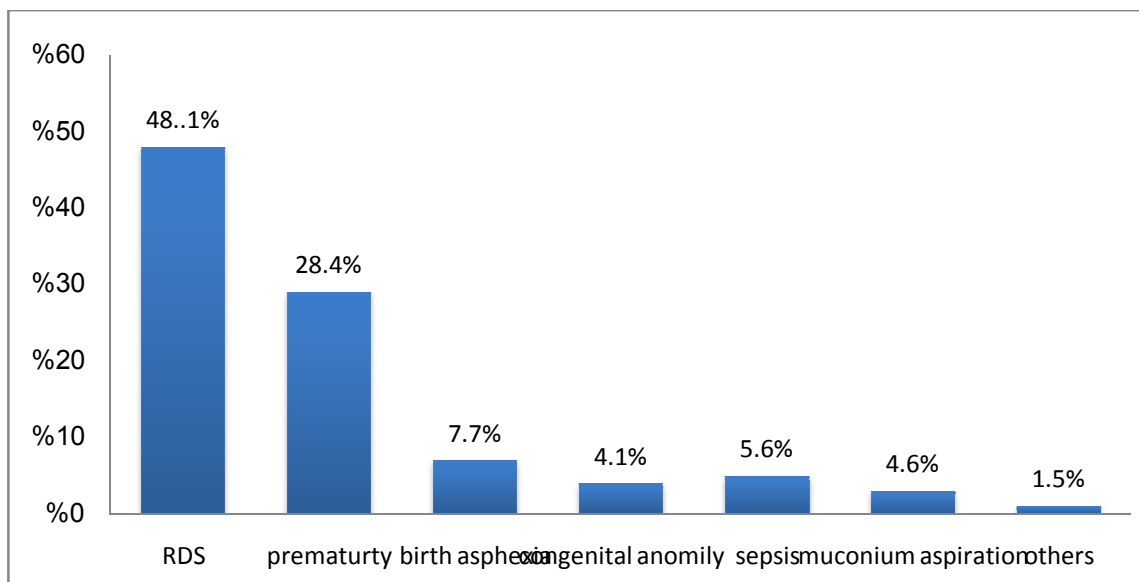


Figure 1:percentage of death according to causes

Although the difference was not statistically significant between those delivered by normal vaginal delivery 48.7% and those delivered by caesarian section 51.3%.

The low birth weight is with more risk for neonatal death 127 (65.8%) body weight less than 2.5 kg than those normal body (more than 2.5 kg) which represent 66 (34.2

%), and most of them died in the first 72 hour 158 (81.8%) vs35 (18.14 %) those after 72 hour(figure – 3). most cases of neonatal death associated with risk factor (86.53% vs 13.47% those with no risk factor);the risk factor may related to the pregnancy like pregnancy induced hypertension and pre-eclampsia and vaginal

bleeding or oligohydernia or polyhydernia, or related to the labor like prolong labor or caesarian section or meconium stained (our study take these risk factor as part of general information about the mothers) ;or may related to the neonate like low birth weight or very large baby (<2,500 or >4,000 g), sever immaturity, sever

congenital anomalies and, tachypnia and cyanosis at the time of diagnosis. The neonatal death relative to admission was different from month to month (September 18.09% and 5.6% at the January) with other different percent between these range as show in the table -1

Table 1: Neonatal death relative to admission

Month	Total life birth	NO of death	% of death
September	105	19	18.09%
October	103	14	13.6%
November	104	15	14.4%
December	109	14	12.8%
January	141	8	5.6%
February	141	15	10.6%
march	176	17	9.6%
April	122	19	15.5%
may	117	18	15.3%
June	124	20	16.1%
July	113	17	15%
august	111	17	15.3%
total	1466	193	13.1%

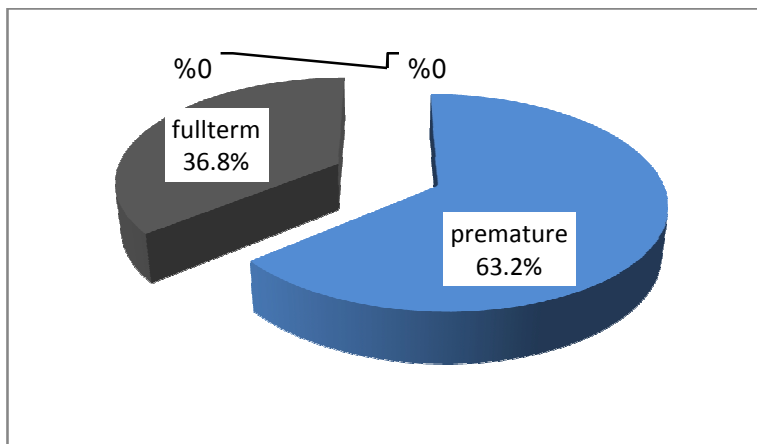


Figure 2: Relation of neonatal death to gestational age

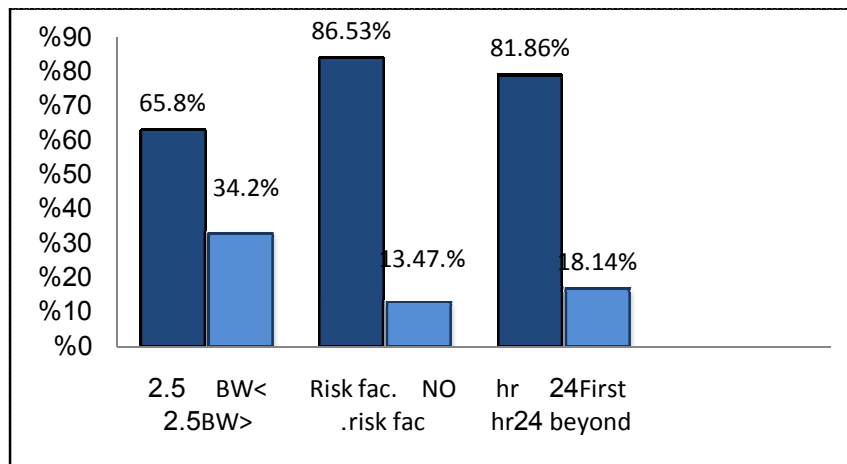


Figure 3: Death cases according to Bodyweight, risk factor, and onset of death

Discussion

In our study the total number of admission during the period September 2013 to the august 2014 is 1466 hospitalized neonate and the number of death is 193 neonate 13.1% and this was more than the study of neonatal mortality in Pakistan which represent 9 % [15] and also less than study in Canada 4 % [16], this is may be caused by availability of the health care and facilities in these countries (differs from country to another).

The top three causes of deaths in the Philippines (1993-2006) for early neonatal deaths are respiratory distress of newborn (2006-21.5%, 2007-21.4%), bacterial sepsis of newborn (2006-19.0%, 2007-20.1%), and disorders related to low gestational age and the problem of birth weight, and other causes not involve in this etiological classification (2006-13.8%-15.3%) [18], while in our study, the major etiological agents of the neonatal death were the RDS (respiratory distress syndrome) 93 (48.1%) and the second most common cause were the complication of prematurity other than the RDS which form 55 (28.4%). The birth asphyxia, congenital anomalies and sepsis represent 15 (7.7%), 8 (4.1%), 11 (5.6%) respectively. A study was similar to other study in Ilam region in which the major etiological classification of neonatal death

reported was the respiratory distress disease [17].

In Pakistan, the major etiology of death in neonate is were immaturity in 34%, hypoxic ischemic encephalopathy 21% and intrapartum bleeding in 9%. ;sever prematurity represent 26%, hypoxic ischemic encephalopathy 26% and neonatal sepsis in 23%. These results are consistent with united nation organization reports on the causes of mortality in early life in western region and from Pakistan [18-20] in addition to that, our finding about the infection, including sepsis, and all type of infections, is major etiological agent of neonatal deaths that occur after first 48 hours in neonate delivered at hospital is consistent with recent studies from western region and emphasize the care during delivery and infection of neonate at hospital [21].

There is no statistical significant between those were delivered by normal vaginal delivery 48.7% and those delivered by caesarian section 51.3%; in comparison in urban Pakistan the delivery by operations rate of 19% in this area [22]. However, in comparison with rural areas of Pakistan, where delivery occur at home and operations rate are the norm, there is now a growing trend in areas towards hospital birth and associated operation delivery [23, 24]. The world health organization's

recommends a operation rate of 5–15% to usually decrease others and early neonatal mortality rates[25] this result indicate that these Caesarean operations are performed in a timely manner on appropriate women,also in this study, the relationship between type of delivery and infant mortality was not significant which was consistent with the study of Rahimi et al.[26].

Our study reports sex-specific neonatal death rates in a defined neonate admitted to the intensive unit. The sex differential in early and late neonatal death is deserve noting. Proportionately, there were more male gender neonatal deaths in the early neonatal period (64.25% were male and 35.75% of them were female);reduced health care specially for girls compared with male sex has been reported in this location, especially in south Asia [27,28] and recently there has been a growing demand for neonatal death data to be disaggregated by sex, location and socioeconomic levels , to enable programs to improve resource classification and monitoring [29], also in Persian study shows that from among the infants who died, (60%) were female and (40%) were male. Based on Namakin's study, 57/6% died infants were female and 42/4% were male [30] In this study, not like our study, there is no any relation between gender and mortality rates.

In this study most cases of neonatal death associated with risk factor (86.53% vs 13.47% those with no risk factor);These results are consistent with united nation organizations reports on the causes of neonatal death in western region and also with other research from Pakistan [2 ,31, 32] and most of them died in the first 72 hour 158 (81.8%) vs35 (18.2 %) those after 72 hour , neonatal deaths that occur in the first 72 hour among neonates deliver at hospital is consistent with recent studies from western countries and indicate the importance of monitoring delivery and hospital-acquired infection. [33] This result was compatible with Prelehman's study

indicate that more than 50 % of the neonatal death is related to the 48 hours days of birth [34], Fvnska's study that 28/6% of the neonatal death occurred during the 24 hours and 62/4% during the seven days of birth [35].

Also The statistics indicated a higher incidence of low birth weight and neonatal mortality in our area in which (65.8%) body weight less than 2.5 kg than those normal body (more than 2.5 kg) which represent (34.2 %) ; these are consistent with Islamic Azad University study by Mandana et al [36].

Conclusion

The common cause of neonatal death was sever immaturity with it is complications and respiratory disease mainly the respiratory distress syndrome .most of this neonatal death occur in immaturity and low birth weight babies .we can prevent of born these babies by high quality prenatal care. The study proves the relations between certain maternal and neonatal factors and neonatal mortality;most of this death occurs in premature and low birth weight babies.

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