Mortality Rate among Low Birth Weight Infants in Al-Battool Teaching Hospital

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Abstract

Background: A comparative study about mortality rate among low birth weight infants who delivered in Al-Battool teaching hospital- Diyala governorate and admitted to neonatal nursery throughout the first six months of the year 2003 and 2009 respectively.

Patients and methods: This study was done in Al-Battool teaching hospital investigating the records of 366 patients admitted during first six months of 2003 and compared with records of 558 patients admitted during the same period of 2009. Information has been studied extensively for gestational age, birth weight, predisposing factors and mortality.

Results: The study reveals

1-Mortality rate increased to 30 % during 2009, while it was 12% during 2003

2-Increase percentage of low birth weight infants (32-36wks) during first 6months 2009 (22.7%) , as compared to first 6months 2003 (19.6%) and (28-32wks) increased to (26.3%) during 2009 as compared to(25.4%) during 2003 .

3-Increase congenital abnormality (ranging from cleft palate to congenital heart diseases) (42%) on 2009 as compared to (29%) on 2003.

4-Increase number of low birth weight infants to total deliveries at hospital (13.1%) during 2009 as compared to (11.7%) during 2003.

Conclusions: High mortality rate, increase percentage of low birth weight infants and increase cases of congenital abnormalities during 2009 , need to be studied extensively and thoroughly regarding the environmental causes and health services availability.

Key words: mortality rate, low birth weight infant, congenital abnormality

Introduction

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Low birth weight infants are defined as : all infants whose birth weight is less than 2500 gm irrespective of the cause & without regard to the duration of gestational age.

Low birth weight infants 60% of them are premature and 40% are intrauterine growth retardation 35% of those are dysmature and other 5% are hypoplastic infants [1]. Newborn infants can now be categorized as [2] :

1.Appropriate for gestational age .

2.Small for gestational age .

3.Large for gestational age .

About one third of low birth weight are small for gestational age while two third of them are appropriate for gestational age and preterm, but in developing countries 70% of low birth weight infants are small for date[3] .

The incidence of low birth weight infants is about 7% of total birth in UK &USA[1,2,3]

The common causes of low birth weight infants are :

1. Inherited factors ;

a. Constitutional ; a mother who has produce a small for date infant has 20% chance of doing so in subsequent pregnancies [4,5] , infants whose parents are small tends to be small at birth [6,7] .

b. Chromosomal anomalies e.g. trisomy18 (Edwards Syndrome) , 45-OX(Turner Syndrome) [8] .

2. Malnutrition ; many studies support the importance of nutrition as a factor in intrauterine growth retardation although protracted and sever nutritional insult is required to produce such effect [9] .

3, Infections e.g. maternal cytomegalic virus infection [1,10] .

4.Toxemia of pregnancy and hypertension.

5. Placental causes.

6. Others e.g. multiple gestation , high altitude . teratogenes , low socioeconomic , first born infant and maternal polycythemia during the latter half of pregnancy [2,11]

Patients and Methods

This retrospective study was done in Al-Battool teaching hospital for maternity and pediatric in statistic records from the case sheets of 366 cases were admitted to the neonatal intensive care unit from hospital delivery rooms exclusively at first 6months of 2003 and 558 cases were admitted at first 6months of 2009 .

The study was including the following data in respect to every case ;

1. Number of low birth weight infants classified according to body weight and gestational age .

2. Mortality in relation to gestational age .

3. Mortality in relation to body weight .

4. Predisposing factors .

5. Causes of death .

6. Percentage of death in relation to total admission to intensive care unit and percentage of low birth weight infants to total deliveries at hospital.

The total number of deliveries in Al-Battool teaching hospital during the 1st 6months 2003 was 3140 and during the 1st 6months 2009 was 4288.

Results

1-Iincrease percentage of low birth weight infants (32-36wks) during the first 6months 2009 which is 22.7%, as compared to same period of 2003 which is 19.6% table (1) , and during 2009 increase cases who are more than 36wks i.e. mostly small for date rather than pre-maturity is the cause , furthermore there is increase percentage of infants below 1.5 kg during 2009 as compared to 2003 table (2) .There is increase in number of those below 28wks gestational age and below 1kg during 2003 as compared to 2009 table(1) and table(2) .

2-Distribution of death according to birth weight and gestational age shown in table(3) and(4).

3-Causes of infants death (table 5 for 2003 & table 6 for 2009)

4-Congenital abnormality (ranging from cleft palate to cong. heart diseases) is (42%) on 2009 as compared to 2003 which is (29%) , as it is shown in table (7), also there is increase in the known predisposing factors to 44.5% during 2003 while it is 33.1% during 2009 that means unknown causes are more in 2009 as compared to 2003.

5-Mortality rate increased to 30% during 2009 while it was 12% during 2003 , as it is shown in table (8) .

6-Percentage of low birth weight infants to the total deliveries in hospital is more during the 1st 6months of 2009 which is (13.1%) as compared to 1st6months of 2003 which is (11.7%) table (8) .

Table (1): Distribution of low birth weight infants according to gestational age in first 6months of 2003 compared to first 6months of 2009

Gestational age	2003	%	2009	%
<28wks	118	32.2	136	24.3
28 -32wks	93	25.4	147	26.3
32-36 wks	72	19.6	126	22.7
>36wks	83	22.8	149	26.7
Total	366	100	558	100

Table (2): Distribution of Low birth weight infants according to the birth weight in first 6months of 2003 compared to first 6months of 2009

Birth weight	2003	%	2009	%
<1kg	138	37.7	160	28.7
1.5 - 1 kg	109	29.8	187	33.5
2.5- 1.5kg	119	32.5	211	37.8
Total	366	100	558	100

Table (3): Distribution of mortality according to birth weight in first 6months of 2003 compared to first 6months of 2009.

Birth weight	No. of death 2003	%	No. of death 2009	%
<1kg	18	40.9	60	35.7
1.5- 1 kg	16	36.4	66	39.3

2.5 – 1.5 kg	10	22.7	42	25.0
Total	44	100	168	100

Table (4): Distribution of mortality according to gestational age in first 6months of 2003 compared to first 6months of 2009

Gestational age	No.of death 2003	%	No .of death 2009	%
< 28wk	16	36.4	52	30.3
28 -32wks	9	20.4	36	21.4
32-36 wks	11	25	46	27.4
> 36wks	8	18.2	34	20.9
Total	44	100	168	100

Table (5): distribution of infants death 2003 (total number 44) according to causes of death

	Sepsis	RDS	Asphyxia	Cong.abn.	others
<1kg	4	4	8	0	0
1.5-1kg	0	4	4	0	0
2.5-1.5kg	4	8	4	2	2 cot death
Total	8	16	16	2	2
%	18.2	36.4	36.4	4.5	4.5

Table (6): distribution of infants death 2009 (total no.168) according to causes of death

B.wt	Sepsis	RDS	Asphyxia	Cong. abn	Others
<1kg	16	4	20	4 CHD	2 Cong.pnemonia
1.5-1kg	20	14	20	2 cleft lip	0

2.5-1.5kg	26	20	16	2 Multiple cong.abn.	2 cot death
Total	62	38	56	8	4
%	36.9	22.5	33.4	4.8	2.4

(7): **Table**

Predisposing factors of low birth weight infants in first 6months of2003 compared to first 6months of 2009

Factor	2003	2009
Maternal disease	57	30
Maternal age	18 Less than 20y 26 Above 35y	20 Less than20y 28 Above 35y
History of low birth wt.	0	10
Twins	14	19
Smoking	0	0
Congenital abnormality	48 29%	78 42%
Total	163	185
%	44.5	33.1

Table (8): percentage of low birth weight infants in the first 6months of both 2003 and 2009 compared to the total deliveries in Al-Battool teaching hospital and percentage of death of low birth weight to total low birth weight number during 2003 compared to 2009.

	No. of death	Total low birth weight infants No.	Total deliveries in Al-Battool teaching hospital	% of death of low birth weight to total low birth weight no.	% of low birth weight infants to total deliveries
First 6months of 2003	44	366	3140	12	11.6
First 6months of 2009	168	558	4288	30	13.1

Discussion

All infants whose birth weight is less than 2500 gm irrespective of the cause and without regard to the duration of gestational age are called low birth weight infants The mortality rate of low birth weight according to WHO in developed countries according to degree of low birth weight ranging from 5% for those whose birth weight (2.5-1.5kg) ,more than 20% for those with birth weight (1.5-1kg) which called (very low birth weight infants) and for those with birth weight less than 1kg called (extremely low) ranging from 50% to 90% for those who less than(0.750kg) which called (immature low birth weight infants) .

In this study

1- Mortality rate of low birth weight infants was higher in the 1st 6months of 2009 (30%) while it is (12%) during the 1st 6months of 2003 .
2- causes of death as shown in table(5) and (6) increase number of sepsis and then asphyxia as a causes of death during 2009 as compared to 2003 in which the major causes are asphyxia and RDS .
3- The number of low birth weight infants is higher during the 1st 6months of 2009 than during the 1st 6 months 2003 as regard to the total admission to the neonatal intensive care unit and as regard to total deliveries in Al-Battool teaching Hospital .
4- The known predisposing causes i.e. the known factors (excluding malnutrition) are less in this study during 1st 6 months 2009 which is (33.1%) as compared to 1st 6months of 2003 which is (44.5) ,congenital abnormalities (varying from cleft palate to congenital heart diseases) are increased during 2009 to 42% as compared to 29% during 2003 , thus the known causes of low birth weight infants are more during 2003 i.e. the unknown causes are more in 2009 , which are attributed mostly to malnutrition , psychological , socioeconomic conditions during these six years of loss of security , unstable and irritable circumstances , these sorrowful conditions which affect all the essential services for life especially the health services.

Conclusion

High mortality rate, increase percentage of low birth weight infants and increase cases of congenital abnormalities during 2009, need to be studied extensively and thoroughly regarding the environmental causes and health services availability .

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