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Clinical Study of Morbidity and Mortality Pattern of Preterm Very Low Birth Weight Babies in Neonatal Period

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Abstract **Original Research Article**

Background: There are multiple factors responsible for preterm delivery. It is difficult to completely separate factors associated with prematurity from those are associated with 'IUGR [4]. ***Objective:*** To determine morbidity and mortality pattern of preterm very low birth weight babies in neonatal period. ***Methods:*** A total number of 200 preterm very low birth weight babies consecutively admitted in this hospital were enrolled into this study. The information about the babies gathered from the history and physical examination and recorded within 24 hours of admission. Each infant was reassessed daily to record the progress and to document any new complication. In his study 50% was male and 50% was female babies. Among them 8.5% was extremely Low birth weight, 1.5% was incredibly low birth weight babies. About 64.5% of preterm VLBW babies were associated with multiple pregnancy- among them 57.1% twin pregnancy and 7.5% triplet pregnancy. Each baby had one or more problems -infection 33% (septicemia congenital pneumonia and umblical sepsis), perinatal asphyxia 30%, poor feeding 10%, neonatal jaundice 28.5, neonatal seizure 14 %, apnea 16.5%, RDS 5 %, Hypoglycemia 7%, hypocalcaemia 2.5 %, were the major problems. ***Result:*** Among the studied neonates mortality rate was 32.5 %. Perinatal asphyxia 30%, septicemia. 20.50 % were the major cause of death in preterm infants. Immediate outcome of preterm VLBW infants was closely related to maternal illness during pregnancy. We found mortality rate was related to gestational age, highest (100 %) among the babies of gestational age less than 28 weeks and lowest in babies of gestational age 35 weeks or more. Lower gestational age was associated with higher mortality rate. Higher mortality rates were observed among babies delivered vaginally (24.7%) compared to caesarian section (16.7 %). In addition to prematurity-birth weight was the important factor influencing the mortality observed in the present study. ***Conclusion:*** This study was an enthusiastic approach towards finding out morbidity and mortality pattern the outcome in preterm very low birth weight babies in neonatal period.

Keywords: Preterm, very low birth weight, neonates, gestational age.

INTRODUCTION

Chronic maternal disease such as UTI, hypertension, diabetes mellitus is associated with premature birth [1]. Prematurity is related to extra difficulty to adaptation with extra uterine environment compared to term baby due to their immaturity of organ system. Premature infants may adapt poorly to air breathing. Apnea of premature babies occurs in 25% of preterm low birth weight babies [2]. It is higher in of preterm very low birth weight babies Apneic spell is one of the major causes of death in preterm babies [3]. Incidence of respiratory distress syndrome in preterm very low birth weight babies is 13.43% [4]. (The incidence is 1-3% of all birth). It is 5% of infants born at 36 weeks and 25% born at 28 weeks. The incidence increases with increased prematurity [5]. It is an important cause of death of preterm very low birth weight babies. Immature cerebral vasculature predispose to subependymal or intra ventricular hemorrhage (IVH). The incidence is 20-30% in infants born at less than 31 weeks and as low as 26 weeks of gestational age [6].

In preterm infants impaired absorption of substrate by the intestine compromise the nutritional

management. Necrotizing enterocolitis is the most common acquired emergency in neonate [7]. Prematurity contributes 20% of the affected infants with necrotizing enterocolitis [8]. Preterm very low birth weight infants are more vulnerable to infection than term babies [9-11]. The mode of delivery was found to influence the outcome of the preterm infants. It is found that outcome is better of preterm babies delivered by caesarian section than vaginal delivery [9-11].

OBJECTIVES

General objectives

To determine morbidity and mortality pattern of preterm very low birth weight babies in neonatal period.

Specific objectives

1. To determine the outcome of preterm very low birth weight babies in neonatal period.
2. To identify important perinatal risk factors associated with preterm very low birth weight baby's contribution to morbidity and mortality pattern of preterm very low birth weight babies in neonatal period.

METHODOLOGY

Type of study	Prospective study
Place of study	Special care Neonatal Unit of Pediatrics department of Sher-e- Bangla medical college hospital, Barisal
Study period	Two years (from August 2019 to August 2021)
Study population	200 case (Male baby- 100, Female baby- 100).
Sampling technique	Purposive

SELECTION CRITERIA

Inclusion criteria

a. Preterm -Gestational age from 28 weeks to <37 weeks.
b. Very low birth weight -Birth weight from 700 gm to <1500 gm.
c. Post-natal age 0-48 hours.

Exclusion criteria

a. Gestational age from <28 weeks and >37 weeks.
b. Birth weight from <700 gm &>1500 gm.
c. Post-natal age >48 hours.
d. Babies with any obvious congenital anomaly and moribund patient.

Study procedure

After fulfilling the inclusion criteria verbal consent was taken from attendant or mother of the baby. Two hundred (200) preterm very low birth weight babies were included in this study. They were admitted to neonatal unit of pediatrics ward of Sher-e-Bangla Medical College Hospital, Barisal during the period from August 2019 to August 2021.

For each infant history was taken and physical examination was done as per set questionnaire. Obstetrical history was taken from the attended and from the birth record. Gestational age of the infant was determined by the history of date of mother's last menstrual period and was confirmed by New Ballard Scoring (NBS) system.

Weight was taken by the digital weight machine. Daily weight was taken by the same machine and at the same time before feeding.

There were junior doctors on duty round the clock in neonatal unit and supervised by the pediatrics consultant. I visited every VLBW baby twice daily.

Any pathological state if present was recorded and management reviewed according to the clinical stat. Handling of the baby was kept at minimum level for prevention of infections.

RESULT

Table-I: Distribution of babies according to age at admission

Age at admission	Number	Percent (%)
Up to 12 hours	75	37.5%
13-24 ours	90	45%
>24 hours	35	17.5%

Distribution of babies according to age at follows

Out of 200 babies 75 babies got admitted within 12 hours of birth, 90 babies within 13-24 hours and 35 babies at >24 but <48 hours of birth.

Table-II: Distribution of babies in relation to gestational age

Gestational age (week)	Number babies (n)	Percent (%)
28	03	1.5%
29	07	3.5%
30	12	6%
31	15	7.5%
32	40	20%
33	35	17.5%
34	34	17%
35	29	14.5%
36	20	10%
<37	05	2.5%
Total	200	100%

Distribution of Preterm VLBW Babies in Relation to Gestational Age. The gestational age of studied neonate was from 28 weeks to <37 weeks

Distribution of babies according to number of pregnancy (parity) among the enrolled neonates about half 95(47.5%) babies were born to primipara mothers, rest to multipara mothers. Out of them 51(25.5%) were second pregnancy, 28(14%) were 3rd pregnancy, 21(10.5%) 4th pregnancy and 5 (2.5%) 5th pregnancy.

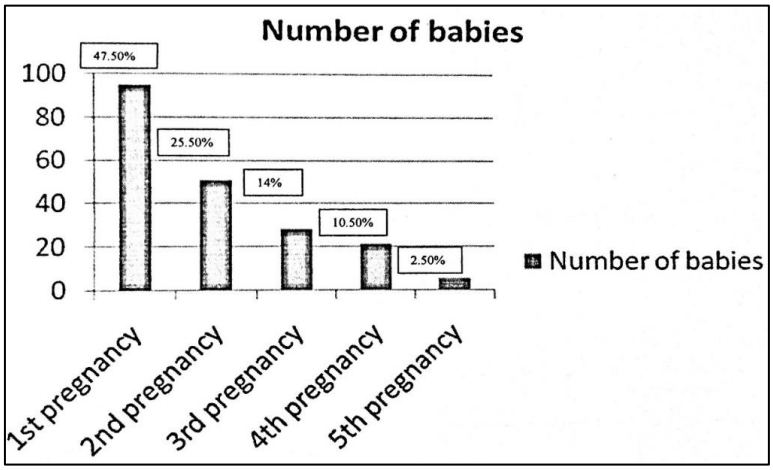

Fig-I: Distribution of babies according to number of pregnancies their maternal parity

Table-III: Distribution of mothers with different antenatal problems

Antenatal problems	Number of babies	Percent (%)
Pre-eclamsia	36	18%
Eclamsia	38	19%
Antepartem haemorrage	16	8%
Premature rupture of membrane	38	19%
Gestational Diabetes mellitus	5	2.5%
Placenta previa	2	1%
Typhoid fever	7	3.5%
Leaking membrane	16	8%
Oligohydramnios	3	1.5%
Polyhydramnios	2	1%
Viral hepatitis	18	9%
History of trauma	3	1.5%
No antenatal problem	16	8%

Among the 133 mothers most common problems were eclampsia 38(19%), Pre eclampsia 36 (18%), Premature rupture of membrane 38(19%), Leaking membrane 16(8%), Antepartem hemorrhage 16(8%), Viral hepatitis18 (9%).

Table- IV: Clinical outcome in relation to mode of delivery

Type of delivery	Died n(%)	Survival n(%)	Total	x^2	P value
NVD	47 (36.4)	82 (63.6)	129 (64.5)	38.34	0.001
C/S	18 (25.4)	53 (74.6)	71 (35.5)		
Total	65	135	200		

Mortality rate was higher among those neonates who were delivered by normal vaginal route. Total number of babies delivered by vaginal route were 129 (64.5%) and of them died 47 (36.43%), and by Caesarean section were 71 (35.5%) and out of them died 18 (25.4%)

Table-V: Outcome in relation to morbidity during neonatal period

Type of complaints	Total	Death	Percent	Survival	Percent	P Value
1.Birth asphyxia	60	10	16.7	50	83.4%	0.001^{S}
2.Poor feeding	20	03	15	17	85%	0.001^{S}
3.Septicaemia	41	10	24.4	31	75.6%	0.001^{S}
4.Neonatal jaundice	57	05	8.8	52	91.2%	0.001^{S}
5.Respiratory distress syndrome	10	05	50	5	50%	1.00^{NS}
6.Congenital pneumonia	10	03	30	7	70%	0.081^{NS}
7.Umblical sepsis	15	00	00	15	100%	0.001^{S}
8.Apnoea	33	06	18.2	27	81.8%	0.001^{S}
9.Cong.heartdisease	05	02	40	3	60%	1.00^{NS}
10.Hypoglycaemia	14	00	00	14	100%	0.001^{S}
11.Hypocalcaemia	05	00	00	5	100%	0.007^{S}
12.Necrotizing enterocolitis	10	04	40	6	60%	0.654^{S}
13.Neonatal seizure	28	06	21.4	22	78.6%	0.001^{S}
14.Severe anemia	07	02	28.6	5	71.4%	0.286^{NS}
15.Oral thrush	24	00	00	24	100%	0.001^{S}
16.Intraventricular hemorrhage	06	05	83.3	1	16.7%	0.080^{S}
17.Disseminated intravascular hemorrhage	02	02	100	00	00%	0.333^{NS}
18.Hypothermia	07	02	28.6	5	71.4	0.286^{NS}
Total		65				

Highest death rate was in disseminated intravascular hemorrhage 100%) and followed by intra ventricular hemorrhage (83.33%) & respiratory distress syndrome (50%). Significant association were found between morbidity and mortality like congenital pneumonia, Respiratory distress syndrome, Severe anemia, disseminated intravascular hemorrhage, Hypothermia but no significant association ($P<0.05$) was found in between mortality and asphyxia, poor feeding, sepsis, hypoglycemia, hypocalcemia, apnea.

DISCUSSION

In this study mortality rate of female babies was 28% and in male babies was 37%. Mortality rate of male babies was 9% higher than female babies. Slight preponderance of male mortality probably male baby more fragile than female [12]. It is consistent with study of Ali Manajjir [11] who found the mortality rate of male babies (55.17%) was higher than female babies (42.86%).

Out of total 200 studied 100 (50 %) were male and 100 (50 %) were female. Out of them 135 (67.5 %) recovered & 65 (32.5 %) died. Out of total 100 male babies 63 (63%) recover and 37 (37%) died. Out of total 100 female babies 72 (72 %) recover and 28 (28%) died.

In this study mortality rate of female babies was 28% and in male babies was 37%. Mortality rate of male babies was 9% higher than female babies. Slight preponderance of male mortality probably male baby more fragile than female.

It is consistent with study of Ali Manajjir [11], who found the mortality rate of male babies (55.17%) was higher than female babies (42.86%).

According to gestational age mortality rate - 28 weeks-100 %, 29-30 weeks 100 %, 31-32 weeks 100 % , 33-34 weeks 16.33 %, 35-36 weeks 00 %, <37weeks 00 %. Among them.

28 wks-00%, 29-30wks-00%, 31-32wks-00%, 33-34 wks-61%, 35- 36wks-100%, 37wks-100%. It is consistent with study of Ali Manajjir, 11. In his study the mortality rate was < 28 wks -100%, 29-32 wks-70.00% 33-36 wks -32.75% & < 37 wks 00% gestational age group respective.

According to birth weight mortality rate -700 - 750gm-100 %) 800-985 gm-100 %, 995 gm-24.57%, l kg-26.67 %, 1.2 kg-55.56 %, 1.25 kg-18.87 %, 1.3 kg-21.74 %,1.35kg-18.18%,1

.4 kg-7.35 %, 1.45 kg-13.51%, 1.48 kg-18.42 %. It is consistent with study of Ali Manajjir [13], The survival rate of 1000-1249g & 1250-1499g weight group were 36% & 80% respectively.

Place of delivery has a great impact on the survival. of a newborn [38]. In my series 135 (67.50%) were born in Hospital, 34 (17%) babies in clinic & 29(14.50%) infants were home delivery and 02(1%) in the Ambulance. Among them 102 (75.56%) l7 (50%), 14 (48.28%), 02 (100%) recovered respectively and 33(24.44%), 17(50%), 15(51.72%), 00(00%) died respectively.

This finding is very much conformity with the finding of Manajjir Ali [11], he found 45% inborn survived 44% survived among the other institutional delivery and non-survived who were delivered at home. Antenatal checkup has a great influence in the outcome of VLBW babies. In my series-45 (22.5%) babies had history of maternal regular antenatal checkup 7 (28.5 %) babies had irregular antenatal checkup, 98(49%) babies had no antenatal checkup at all. Among them 35(77.78%), 65(66.33%) survived respectively and 10(22.22%), 22(36.60%), 33(33.67%) died respectively.

In my study prenatal asphyxia encountered the commonest presentation at admission. Total 60 (30%) infants presented with prenatal asphyxia. Overall mortality rate of prenatal asphyxia was 10 (16.67 %).

Shahnawaz found 32% incidence of prenatal asphyxia in his series of VLBW babies. Ali Mamqjir [11], found 34% prenatal asphyxia in his series of which 82% died.

This study is in near conformity whit the study of Banu at1 [14] found 13.43% of prenatal asphyxia among 87 babies and per entage of mortality was 44.40% among these cases.

CONCLUSIONS

This study was an enthusiastic approach towards finding out morbidity and mortality pattern the outcome in preterm very low birth weight babies in neonatal period.

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