

Lowest Birth Weight Baby Survived in Abha General Hospital, Abha, K S A

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Introduction

Any baby born with less than 2500 gm are considered as low birth weight (LBW). Low birth weight is again divided into very low birth weight (VLBW) if birth weight is less than 1500 gm, extreme low birth weight (ELBW) if birth weight is less than 1000 gm¹ and incredibly low birth weight (ILBW) if birth weight is less than 750 gm². A baby is born with low birth weight if he/she is delivered preterm or there is intra uterine growth restriction (IUGR). Every system of the baby is immature if the baby is born as low birth weight. As a result, baby is to have many complications after birth such as respiratory distress syndrome (RDS), bronchopulmonary dysplasia (BPD), apnea of prematurity, neonatal sepsis, meningitis, pneumonia, intraventricular hemorrhage, periventricular leukomalacia, cerebral palsy, necrotizing enterocolitis, feeding intolerance, growth failure, bleeding disorder, and so on. Factors responsible for low birth weight are related with either placenta, fetus or with mother, which has similarity in both preterm birth and IUGR³. There is a strong correlation between socio-economic condition and the birth weight of baby. Poor socio-economic condition is directly related with low birth weight baby⁴.

More a baby is premature more is the chance of mortality. Mortality is highest below 28 weeks of gestation and/or below 1000 gm birth weight. It is a very challenging job for the neonatologist to keep these babies alive and discharge in healthy condition without any complications. Because of modern technology many of the extreme low birth weight babies can now be discharged from Neonatal Intensive Care Unit (NICU) in a good health without complications. The baby who is going to be reported below is one of the examples of great success in NICU management of Abha General Hospital, Abha, K S A.

Case Report

A female baby was delivered by emergency lower segment caesarian section on 25/05/2009 at 11.27 A.M. at 26 weeks of gestational age (by date) due to severe Pre-eclamptic toxemia to a mother with HELLP (Haemolysis, Elevated Liver Enzyme, Low platelet count) syndrome. Mother received Labetalol, Hydralazine and magnesium sulphate as well as two doses of Inj. Dexamethasone. Mother was 39 years old and G₇P₆+0. Her blood group was A+ve. Weight of the placenta was 300 gm which was normal in structure.

Birth weight of the baby was 520 gm, length was 31 cm and head circumference was 22.5 cm. APGAR score of the baby was 4, 7 and 7 at 1, 5 and 15 minute respectively. Baby was delivered flat with bradycardia with no respiration. Baby was resuscitated at operation room by oropharyngeal suction, endotracheal intubation and positive pressure ventilation by ambu bag. Baby was given one dose of surfactant (2ml) in the operation room. Then the baby was shifted to NICU where she was put under mechanical ventilator in SIMV mode with initial settings of FiO₂ 100%, Ventilator Rate 55/min, PIP 12 cm of H₂O, PEEP 4 cm of H₂O. She was started



Fig.-1: The lowest birth weight baby at Abha general hospital, KSA.

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with parenteral nutrition, Inj. Penicillin-G, Inj. Gentamicin and Inj. Ca-gluconate through umbilical venous catheter. Ventilator settings were gradually reduced on the basis of capillary blood gas and general condition of the baby specially the condition of lungs. Baby was extubated and put on nasopharyngeal SIMV after 53 days. Nasopharyngeal SIMV was removed after another 8 days, then she was supplied O₂ via incubator. Baby was removed from source of O₂ after further 13 days. Since baby was extubated, she was on nebulized salbutamol and ipratropium bromide along with bromhexane through orogastric tube. She was started with Spironolactone and Hydrochlorothiazide after 55 days of birth on suspicion of bronchopulmonary dysplasia as she was oxygen dependent and on the basis of radiological findings.

On 3rd day of admission her antibiotics were changed to Imipenem and Cloxacillin because of low platelets count but on 8th day, child was looking sick with ash grey color, so antibiotic again changed to Meropenem, Vancomycin and Amphotericin B and continued for 7 days. Two days later she was again started with Cloxacillin, Imipenem and Gentamicin for another 7 days when she was switched over again to Meropenem, Vancomycin and Amphotericin B for 6 days. Since then baby was without antibiotic for 15 days and then again she was put on Imipenem, Vancomycin and Amphotericin B for 7 days as well as Erythromycin was added on suspicion of atypical pneumonia which was continued for 14 days. All blood

cultures were negative.

Baby was on total parenteral nutrition (TPN) from 2nd day of admission for 20 days and stopped when she tolerated 50% feed through orogastric tube. TPN again started on 33 days after birth, because baby developed abdominal distension due to Necrotising Enterocolitis (NEC) and continued for another 18 days. She received platelets transfusion, IV IgG, FFP, vitamin-K and eleven times PRBC transfusion.

Baby was discharged at her age of 96 days with body weight 2.1 Kg and head circumference 32 cm. She was discharged with Salbutamol and Ipratropium bromide through nebulizer, Beclomethasone inhaler with spacer for 1 month along with multivitamin, iron and vitamin-D.

At the time of discharge she was having grade 1 Retinopathy of Prematurity (ROP), normal USG of brain (no evidence of germinal matrix hemorrhage, no evidence of periventricular leukomalacia, normal size, shape and position of ventricles).

At her age of 9 months the baby (Fig-1) was followed-up in our nursery. She was found active, alert and well oriented. Her weight was 5.3 kg, length was 60 cm and head circumference was 40 cm. She was able to sit with support. Systemic examination was normal except mild degree of Harrison sulcus. Her hearing screening was found to be normal; ROP screening

Table-I
Distribution of survived lowest birth weight babies in different countries.

Year of birth	State / country	Birth weight	Gestational age	Sex
2004	Illinois, USA	260 gm	25 weeks	Female
2007	Japan	265 gm	25 weeks	Female
1989	Illinois, USA	280 gm	26 weeks	Female
1938	U.K.	283 gm	34 weeks	Female
2006	Florida, USA	284 gm	21 weeks	Female
2002	Italy	285 gm	27 weeks	Female
1999	Japan	289 gm	23 weeks	Female
2000	Oregon, USA	290 gm	25 weeks	Female
2001	Germany	290 gm	23 weeks	Female
2000	Israel	300 gm	25 weeks	Female
2002	Germany	303 gm	26 weeks	Female

was repeated and found to be normal with spontaneous regression of initial grade 1 ROP.

Discussion

Low birth weight may be due to preterm delivery (less than 37 completed weeks) or intrauterine growth restriction (IUGR also referred to as SGA) or both. Approximately 30% of low birth weight is also small for gestational age (SGA) in the United States. In developing countries approximately 70% of LBW infants have IUGR. For any given duration of gestation the lower the birth weight the higher the neonatal mortality, for any given weight the shorter the gestational duration the higher the neonatal mortality. The highest risk of neonatal mortality occurs in infants who weigh less than 1,000 gm at birth or whose gestation was less than 28 wks.^{1,3} As many as 50% of 500-750 g infants have a significant neurodevelopmental impairment (blindness, deafness, mental retardation, cerebral palsy). A strong positive correlation exists between both preterm birth and IUGR and low socioeconomic status. Families of low socioeconomic status have higher rates of maternal undernutrition, anemia, and illness, inadequate prenatal care, drug misuse, obstetric complications and maternal history of reproductive inefficiency (abortions, still birth, premature or LBW infants).^{1,3} Mother's age, education, occupation, yearly income, gravid status, gestational age at first visit, number of antenatal care visit attended, quality of antenatal care received and pre-delivery body mass index had significantly associated with the incidence of LBW.⁴

The National Institute of Child Health and Human Development (NICHD) suggested that the following 4 factors should be considered in addition to gestational age when determining the likelihood of favorable outcome of baby in intensive care³:

- Female sex has more favorable outcome.
- Exposure to antenatal corticosteroids with favorable outcome.
- Single baby birth has a favorable outcome.
- Birth weight increments of 100 g each add to favorable outcome potential.

Major problems of extremely low birth weight infants are short-term. problem⁵ like respiratory distress syndrome, apnea of prematurity, feeding intolerance, necrotising enterocolitis, growth failure, immunodeficiency, nosocomial infection,

intraventricular hemorrhage, periventricular leukomalacia, retinopathy of prematurity, hypotension, patent ductus arteriosus, water and electrolyte imbalance, acid base disturbance, anemia of prematurity, long-term problem⁵, e.g., chronic lung disease-Bronchopulmonary Dysplasia (BPD), failure to thrive, cerebral palsy, hearing loss, blindness, retinal detachment, and other clinical problems⁶ like, hypothermia, hypoglycemia, perinatal asphyxia, hyperbilirubinemia and sudden infant death syndrome (SIDS)

Infants with a LBW weighing less than 2,500 gm are 40 times more likely to die than infants of normal birth weight. The relative risk of neonatal death is almost 200 times greater for infants with a VLBW, weighing less than 1,500 gm. In spite of huge problems associated with extreme low birth weight baby morbidity and mortality of these babies has decreased to a great extent in the last two decades, because of increased understanding of neonatal physiology and availability of modern technology and use of new therapies such as surfactant in the management of babies admitted in NICU⁷. Still survival of low birth weight baby is directly related to birth weight, with approximately 20% of those between 500 and 600 gm and over 90% of those between 1,250 and 1,500 gm are surviving.¹

So far, there is no report on the lowest birth weight baby survived in KSA, we have the information about the lowest birth weight baby survived in the different parts of the world (table-1).⁸

From the above mentioned list it is evident that the entire lowest birth weight baby who survived was of female sex, which has a favorable outcome as mentioned before. Here only lowest birth weight was considered not the lowest gestational age. Corresponding to the gestational age birth weight of all of the above babies fall in the category of IUGR excepting the baby who was delivered at 21 weeks of gestation.⁹

Our baby was a female, mother of the baby received two doses of inj. dexamethasone and it was a singleton baby. All these three favorable factors as well as appropriate NICU services have favoured normal survival of this baby.

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