EDITORIAL

Care of Low Birth Weight Neonates

Ravinder K. Gupta

According to WHO a newborn baby weighing less than 2500gm at birth is designated as low birth weight (LBW) neonate. Low birth weight in a newborn infant results due to intrauterine growth restriction (IUGR) or prematurity. According to UNICEF, the incidence of LBW neonates is 30% in India (1,2). Low birth weight neonates are further classified as very low birth weight (VLBW <1500 g) and extremely low birth weight (ELBW <1000 g) infants. The term micro preemie is being applied for babies being below 500-gram birth weight babies. The magnitude of LBW babies in developing world is enormous. Out of a total of 22million such infants in the world, 21 million belong to the developing countries. India's share is quite substantial: 7-10 million. Majority of LBW neonates in our country weigh between 2000-2499 gms. Around three fourths of them are delivered at full term of gestation (2,3). This shows that the major low birth weight problem in India stems from intrauterine growth retardation and not prematurity, in contrast to the western world.

LBW is the most significant factor contributing to neonatal mortality and morbidity. There is higher risk of asphyxia, sepsis, hypothermia, and feeding problems, *etc.* in these neonates. Common illnesses tend to be more severe and last longer in this group. Apart from immediate problems, LBW neonates are prone to long-term disorders like infections, malnutrition, and neurodevelopment disabilities. Babies who are small or disproportionate at birth also have an increased risk of developing coronary heart disease, non-insulin dependent diabetes mellitus, stroke, hypertension during adult life (2,3). The measures to increase the birth weight of babies constitute a priority area in developing nations.

The etiology of LBW is multifactorial. Maternal malnutrition and anemia are the most important causes responsible for reduced birth weight in developing nations. Other maternal factors playing a part include young age at conception, multiple pregnancies, pregnancy induced hypertension, infections, substance abuse etc. Genetic factors also play a role (2-4).

The care of LBW neonate should commence *in utero* and be focused on preventive aspects. The impact of maternal nutritional supplementation in augmenting birth weight has been studied and documented. The micronutrients rich food influences the weight of a neonate. Folic acid supplement during pregnancy has been shown to improve birth weight (4). Improving the nutritional status of mother and tackling anemia in adolescent girls can go a long way in preventing birth of low birth weight infants.

Labor and vaginal delivery is not being tolerated frequently by Small for Gestational Age (SGA) infants. There is an increased incidence of low APGAR scores at all gestational ages and resuscitation is most of the times needed. A team trained and skilled in neonatal resuscitation should be present when a LBW neonate is being delivered. In addition, the LBW-SGA infants have a narrow thermo neutral range. The large head to body ratio and greater surface area along with a thin layer of subcutaneous fat leads to a rapid heat loss. On the other hand, the heat production is also compromised due to hypoglycemia, and hypoxia. It is thus critical that the LBW-SGA neonate is resuscitated and nursed in a thermo neutral environment. The resuscitation must be prompt and the neonate dried and placed under a warmer. The neonate should be covered well there after (3).

The nutritional management of LBW-SGA neonates is complex. A rapid glucose supply can lead to hyperglycemia, but amino-acid intolerance is not exaggerated. There is reluctance in feeding SGA infants

From the Department of Pediatrics , ASCOMS, Sidhra Jammu-J&K-India
Correspondence to : Dr Ravinder K.Gupta, Associate Proff, Deptt. of Pediatrics , ASCOMS, Sidhra Jammu-J&K-India

as aggressively as their deprived state would indicate. It needs to be ascertained, if aggressive feeding is tolerated and whether it results in nutritional rehabilitation and a better outcome. Breastfeeding in LBW infants is associated with lower mortality rates and better weight gain with lower morbidity rates. For infants on expressed breast milk, feeding with spoon or paladai is recommended to ensure better hygiene .Trophic feeding the practice of feeding very small amounts of enteral nutrition to VLBW babies to stimulate development of immature gastrointestinal tract .The benefits of trophic feeding include enhanced gut motility, improved growth, decreased need for parentral nutrition fewer episodes of sepsis and short hospital stays.

Early hypoglycemia results due to the diminished hepatic and skeletal muscle glycogen content and reduced alternate energy substrates along with deficient counter-regulatory hormones. There should be frequent monitoring of blood glucose of these babies and the concentration maintained above 50 mg/dL. Early enteral feeds or intravenous glucose for those with clinical problems must be instituted, preferably within half an hour of life. Although hypoglycemia is a major problem of LBW neonates, yet a contrast situation may result in hyperglycemia due to low insulin secretion rates or iatrogenically due to high rates of glucose infusion (5, 6). This condition is usually noted in ELBW (preterm) neonates or stressed neonates.

Kangaroo mother care (KMC) is a humane, low cost and simple method of care of LBW infants particularly for those weighing less than 2000 grams at birth which can be continued even at home. It consists of skin-to-skin contact, exclusive breastfeeding and early discharge with an adequate follow up. Despite said advantages of KMC, it is not a widely practiced method of care of LBW infants in India (7, 8).

Deficiency of both T and B cell function has been demonstrated in the babies that are responsible for diminished immune function. This predisposes them to neonatal infection. Early diagnosis, treatment, and prevention through hand washing and universal precautions are recommended. Limiting nurse to patient ratios and avoiding crowding, meticulous skin care and appropriate advancement of enteral feeding and health education are other methods to reduce the chances of sepsis (3).

LBW neonates are a special group that needs attention and care. Since the etiology is multifactorial, efforts at a multipronged approach alone could help achieve targets. Simple measures to prevent morbidity and mortality as care of LBW must be exercised with emphasis on skilled attendance at birth, prompt resuscitation, adequate nutrition though breast feeding, prevention of hypothermia through KMC and successful referral of sick neonates.

References

1. United Nations Childrens Fund (UNICEF). The State of the World's Children 2004. New York; Unicef: 2003.
2. Gupte S. Chowdhary J, Vani S. Neonatology. In Gupte S(ed) The short textbook of pediatrics 10th edn.New Delhi. JayPee Brothers 2004.pp. 614-16.
3. Stoll J B, Chapman I A. The high-risk infant. In Kliegman R M, Jenson HB,Behrman RE, Stanton B F (eds) Nelson Textbook of Pediatrics 18th edn. Vol.1. Philadelphia, Saunders 2008.pp. 698-711
4. Gupta P, Ray M, Dua T, Radhakrishnan G, Kumar R, Sachdev HPS. Multimicronutrient supplementation for undernourished pregnant women and the birth size of their offspring: A double blind, randomized, placebo controlled trial. *Arch Pediatr Adolesc Med* 2007; 161: 58-64.
5. Hays S P,Smith E O, Sunehag A L.Hyperglycemia is a risk factor for early death and morbidity in extremely low birth weight infants. *Pediatrics* 2006; 118:1811-18.
6. Kairamkonda VR, Khashu M. Controversies in the management of hyperglycemia in the ELBW infant. *Ind Pediatr* 2008; 45: 29-38
7. Suman Rao PN, Udani R, Nanavati R. Kangaroo mother care for low birth weight infants: A randomized controlled trial. *Indian Pediatr* 2008; 45: 17-23.
8. Kadam S, Binoy S, Kanbur W *et al*. Feasibility of Kangaroo mother care in Mumbai. *Ind Pediatr* 2005; 72:35-38.