STUDY OF LOW BIRTH WEIGHT NEONATES

Lt Col PK BHATNAGAR *

ABSTRACT

Low birth weight neonates with 2000g or less birth weight constitute about 10% of live births with perinatal mortality as high as 32.4%. Perinatal morbidity is 19.3% with asphyxia neonatorum and neonatal jaundice heading the list. Epidemiological maternal factors include extremes of age and parity, lack of antenatal care, low socioeconomic status, illiteracy and underweight short women. Etiologic factors are obstetric complications, hypertensive disorders, systemic diseases or idiopathic. The scope of preventive measures include improvement of economic status and education about health and safe pregnancy. Proper antenatal care for early detection of high risk cases, adequate and timely management of complications and adequate facilities for neonatal care can reduce the perinatal morbidity and mortality.

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KEY WORDS : Low birth weight neonates; Perinatal mortality

Introduction

WHO has defined low birth weight neonate as any neonate weighing less than 2500 g at birth. The definition helps in identifying neonates requiring special care. In developing countries, adoption of this standard will result in unusually high incidence of low birth weight neonates and many of them would not require special care. In India it is common observation that neonates weighing 2000g or less show increased risk of perinatal mortality and morbidity and require special care. By common consensus therefore the paediatricians of our country have accepted 2000g as the dividing line between low birth weight neonates and normal neonates [1,2].

These are classified in terms of birth weight and gestational age. Preterm defines those neonates born before 37 completed weeks from the first day of last menstrual period. Small for gestational age is used to describe those neonates below the tenth percentile [3,4]. Perinatal mortality is six times higher in low birth weight neonates [5,6]. In severe foetal growth retardation brain and intellectual development may be permanently stunted or abnormal in the form of cerebral palsy or other neurological damage [7]. Exact cause of low birth weight may not be known in many of the cases. Maternal factors are height, weight, age and parity. Coincidental medical conditions are anaemia, malnutrition, cardiac disease and fevers due to intercurrent infections like malaria, infective hepatitis and chronic diarrhoea or dysentery. Maternal diseases peculiar to pregnancy are hypertensive disorders of pregnancy.

Uterine conditions which may cause prematurity are uterine malformations, incompetent cervix and fibromyoma. Foetal factors are multiple pregnancy, congenital malformations, chronic foetal infections and chromosomal disorders. Placental factors are placenta praevia, abruptio placentae, infarction or infections and idiopathic placental insufficiency. Other associated factors include low socioeconomic status [8]. It is therefore apparent that studies of low birth weight neonates are important from the paediatric and obstetric point of view. An effort has therefore been made to conduct a clinical study of the problem of low birth weight neonates to evaluate the causes of low birth weight, so that preventive measures can be taken and perinatal mortality and morbidity can be reduced.

Material and Methods

Material for the present study was collected from various Military Hospitals. All the neonates having 2000g or less weight irrespective of period of gestation were selected for the present study. Study of mother involved, age, socio-economic status, education status, occupation, religion and history of addictions. State of antenatal care, obstetric complications, past obstetric history, systemic diseases of mother and nature of present delivery were recorded. Study of neonate involved, weight of new born, single or multiple, sex, Apgar score at birth, physical examination to determine gestational age and presence of congenital abnormalities. Perinatal mortality and morbidity were recorded.

Results

Out of 5211 babies 552 (10.59%) were weighing 2000g or less with 303 (54.90%) preterm and 249 (45.10%) small for date. 73.10% of the mothers were in age group 20-30 years, 18.96% teenage and 9.4% were above 30 years of age. 39.76% were officers wives with educational status of graduation and above. 92.05% were JCO & ORS' wives with 53.67% having a qualification tenth standard and above and 38.38% below tenth standard. 76.94% of mothers were house wives and 23.06% were working

*Classified Specialist (OBS & GYN), Military Hospital, Devlali.

women. 94.04% mothers had no addiction and 5.96% had addiction of tobacco chewing. 58.03% of mothers were unbooked cases and had none or less than three antenatal visits. 39.36% of the mothers had bad obstetric history (7.15% abortions, 14.33% perinatal loss, 12.92% low birth weight and 4.96% obstetric complications).

Distribution of etiological factors revealed obstetric complications (22.06%), hypertensive disorders (16.10%) and in 42.14% cases no obvious cause could be detected (Table-1). 7.36% had haemorrhages associated with pregnancy (accidental haemorrhage and placenta praevia (81.08%) and threatened abortion (18.92%). Out of obstetric complications twin pregnancy constituted 44.14% and premature rupture of membranes 35.43%.

TABLE 1
Aetiological factors in causation of low birth weight neonates

Factors	No. of cases	Percentage
Haemorrhage associated with pregnancy	37	7.36
Hypertensive disorder	81	16.10
Obstetric complications	111	22.06
Systemic disease of mother	44	8.67
Congenital abnormality of foetus	18	3.67
No obvious cause	212	42.14

Out of 8.67% systemic diseases, anaemia was detected in 65.91%. Labour was spontaneous in 97.02% cases and induced in 2.98%. 92.66% cases delivered normally.

76.45% of cases were more than 1500g of weight. 23.55% of cases had birth weight less than 1500g. 53.80% neonates were female and 46.20% were males. There were 13.04% still births and 19.38% neonatal deaths in the first week of life.

30.55% of still births were associated with pregnancy induced hypertension and antepartum haemorrhage. 73.83% neonatal deaths were associated with respiratory complications. Asphyxia neonatorum and neonatal jaundice were main causes of morbidity in low birth weight neonates (Table-2).

TABLE 2
Neonatal morbidity in low birth weight neonates

Morbidity	No. of cases	Percentage
Asphyxia neonatorum	43	40.18
Neonatal jaundice	42	39.26
Neonatal infections	17	15.88
Gastroenteritis	5	4.68

Discussion

Low birth weight neonates may be grossly handicapped at birth by virtue of their weight and in some cases associated relative immaturity of vital organs and lack of immunological response. This handicap exposes them to high risk of infection, respiratory distress syndrome and other neonatal complications resulting in high rate of perinatal mortality and morbidity [9].

The incidence of low birth weight neonates in India

is 16% to 30% taking 2500g and less as the criteria and 8% to 14.3% taking 2000g less as the criteria. This is three to four times higher as compared to developed countries 4.5% to 7% and 2.5% to 4.2% [10]. The relative incidence of preterm neonates is higher than that of small for date neonates (1.21:1) and adequate management of preterm labour can reduce the perinatal mortality and morbidity. The optimum age for child bearing is 20 to 30 years and pregnancy should be avoided in extremes of age. Young age of the mother and inadequate development of uterus can cause low birth weight neonate. In elderly parous women the cause of low birth weight can be increased vascular changes and decreased nutritional state. Lower socioeconomic and educational status leads to lower nutritional state, health consciousness and antenatal attendance and increases the risk of low birth weight neonates [11]. The influence of antenatal care can be explained from the fact that various etiologic factors affecting the birth weight of foetus are preventable and adequate antenatal care helps in identification of high risk cases and early detection of various obstetric and systemic disorders which can be well controlled or even eradicated if detected early. Bad obstetric history like abortions, preterm labour, low birth weight neonate and perinatal loss increases the risk of repeating the same unless preventive measures are taken.

Nearly 50% of cases of low birth weight neonates are born out of normal pregnancies and cause of low birth weight is not known. The low birth weight of the neonate can result from impaired placental function due to systemic maternal disease or obstetric complications [12]. It can result from preterm labour either induced or spontaneous. Haemorrhages associated with pregnancy may cause or compel delivery before the foetus has achieved normal weight or it may impair foetal growth and cause the neonate to be small for date. Hypertensive disorders, pregnancy induced hypertension, eclampsia and essential hypertension may impair foetal growth and cause the foetus to be small and also increase chances of preterm labour. Vasospasm of the small vessels is identified as the basic disease process in such cases and this leads to local hypoxia of the surrounding tissues and impaired circulation of vasavosum with damage to vessel wall. Constriction of damaged vessel wall with angiotensin creates subendothelial leak, necrosis and degenerative changes. Foetal complications include intrauterine growth retardation due to chronic placental insufficiency and intrauterine foetal death [13].

Multiple pregnancies usually do not carry till term

and result in preterm labour due to over distension of uterus. Premature rupture of membranes associated with hydramnios, multiple pregnancy and chorio-amnionitis may result in low birth weight neonate.

Congenital malformations of foetus are associated with lower mean birth weight.

Birth weight is the single most important factor which determines the fate of new born.

Fresh still births are due to intrapartum anoxia and birth injuries. Macerated stillbirths are due to intrauterine foetal death, pregnancy induced hypertension, diabetes, congenital malformations and postmaturity. Respiratory system complications, respiratory distress syndrome, asphyxia neonatorum, lung collapse, congenital pneumonia, pneumothorax, aspiration pneumonia and infection are common causes of neonatal deaths. Causes of morbidity are asphyxia neonatorum, neonatal jaundice, gastroenteritis, diarrhoea and neonatal sepsis [14].

It is evident from the present study that low birth weight neonate is a common clinical problem and is associated with high perinatal mortality and morbidity. It is preventable to a large extent by early detection of pathological state and treatment. The perinatal mortality and morbidity can be reduced by improvement of economic status, educational status, avoiding teenage pregnancy, proper antenatal and intranatal care, and specialised neonatal care.

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