The High risk Neonate

Prepared

By

Ass.Prof. Dr/ Eman Hassan Mahmoud

High risk neonate

Introduction;-

High-risk neonates are the babies who were exposed to high-risk factors before birth or during birth or during their newborn periods. With the rapid advance of medicine, there is a sharp decline in the mortality rate of high-risk neonates, but a relatively increased incidence of children with neuron developmental disabilities.

Definition;-

A newborn, regardless of gestational age or birth weight, who has a greater than average chance of morbidity or mortality because of conditions or circumstances superimposed on the normal course of events associated with birth and the adjustment to extra uterine existence.

High Risk Period

The high risk period encompasses human growth and development from the time of viability up to 28 days following birth and includes threats to life and health that occur during prenatal, intra natal and post natal periods

Classification of high risk newborn

Classified according to ….

- Etiological factors
- Special care requirements
- Size
- Gestational age

According to etiological factors

1 Low birth weight (LBW) infant
2 Infant who requires technological support
3 Infant primarily at risk because of family issues
4 The infant whose irreversible condition will result in an early death.

According to special care requirements

1 Those requiring special or assistive feeding techniques
2 Those requiring respiratory assistance
3 Those with complex congenital anomalies requiring supportive and assistive devices.

According to size

- **LBW –** Less than 2500 gm regardless of gest age
- **MLBW –** 1500 – 2500 gm
- **VLBW -** <1500 gm
- **ELBW -** <1000 gm
- **AGA/ AFD** – 10th – 90th percentiles on intrauterine growth curves
- **SGA/ SFD** - <10th percentile on intrauterine growth curves (= IUGR)
- **LGA/ LFD** - > 90th percentile on intrauterine growth curves

According to Gestational Age

Premature/ preterm infant – Born before 37 completed weeks of gestation, regardless of birth weight

Full tem infant – Born bet 38 weeks and completion of the 42 weeks of gestation, regardless of birth weight

Post term/ post mature infant – Born after 42 weeks of gestation, regardless of birth weight

According to mortality

Live birth – Birth in which the neonate manifests any heart beat, breathes or displays voluntary movement, regardless of birth weight

Fetal death - Death of fetus after 20 weeks of gestation and before delivery, with absence of any signs of life after birth

Neonatal death – Death in the first 27 days of life (Early – first 7 days)

Post natal death – Deaths that occur at 28 days to 1 year

Perinatal mortality – Total no of fetal and early neonatal deaths per 1000 live births

Prematurity

A baby born before 37 weeks of pregnancy is considered premature, that is, born before complete maturity. Overall, the rate of premature births is rising, mainly due to the large numbers of multiple births in recent years. Twins and other multiples are about six times more likely to be premature than single birth babies. The rate of premature single births is slightly increasing each year.

Causes prematurity

Maternal Factors:

High-risk pregnancies as in lack of antenatal care, poor socioeconomic condition, previous history of obstetric complications as abortion, toxemias, placental insufficiency, stillbirth. Medical illness of mother as, diabetes mellitus, heart and kidney diseases and severe infection. Complications of labor and delivery as prolonged rupture of membranes, cesarean section and stillbirth.

Neonatal Factors*:*

As neonatal asphyxia, neonatal infection, congenital anomalies, pre-maturity, post-maturity, low APGAR score, hypoglycemia and others. At birth, all infants should have a complete gestational age assessment. The purpose of this assessment is to compare a given infant against standardize norms of neonatal growth based on gestational age. It also includes evaluation of physical characteristics of the infant for the degree of maturity. This assessment helps to identify infants that are Pre-term, post-term, small or large for gestational age. Then observe, report, help in medical treatment and intervene in nursing management.

Some of the problems premature babies may experience include:

Temperature instability - inability to stay warm due to low body fat.

Respiratory problems:

Hyaline membrane disease/respiratory distress syndrome - a condition in which the air sacs cannot stay open due to lack of surfactant in the lungs.

- Air leaking out of the normal lung spaces into other tissues
- incomplete lung development
- Apnea (stopping breathing) - occurs in about half of babies born at or before 30 weeks
- Chronic lung disease/bronchopulmonary dysplasia - long-term respiratory problems caused by injury to the lung tissue.

Cardiovascular:

- Patent ductus arteriosus (PDA) - a heart condition that causes blood to divert away from the lungs.
- Too low or too high blood pressure
- Low heart rate - often occurs with apnea

Blood and metabolic:

- Anemia - may require blood transfusion
- Jaundice - due to immaturity of liver and gastrointestinal function
- Too low or too high levels of minerals and other substances in the blood such as calcium and glucose (sugar)
- immature kidney function

Gastrointestinal:

- Difficulty feeding - many are unable to coordinate suck and swallow before 35 weeks gestation
- Poor digestion
- Necrotizing enterocolitis (NEC) - a serious disease of the intestine common in premature babies.

Neurologic:

- Intraventricular hemorrhage - bleeding in the brain.
- Periventricular leukomalacia - softening of tissues of the brain around the ventricles (the spaces in the brain containing cerebrospinal fluid).

- Poor muscle tone
- Seizures - may be due to bleeding in the brain
- Retinopathy of prematurity - abnormal growth of the blood vessels in a baby's eye.

infections –

premature infants are more susceptible to infection and may require antibiotics

Premature babies can have long-term health problems as well. Generally, the more premature the baby, the more serious and long lasting are the health problems.

What are the characteristics of prematurity?

1 Small baby, often weighing less than 2,500 grams (5 pounds 8 ounces)

2 Thin, shiny, pink or red skin, able to see veins

3 Little body fat

4 Little scalp hair, but may have lots of lanugo (soft body hair)

5 Weak cry and body tone

6 Genitals may be small and underdeveloped

Treatment of prematurity:

Specific treatment for prematurity will be determined by baby's physician based on:

- Baby's gestational age, overall health, and medical history
- Extent of the disease
- Tolerance for specific medications, procedures, or therapies
- Expectations for the course of the disease
- Opinion or preference

Treatment may include:

Prenatal corticosteroid therapy

One of the most important parts of care for premature babies is a medication called a corticosteroid. Research has found that giving the mother a steroid medication at least 48 hours prior to delivery greatly reduces the incidence and severity of respiratory disease in the baby. Another major benefit of steroid treatment is lessening of intraventricular hemorrhage (bleeding in the baby's brain).

Care of premature babies may also include:

1 Temperature-controlled beds

2 Monitoring of temperature, blood pressure, heart and breathing rates, and oxygen levels

3 Giving extra oxygen by a mask or with a breathing machine

4 Mechanical ventilators (breathing machines) to do the work of breathing for the baby

5 Intravenous (IV) fluids - when feedings cannot be given, or for medications

6 Placement of catheters (small tube) into the umbilical cord to give fluids and medications and to draw blood

7 X-rays (for diagnosing problems and checking tube placement)

8 Special feedings of breast milk or formula, sometimes with a tube into the stomach if a baby cannot suck. Breast milk has many advantages for premature babies as it contains immunities from the mother and many important nutrients.

9 Medications and other treatments for complications, such as antibiotics

Kangaroo Care - a method of caring for premature babies using skin-to-skin contact with the parent to provide contact and aid parent-infant attachment. Studies have found that babies who "kangaroo" may have shorter stays in the NICU.

Prevention of prematurity:

Because of the tremendous advances in the care of sick and premature babies, more and more babies are surviving despite being born early and being very small. But prevention of early birth is the best way of promoting good health for babies.

1 Identifying mothers at risk for preterm labor

2 Prenatal education of the symptoms of preterm labor

3 Avoiding heavy or repetitive work or standing for long periods of time which can increase the risk of preterm labor

4 Early identification and treatment of preterm labor