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A ONE MONTH OLD CHILD WITH PREMATURITY,EXTREMELY LOW BIRTH WEIGHT, ROP, NEONATAL JAUNDICE AND PDA

Nursing

Nupur Rohilla P.G Scholar Faculty of nursing(Paediatrics) SGT University

ABSTRACT

One month old baby delievered through assisted breech vaginal delievery at SGT hospital at 26 week of gestation to a mother who was GDM and having hypothyroidism during pregnancy. APGAR score of the child at 1 min was 3 and at 5 min was 7. Baby not cried immediately after birth. child was put on ventilator support and shifted to NICU for further management .child was extremely low birth weight (800gm). Baby intubated with endotracheal tube 2.5 cm which was fixed at 6.5 cm just after the delivery as baby was not maintaining oxygen saturation. After few days baby kept on CPAP and with the time as baby starts maintaining saturation baby kept on room air oxygen @2ml.After doing ECHO baby diagnosed with patent ductus arteriosus and getting continued phototherapy as baby had pathological jaundice. As the babys hemoglobin level drops baby got packed cell transfusions two times.Baby kept on treatment with ferronia and osteocalcium.With the time baby's condition starts improving.According to all these features baby diagnosed with ROP with extremely low birth weight and patent ductus arteriosus.

KEYWORDS

Low Birth Weight With Jaundice And Patent Ductus Arteriosus:
Low birth weight (LBW, birth weight less than 2500 g) babies have higher morbidity and mortality. LBW results from either preterm birth (before 37 completed weeks of gestation) or due to intrauterine growth restriction (1UGR) or both. Preterm birth, also known as premature birth, is the birth of a baby at fewer than 37 weeks' gestational age, as opposed to the usual about 40 weeks. Extremely low birth weight infants are infants whose birth weight is less than 1000 grams.There are certain factors which are responsible such as:

MATERNAL FACTORS
- Age of the delivery
- Over 40 years
- Under 16 years

FETAL FACTORS
- IUGR
- Multiple gestation
- Macrosomia(Birth weight more than 8 pounds)
- Abnormal fetal position / presentation
- Abnormality of fetal heart rate and rhythm
- Decreased activity
- Polyhydramnios

Oligohydramnios[1]
Neonatal jaundice is a yellowish discolouration of skin, sclera, mucous membranes & nails from accumulation of bilirubin. Hyperbilirubinemia refers to an excessive level of bilirubin in blood. Important causes of Jaundice in Neonates include

Hemolytic
- Rh incompatibility
- ABO incompatibility
- G6PD deficiency
- Thalassemias
- Hereditary Spherocytosis

Non – Hemolytic
- Prematurity
- Extravasated blood
- Inadequate feeding
- Polycythemia
- Idiopathic
- Breast milk Jaundice

Classification Based On The Time Of Onset Of Jaundice
Appearing Within 24 Hours Of Life
- Hemolytic disease of newborn
- Infections

Appearing Between 24 And 74 Hours Of Life
- Physiological
- Sepsis
- Polycythemia
- Concealed hemorrhages
- Increased enterohepatic circulation

Appearing After 72 Hours
- Sepsis
- Neonatal hepatitis
- Extrahepatic biliary atresia
- Breast milk jaundice

Metabolic Disorders[2]
Patent ductus arteriosus (PDA) is a condition in which a blood vessel called the ductus arteriosus fails to close normally in an infant soon after birth. (The word "patent" means open.)

The condition leads to abnormal blood flow between the aorta and pulmonary artery, two major blood vessels surrounding the heart.

CAUSES
- Before birth, the ductus arteriosus allows blood to bypass the baby's lungs by connecting the pulmonary arteries (which supply blood to the lungs) with the aorta (which supplies blood to the body). Soon after the infant is born and the lungs fill with air, this blood vessel is no longer needed. It will usually close within a couple of days. If the ductus arteriosus does not close, there will be abnormal blood circulation between the heart and lungs.
- PDA is rare. It affects girls more often than boys. The condition is more common in premature infants and those with neonatal respiratory distress syndrome. Infants with genetic disorders, such as Down syndrome, and whose mothers had German measles (rubella) during pregnancy are at higher risk for PDA.
- PDA is common in babies with congenital heart problems, such as hypoplastic left heart syndrome, transposition of the great vessels, and pulmonary stenosis.

As baby of pooja suffered from prematurity, extremely low birth weight,Patent ductuus arteriosus and jaundice. The main cause of all these problem is prematurity as the baby delievered at 26 weeks of gestation[3].

PATIENT HISTORY:
Baby of pooja delievered through assisted breech vaginal delievery at SGT hospital at 26 week of gestation to a mother who was GDM and having hypothyroidism during pregnancy. APGAR score of the child at 1 min was 3 and at 5 min was 7. Baby not cried immediately after birth. child was put on ventilator support and shifted to NICU for further management .child was extremely low birth weight (800gm). Baby intubated with endotracheal tube 2.5 cm which was fixed at 6.5 cm just after the delivery as baby was not maintaining oxygen saturation. Baby immediately put on ventilator and shifted in NICU. In NICU at the time of admission baby vital signs were temperature-36.7*c,heart rate-92 bpm,oygen saturation was 96% on ventilator . After doing all the initial assessment certain in Lab investigation such as CBC, electrolytes, LFT, S.Billrubin was done at the time of admission.

- Chief complaints of the child were:
- Respiratory distress and on ventilator
- Yellowish discolorations since 2 days of life
- Extremely low birth weight 800gm with ET
- PDA (**Patent ductus arteriosus)**
- No urine output since birth

FAMILY AND BIRTH HISTORY:
Mother received Folic acid and Iron, Calcium supplements. Mother Received Inj. T.T. Attended ante-natal clinic. Mother has undergone all the investigations, including Ultrasound, mother had GDM and hypothyroidism detected at the time of antenatal visits. There is no history of congenital and hereditary disease in the family.

BIOLOGICAL ASSESSMENT:
Vital signs were not stable as the child was on ventilator. Physical parameters of the child involves weight which was 700 gm at birth and 980 gm at 32 weeks, length 32.5 cm at birth and 39 cm at 32 weeks, head circumference 22 cm at birth and 25 cm at 32 weeks, chest circumference 19.5 cm at birth and 22 cm at 32 weeks, abdominal circumference 20 cm at birth and 22 cm at 32 weeks.

PHYSICAL EXAMINATION:
After doing examination certain findings were there as the child was having extremely low birth weight,in eyes retinopathy of prematurity (ROP) was present,chest was barrel shaped,no bowel sound was heard,abdomen has a tympanic sound on percussion,heart shows patent ductus arteriosus s confirmed by ECHO. Rest all the things were normal. All the reflexes such as moros, sucking, swallowing, rooting, Babinski reflex was present.

INVESTIGATIONS:
As the child has gone through many investigations Child's Hb was 12gm on day one and 8.2gm on day 36 , lymphocytes were increased from 45.3 to 49.6%, platelets increased from 2.48 lacs to 4.16, bilirubin direct was 0.78,SGOT was 22,SGPT was 6.Blood group of the baby was AB positive.

As the child hemoglobin value continued to decrease 12 ml packed cell RBC was transfused.On the third day after intubation the child extubated and put on CPAP(continuous positive airway pressure).

ECHO done and child was diagnosed with patent ductus arteriosus. Child was on CPAP showing respiratory distress.After that child start maintaining oxygen saturation then gradually child was shifted to nasal prongs with oxygen at the rate of 2ml per minute and child was maintaining spo_2 at the rate of 95%. Child was on continuous phototherapy and receiving breast feed every 2 hrly. According to Kramer's rule child was having grade 4 pathological jaundice. Kept the baby naked with a small nappy to cover the genitalia and covered the eyes,Changed position from supine to prone after each feed 3 hourly,Encouraged frequent breast feeding,Monitored for urinary frequency 6-8 times /day,Monitored temperature 4 hourly and weight every 24 hours,After switching on the unit checked if all the tubes / bulbs are on,Exposed maximal surface area of the baby,Kept the baby in good hydration and nutrition,Minimized interruption of phototherapy during feeding sessions or other procedure,Made sure that ambient room temperature is optimum 25^0 to 28^0c.

Chest x ray was done as the child showing respiratory distress and surfactant replacement therapy was given to the child. Blood culture was done showing no growth.

TREATMENT:
Child was being treated with drop ferronia xt 5 drops and Syp. Osteocalcium 5 ml once in a day with orogastric tube feed. Child was receiving feed at the rate of 6.5 ml/hr. Ferronia is a iron and folic acid supplement which is given for the treatment of iron and folic acid deficiency. It is used for the treatment of megaloblastic anemia which results due to deficiency of folic acid. Common side effects are irritation, rashes, itching ,fever, abdominal distension. Syp. Osteocalcium is a calcium supplement, the common side effects are nausea and vomiting. While giving calcium we have to monitor the serum osteocalcium level. Child has passed urine and stool[4].

PLAN OF CARE[5]:
Fluid And Electrolyte Imbalances Related To Prematurity And The Effect Of Phototherapy.
Baby's vital signs were monitored.The weight of the child was checked daily and Observed for sudden weight gain.Turned and provided skin care at regular intervals.Monitored laboratory studies, as indicated. Provided tube feedings as appropriate at the rate of 6.5 ml per hour.

Imbalanced Nutritional Pattern Related To Prematurity.
Assessed the sucking reflex of the child. Assessed daily weight of the child and Intake and output chart is maintained. Small and frequent meals are advised. Child is assessed for the problem of feeding. Prepared food according to nutritional need of child.

Hypothermia Related To Prematurity.
Assessed for precipitating situations and risk factors. Monitored child's temperature. Monitored the child's HR, heart rhythm, and BP. Monitored fluid intake and urine output. Checked for electrolytes, arterial blood gases, and oxygen saturation by pulse oximetry. Assessed the child's peripheral perfusion at frequent intervals.

Education To Mother And Family:
Mother was informed about all the care which was given to the child and also made aware of possible complications that can arise. If the patent ductus is not closed, the infant has a risk of developing heart failure, bleeding in the lungs, problems with lung development, or infective endocarditis -- an infection of the inner lining of the heart.

- If a small PDA remains open, heart symptoms may or may not eventually develop. Persons with a moderate or large PDA will usually develop heart problems sooner or later unless the PDA is closed.
- Closure with medications can work very well in some situations, with few side effects. Early treatment with medications is more likely to be successful.
- Surgery carries its own significant risks. It may eliminate some of the problems of a PDA, but it can also introduce a new set of problems. The potential benefits and risks should be weighed carefully before choosing surgery.

Physicians were expecting Patent ductus arteriosus will close on its own.

Mother was educated about maintenance of hygiene, both personal and environment,Ensure adequate breast feeding / Exclusive breast feeling till 6 months,Monitor for danger signs and yellowish discoloration below knees and elbows or persistent jaundice beyond 15 days,Taught the parents about the prevention of injury by explaining safety measures,Give medicine to the child as directed, Contact the pediatrician if the child has a fever or any other problems, Notice for any cyanosis of the body,Regular follow up and hearing assessment should be done at 3 months of age.

CLINICAL MANIFESTATIONS:
Table:1

- Respiratory distress
- On ventilator support
- Apnea and irregular respirations.
- prematurity
- Inadequate feeding
- Palms and soles are yellow.
- Stool clay or white colored and urine is staining clothes.
- Yellow discoloration of the skin, palms and legs, mucous membranes and the sclera of the eyes
- Light-colored stool
- Poor feeding
- Lethargy/excessive sleepiness present
- Poor growth

Nutritional Requirement For Month Old Child[6]:
Table No.2

Water requirement- 140-160 ml/kg
Calorie requirement- 12 cal/kg
Protein allowance- 2.3 gm/kg/day
Iron- 1mg/kg
Calcium-500 mg
Iodine-0.2 mg
Sodium- 2meq/kg
Potassium- 1.5 meq/kg
Zinc- 0.3 mg/kg
Flourine- 0.5 to 1 mg

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