



A STUDY OF NEONATAL JAUNDICE IN A TERTIARY CARE CENTRE IN EASTERN BIHAR.

Dr. Pawan Kumar Yadav*

Senior Resident, Department of Pediatrics, JLNMC, Bhagalpur, Bihar.
*Corresponding author.

Dr. Anil Kumar

Junior Resident, Department of Pediatrics, JLNMC, Bhagalpur, Bihar.

Dr. Brajesh Kumar

Senior Resident, Department of Pediatrics, JLNMC, Bhagalpur, Bihar.

ABSTRACT

Neonatal hyperbilirubinemia is the most common reason for admission in the neonatal period (first month of life) worldwide. The skin of the newborn baby becomes jaundiced, which is caused by a high level of bilirubin in the blood. In some neonates the level of bilirubin increases to a level that can cause brain damage or even death.

Hyperbilirubinemia is a common problem during the neonatal period occurring in up to 60% of term and 80% of preterm babies in the first week of life. Some of the most common causes of neonatal jaundice include physiological jaundice, breast feeding or non feeding jaundice, breast milk jaundice, prematurity and ABO incompatibility.

Aims and objectives of study: To study the incidence, various risk factors in newborns with clinical jaundice progressing to jaundice needing treatment and to assess no. of neonates requiring phototherapy & exchange transfusion in Jawahar Lal Nehru Medical College and Hospital, Bhagalpur, Bihar, during June 2016 to July 2017.

Method: The present study was a prospective hospital based study involving all neonates who were born at Jawahar Lal Nehru Medical College and Hospital, Bhagalpur, Bihar.

Observation: Out of 280 newborns, 136 (48.57%) newborns developed clinical jaundice. Out of 136 newborns with clinical jaundice, 83 (61%) newborns developed physiological jaundice and 53 (39%) newborns developed non physiological jaundice requiring therapeutic intervention in the form of phototherapy or exchange transfusion.

Conclusion: Present study concludes that the leading cause of pathological jaundice is breastfeeding jaundice, ABO incompatibility and prematurity.

KEYWORDS : Newborn, Hyperbilirubinemia, ABO incompatibility, Non physiological jaundice.

INTRODUCTION:

Newborn infants often develop transient hyperbilirubinemia that requires no treatment, that is, physiologic jaundice.[1,2,3]. In some infants, also in the absence of hemolytic or other diseases, there is a more pronounced imbalance between bilirubin production and excretion, resulting in excessive bilirubin levels. High levels of unconjugated bilirubin could be associated with brain dysfunction and even permanent brain damage, known as kernicterus. Hyperbilirubinemia is a common problem during the neonatal period occurring in up to 60% of term and 80% of preterm babies in the first week of life. [4,5]. Some of the most common causes of neonatal jaundice include physiological jaundice, breast feeding or non feeding jaundice, breast milk jaundice, prematurity leading to jaundice & various pathological causes like haemolytic disease, liver dysfunction, neonatal sepsis, deficiency of G6PD enzyme, hypothyroidism and rare conditions such as Gilbert's syndrome etc [6,7]. Extreme hyperbilirubinemia is rare, however, if left untreated especially in premature infant, indirect hyperbilirubinemia may lead to kernicterus, a serious neurological problem and social & economic burden on the patient's family & society. Elevation of direct bilirubin constitute the pathological causes of jaundice & should be promptly treated either by medical or surgical means.

AIMS AND OBJECTIVES:

To study the incidence, various risk factors in newborns with clinical jaundice progressing to jaundice needing treatment and to assess number of neonates requiring phototherapy & exchange transfusion in Jawahar Lal Nehru Medical College and Hospital, Bhagalpur, Bihar, during June 2016 to July 2017.

MATERIAL AND METHODS:

The present study was a prospective hospital based study involving all neonates who were born at Jawahar Lal Nehru Medical College and Hospital, Bhagalpur, Bihar. The present study was conducted from June 2016 to July 2017. A predesigned proforma has aided the enrollment of newborns into the present study. Significant hyperbilirubinemia was defined as the value of bilirubin according to AAP guidelines in term neonates and Cockington's charts in preterm, above which phototherapy or exchange transfusion or both are

required [8,9]. Clinical jaundice is visible yellowish discoloration of skin of newborns in day light. The following situations suggest non physiologic jaundice and require evaluation (onset of jaundice occurs before 24 hours of age, elevation of serum bilirubin requires phototherapy, a rise in serum bilirubin levels of 0.2mg/dl/hour, signs of underlying illness in any infant (vomiting, lethargy, poor feeding, excessive weight loss, apnea, tachypnea or temperature instability), jaundice persisting after 8 days in a term baby or after 14 days in a premature

Inclusion Criteria:

All babies born at Jawahar Lal Nehru Medical College and Hospital, Bhagalpur, Bihar, who were admitted to NICU and postnatal ward, who had clinical jaundice irrespective of the gestational age and birth weight were included in the present study.

Exclusion Criteria:

1. Babies with major congenital malformations.
2. Newborns who expired before complete evaluation during the period of hospital stay.
3. Out born baby admitted in Jawahar Lal Nehru Medical College and Hospital NICU.

Statistical Analysis: Descriptive data are presented as number and percentages. Chi-square test was used to assess the association between neonatal jaundice with various factors. Microsoft word and SPSS software were used for the analysis of the results. A p value of 0.05 or less was considered for statistical significance.

RESULTS:

In the present study, out of 280 newborns delivered during the study period, 136 (48.57%) newborns developed clinical jaundice.

Out of 136 newborns with clinical jaundice, 83 (61%) newborns developed physiological jaundice. The overall incidence of non physiological jaundice in the study group is 19%. (53 out of 280 newborns).

Out of 136 newborns with clinical jaundice, 53 newborns developed

pathological jaundice. Out of 53 newborns, 26 (48%) newborns had breast feeding jaundice. 8 (15%) newborns had ABO incompatibility. 4 (7.54%) newborns were preterms. 3 (5.6%) newborns had cephalohematoma. 3 (5.6%) newborns had Rh incompatibility. 2 (3.77%) newborns had history of previous sibling deaths. 2 (3.77%) newborns had history of birth asphyxia. 2 (3.77%) newborns were born to mothers with history of GDM. 1 (1.88%) newborns had sepsis. 1 (1.88%) newborn was born to mother with history of hypothyroidism. 1 (1.88%) newborn was born to mother with TORCH infection.

Sex factor had an influence on the incidence of non physiological jaundice among the neonates showing that males 67.9% (36 out of 53) had higher incidence compared to females 32% (17 out of 53) with p value <0.05 . All 2 (100%) newborns with history of birth asphyxia developed pathological jaundice.

Out of 53 babies with pathological jaundice, 2 newborns had Rh incompatibility, 8 newborns had ABO incompatibility, 1 newborn had both Rh and ABO incompatibility.

Out of 136 newborns with clinical jaundice, 1 (0.73%) newborns required double volume exchange transfusion as a therapeutic intervention for the treatment of jaundice. Both these cases were associated with Rh incompatibility as a risk factor for pathological jaundice.

DISCUSSION:

In the present study incidence of clinical jaundice is 49%. In a study done by Kumar RK in 1999, jaundice was the most common condition requiring medical attention in newborn infants. About 50 percent of term and 80 percent of preterm infants developed jaundice in the first week of life [11].

In our study the overall incidence of non physiological jaundice is 19% (53 out of 280). In a study conducted by Anil Narang et al. in 1996 at Nehru hospital, Chandigarh, of 3791 live births, 551 (14.5%) developed neonatal jaundice needing therapeutic intervention, i.e., either phototherapy or exchange transfusion. [12] Significant male preponderance was seen in the present study, male being 67% vs female babies with 33% in non physiological jaundice. In a study from Chandigarh done by Narang et al, incidence of hyperbilirubinemia in males was 64.2%. [9] In another study done at Delhi by Singhal et al, incidence of hyperbilirubinemia in males was 56.8%. [13]

Among them most common cause of jaundice was breast feeding jaundice 52 (48%), second most common cause being due to ABO incompatibility 17(16%), third common cause being due to newborns were prematurity 8(7.54). In a study conducted by May-Jen Huang et al., similar pattern of distribution has been observed [14].

Breastfeeding jaundice tops the list in non-physiological jaundice. In a study done by Osborn LM et al, it was found that Breastfed newborns may be at increased risk for early-onset exaggerated physiologic jaundice because of relative caloric deprivation in the first few days of life [15]. In another study done by Schneider AP, it was stated that decreased volume and decreased frequency of feedings may result in mild dehydration and the delayed passage of meconium. Compared with formula-fed newborns, breastfed infants are three to six times more likely to experience moderate jaundice (total serum bilirubin level above 12 mg per dL) [16].

ABO incompatibility has become the second most common cause of non physiological jaundice in newborn in our study. In a study of a population of newborns in Turkey, there was a 14.8% incidence of ABO incompatibility, with 21.3% of these babies exhibiting significant hyperbilirubinemia and 4.4% exhibiting severe ABO hemolytic disease [17].

Prematurity was third most common cause in our study. Preterm newborns are prone to developing jaundice due to immaturity of bilirubin conjugating system, higher rate of hemolysis, increased enterohepatic circulation, decreased caloric intake [18]. Onyearugha, et al concluded prematurity as the second leading cause of neonatal jaundice [19].

2% (3) newborns had extravascular bleed and all 3 newborns developed pathological jaundice. In a study done by Meredith L. Porter et al at Dewitt Army Community Hospital, Fort Belvoir, Virginia, they

found that Common risk factors for hyperbilirubinemia include fetal-maternal blood group incompatibility, prematurity, and a previously affected sibling, Cephalohematoma, bruising, and trauma from instrumental delivery may increase the risk for serum bilirubin elevation [20].

All 2 newborns with history of previous sibling death developed pathological jaundice. In a study done by Meredith L. Porter et al in Dewitt Army Community Hospital, Fort Belvoir, Virginia, Common risk factors for hyperbilirubinemia included fetal-maternal blood group incompatibility, prematurity, and a previously affected sibling. Infants with risk factors should be monitored closely during the first days to weeks of life [20].

2 newborns with history of birth asphyxia developed pathological jaundice. Out of 136 newborns with clinical jaundice, 53 (38.9%) newborns required therapeutic intervention in the form of phototherapy as a mode of treatment for clinical jaundice. Early and frequent breastfeeding decreases the risk, whereas inadequate breastfeeding can contribute to severe hyperbilirubinemia [21].

CONCLUSION:

We concluded from our study that the leading cause of non physiological jaundice is breastfeeding jaundice followed by ABO incompatibility and prematurity. Physiological jaundice contributes maximum number of cases among total cases. If timely intervention done then serious neurological problems, social & economic burden on the patient's family and society can be prevented and mortality and morbidity of newborns can be brought down.

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