

OBSERVATION OF NEONATAL JAUNDICE IN RELATION TO PHYSIOLOGICAL CHANGES AND SEPTICEMIA IN NEONATAL PERIOD

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ABSTRACT: INTRODUCTION: Jaundice is the commonest abnormal physical finding in newborn babies. It is mostly due to physiological handicaps. Non-physiological hyperbilirubinemia is said to occur in 5-25% of the newborn babies. Any factor that further increases the bilirubin production is very likely to exacerbate neonatal hyperbilirubinemia. **OBJECTIVES:** This study was carried out to find the presence of physiological jaundice and the association of neonatal hyperbilirubinemia with septicemia in neonatal period. **MATERIALS & METHODS:** In this study, 100 neonates were selected, who belonged to the age group of birth to one month of age. After selection of the cases, a detailed history and clinical examination was done. All types of investigations (Routine and specialized, where applicable) were carried out for the measurement of serum bilirubin. Finally an association was made between neonatal jaundice and physiological changes and septicemia in neonatal period. **RESULTS:** It was clear in our study that the most common association of neonatal jaundice was physiological changes in neonatal period. It was present in 22% of the cases. Septicemia was next major cause of neonatal hyperbilirubinemia (18%). **CONCLUSION:** After analyzing 100 cases of neonatal jaundice, ranging from birth to one month of age, it was concluded that the most common cause of neonatal jaundice is physiological. Septicemia was ranked second. Pneumonia in the neonatal period was found to be most common underlying problem in septicemia.

KEYWORDS: Neonates, Jaundice, Septicemia, Bilirubin.

INTRODUCTION: The word "Jaundice" comes from French word 'Jaune', which means yellow or icterus, yellow staining of tissues and body-fluids due to increase in bile pigment. The word "neonate" means period of life immediately succeeding birth and continuing through first four weeks. Jaundice is the commonest abnormal physical finding in newborn babies. It is mostly due to physiological handicaps. Non physiological or pathological hyperbilirubinemia is said to occur in 5-25% of the newborn babies. As in the neonates, bilirubin production is more, compared with that in the adult (2-3 times higher on per kg of bodyweight basis), rapid accumulation of bilirubin occurs. Hence, any factor that further increases the bilirubin production is very likely to exacerbate neonatal hyperbilirubinemia. The only common cause of jaundice which is not primarily a result of accelerated bilirubin production is breast milk jaundice. Yet both early and late breast milk jaundice may be exacerbated by increased bilirubin formation.¹

Physiological jaundice is the term used arbitrarily to define that degree of jaundice which can be completely accounted for by the neonatal limitation in glucuronide conjugation ability. Several physiological handicaps leads to increased frequency and severity of jaundice among newborn babies. There is overproduction of bilirubin due to polycythemia and reduced life span of fetal red

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cells.² The minimum intensity of jaundice in term babies is seen on the 4th day and jaundice disappears by 10th day of life. The serumbilirubin level does not exceed 15mg/dl.

Jaundice is also an important manifestation of septicemia and urinary tract infection (UTI) and should be seriously considered when it first appears after the age of 3 days and is persistent beyond two weeks of life. The clinical picture is dominated by other systemic features of septicemia.

OBJECTIVE OF OUR STUDY WERE:

1. To find out the presence of physiological jaundice in neonatal period.
2. To find out the association of neonatal hyperbilirubinemia and septicemia in neonates.

MATERIALS & METHODS: Present study was conducted in Darbhanga Medical College & Hospital, Laheriasarai, Bihar, from Sept.2014 to Oct.2014 (two months). A predesigned pre-tested study schedule was used for collecting data. A structured questionnaire was used for conducting interviews and observations. In addition, the interview was conducted by the field worker to the mother or caretakers of the child. Privacy and confidentiality of the children and their parents were maintained. This work has been undertaken to find out the degree of association of various causes with neonatal hyperbilirubinemia. The neonates selected for the study belonged to the age group of birth to one month of age, who are mostly permanent residents of this area or who are residing in this zone for more than 6 months. Neonates who are visitors from outside the area are not considered in this study. After the cases were selected, a detailed history and clinical examination was done after taking antenatal and post-neonatal history of each baby. A thorough clinical examination was done in each case. This included general examination of the case and examination of the different systems. Particular attention was given to the palpation of the abdomen. All the types of investigations (Routine and specialized, where applicable) were carried out for the measurement of serum bilirubin. The serum bilirubin was estimated by the modified diazo method. Finally, as observation was done for neonatal jaundice in relation to physiological changes & septicemia in neonatal period.

RESULTS:

Etiology	No. of cases	Percentage
Physiological	22	22
Septicemia	18	18
Rh-Isoimmunization	13	13
Jaundice of Prematurity	13	13
ABO Isoimmunization	6	6
Jaundice in small for age babies	6	6
Polycythemia	4	4
Intrauterine infections	3	3
Neonatal Hepatitis	2.8	2.8
Biliary Atresia	2.2	2.2
Twins	2	2
Unknown causes	8	8

TABLE 1

Analysis of 100 cases of Neonatal Jaundice

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Above table shows that after physiological jaundice (22%), Septicemia was the next major cause of neonatal hyperbilirubinemia (18%).

Cause	No. of Neonates	Percentage
Umbilical sepsis	3	16.6
Pneumonia	6	33.3
Gastroenteritis	2	11.1
Meningitis	2	11.1
Skin infection	1	5.5
Unknown	2	11.1
Pneumonia + Gastroenteritis	1	5.5
Umbilical Sepsis + Skin infection	1	5.5

TABLE 2

Above table shows that Pneumonia was the most common accompaniment of Septicemia (33.3%).

DISCUSSION: The result of our present work revealed various etiological causes of neonatal hyperbilirubinemia (Table-1). Among these causes, physiological jaundice ranks first in order of frequency. It is interesting to note that in our work, septicemia ranked second.

In the present series of 100 cases of neonatal jaundice, there were 22 cases of physiological jaundice, giving an incidence of 22%. Similar studies done at Bombay and Shimla showed an incidence of 25.3% (Merchart, 1994)³ and 63.8% (Bahl, 1994),⁴ respectively. According to Basu K. et. al. (2002)⁵ in their study entitled as a new look on neonatal jaundice showed that physiological jaundice was present in 8.92% of all live born babies and accounted for 79.89% of babies with jaundice.

Jaundice due to septicemia ranked second in the present series of neonatal hyperbilirubinemia. It was responsible for 18 cases [Table-1]. Jaundice is an important manifestation of bacterial septicemia and UTI and should be seriously considered when it first appears after 3 days of birth and persists beyond two weeks of life. In the present series of 18 cases due to infection, pneumonia was found to be underlying problem in 6 cases (33.3%), followed by others. Dikshit (1989)⁶ in his series reported 23.6% of neonates with septicemia. E. coli was found to be the commonest organism responsible for the varying lesions. Bahl (1994),⁴ in a study of the etiology of jaundice at Shimla observed that sepsis was associated with jaundice in 11 out of 105 cases of jaundice (10.5%). Linder (1988)⁷ identified 93 jaundiced newborns out of 5805 newborns. These all full term neonates younger than 7 days old who had serum bilirubin levels more than 10mg/dl in the first 48 hrs of birth or 15mg/dl thereafter. 3 of these babies had positive blood cultures. The organisms identified were *Proteus mirabilis*, *Bacteroides* species and *Klebsiella pneumoniae*.

CONCLUSION: An analysis of 100 cases of neonatal jaundice ranging from birth to one month of age has been presented in this work. This comprises 22 cases (22%) of physiological jaundice. Jaundice due to septicemia ranked second in the present series of neonatal hyperbilirubinemia. It comprises of 18 cases (18%). Pneumonia was found to be most common underlying problem in septicemia (37.3%).

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RECOMMENDATION: Some limits of physiological jaundice should be established in the nursery, so that one may know whether an infant has the degree, type, and extent of jaundice that can easily be attributed to his degree of immunity. Infants whose jaundice by any of these criteria is out of line should be investigated thoroughly.

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