Original Research Article

Study of clinical profile of neonatal jaundice at a tertiary care centre

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Abstract

Background: Neonatal hyperbilirubinemia It may be physiological or pathological. Neonatal hyperbilirubinemia is a common condition requiring inpatient treatment and monitoring, and many times requires readmission to hospital. Estimated incidence of jaundice in neonates is 60% to 84% of late term and term infants. Present study was undertaken to study clinical profile of neonates with jaundice at our tertiary care center. **Material and Methods:** This prospective, observational study was conducted in neonates with jaundice admitted in NICU or neonatology ward during study period, with serum bilirubin more than 10 mg/dL. **Results:** During study period 340 newborns were considered for present study. 159 newborns (47 %) developed jaundice after 72 hours of birth. Only 14 % developed jaundice within 24 hours of birth. 56 % babies were male as compared to 44% female babies. Babies delivered at more than 37 weeks gestational age (70 %) were most common, while only 7% babies were delivered between 28-32 weeks gestational age. 2500 - 4000 gm birthweight babies were 66 %, while 28% babies had birthweight less than 2500 gm. Incidence of neonatal jaundice was 58%, 31% and 10% in vaginal delivery, caesarean section, instrumental delivery respectively. Physiological jaundice (36.17%), prematurity (13.53%), breast feeding (12.65%), idiopathic (12.35 %), were most common causes noted in our study. **Conclusion:** Male gender, 2500 - 4000 gm birthweight, vaginal delivery, physiological jaundice, prematurity were common causes associated with neonatal jaundice in our study. Parental counselling and monitoring of baby is most important in management of neonatal jaundice.

Key Words: Neonatal jaundice, Physiological jaundice, ABO incompatibility, Rh incompatibility

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INTRODUCTION

Jaundice is yellow discolouration of the skin and sclera that occurs when levels of bilirubin are increased. Bilirubin is a product of heme catabolism, and 80% to 90% of hyperbilirubinemia occurs due to the breakdown of haemoglobin.[1] Neonatal hyperbilirubinemia occurs due to a variety of factors. It may be physiological or pathological. Physiologic hyperbilirubinemia is seen in neonates due to multiple factors.[2,3] such as an increased number of red cells with a shorter life span prone for hemolysis. Also, neonates have increased enterohepatic circulation due to decreased gastrointestinal tract motility during initial few days of life, causes bilirubin reabsorption. Physiologic volume restriction due to the low volumes of breast milk is also seen in neonates. Introduction of delayed cord clamping can also be a risk factor. Few pathological causes of hyperbilirubinemia in neonates are ABO incompatibility, rhesus incompatibility, sepsis, asphyxia, and exposure to hemolytic agents. However, the etiology of neonatal hyperbilirubinemia may remain obscured in more than half of the cases.[4] Neonatal hyperbilirubinemia is a common condition requiring inpatient treatment and monitoring, and many times requires readmission to hospital.[5] Estimated incidence of jaundice in neonates is 60% to 84% of late term and term infants[6]. 5–10% of the

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new-born with jaundice need to be treated due to pathological hyperbilirubinemia, but risk of neurologic damage always remains, especially with very high bilirubin level, in presence of certain risk factors and in cases where management remains inappropriate[7].Since multiple management protocols are adapted to reduce incidence of neonatal jaundice such as early initiation of breast feeding, anti-D prophylaxis to prevent Rh D disease, effective phototherapy, exchange transfusion, and intravenous immunoglobulin for treatment of hyperbilirubinemia, neonates presenting with severe hyperbilirubinemia and bilirubin encephalopathy are not uncommon. Present study was undertaken to study clinical profile of neonates with jaundice at our tertiary care center.

MATERIAL AND METHODS

This prospective, observational study was conducted in Department of neonatology and Neonatal Intensive Care Unit, Dr Ulhas Patil Medical College and Hospital, Jalgaon. Total study duration was of 12 months (January 2018 to December 2018). Proper approval was taken from institutional ethical committee.

Inclusion Criteria

1. Neonates with jaundice admitted in NICU or neonatology ward during study period, with serum bilirubin more than 10 mg/dL.

Exclusion Criteria

1. Neonates with jaundice not admitted inn NICU, attending outpatient department only.
2. Neonates with jaundice opted discharge against medical advice.
3. Parents not willing to participate in this study.

Purpose of present study was explained to parents and a written informed consent was taken for participation. Detailed history was taken for all babies along with maternal antenatal and delivery details. Clinical examination was done with special attention for assessment of severity of jaundice. Examination was done in natural day light in a white background. Laboratory investigations such as total serum bilirubin and its fraction, Blood groups (Rh and ABO) for both jaundiced new-born and mother were done for each patient. Other tests like direct Coombs test, G6PD screen, reticulocyte count, hematocrit, sepsis screening etc. were done when needed. Follow up was kept till 30 days of neonatal age. Data was collected in predesigned format and analyzed accordingly.

RESULTS

During study period 340 newborns were considered for present study, as they were satisfying inclusion and exclusion criteria. 159 newborns (47 %) developed jaundice after 72 hours of birth. Only 14 % developed jaundice within 24 hours of birth. 56 % babies were male as compared to 44 % female babies. Surprisingly neonatal jaundice was most commonly noted in babies delivered at more than 37 weeks gestational age (70 %), while only 7 % babies were delivered between 28-32 weeks gestational age. 2500 - 4000 gm birthweight babies were 66 %, while 28% babies had birthweight less than 2500 gm. Incidence of neonatal jaundice was 58%, 31% and 10% in vaginal delivery, caesarean section, instrumental delivery respectively.

Table 1: General characteristics

Characteristics	No. of newborns (Total 340)	Percentage
Age of onset of Jaundice		
0 – 24 hours	47	14%
24 – 72 hours	134	39%
> 72 hours	159	47%
Gender		
Male	192	56%
Female	148	44%
Gestational Age at birth		
28 - 32 wks	23	7%
33 - 36 wks	78	23%
> 37 wks	239	70%
Birth weight		
< 2500 gm	96	28%
2500 - 4000 gm	225	66%
> 4000 gm	19	6%
Mode of Delivery		
Vaginal Delivery	198	58%
Instrumental Delivery	35	10%
C-section	107	31%

Physiological jaundice (36.17%), prematurity (13.53%), breast feeding (12.65%), idiopathic (12.35 %), were most common causes noted in our study. Less common causes noted in our study were ABO incompatibility (8.24%), sepsis (7.94%), Rh incompatibility (4.12 %), cephalhematoma (2.06 %), hemolytic anemia (2.06%), G6PD deficiency (0.59%), hypothyroidism (0.29%).

Table 2: Etiology

Etiology	No. of Newborns	Percentage
Physiological	123	36.17
Prematurity	46	13.53
Breast feeding	43	12.65
Idiopathic	42	12.35
ABO incompatibility	28	8.23
Sepsis	27	7.94
Rh incompatibility	14	4.12
Cephalhematoma	7	2.06
Hemolytic anemia	7	2.06
G6PD deficiency	2	0.58
Hypothyroidism	1	0.29
Total	**340**	**100**

Yellowish discolouration with good activity (52.65 %), Jaundice with refusal of feeds (23.53 %) were most common symptoms noted. History of delayed cry (13.53 %), Fever (10 %), Breathlessness (6.47 %), History of acholic stools (4.41 %), Vomiting (2.65 %) symptoms were noted in our study.

Table 3: Symptom

Symptoms	No. of Newborns	Percentage
Yellowish discolouration with good activity	179	52.64
Jaundice with refusal of feeds	80	23.53
History of delayed cry	46	13.53
Fever	34	10
Breathlessness	22	6.47
History of acholic stools	15	4.41
Vomiting	9	2.65

DISCUSSION

Neonatal jaundice is one of the most common cause of hospitalization of neonates in the first month after birth. In most cases, neonatal jaundice is transient and usually resolving at the end of the first week after birth. But when severe hyperbilirubinemia is present, there is a potential risk for acute bilirubin encephalopathy and kernicterus. This can lead to death in the first months, and infants who are still alive often suffer from mental retardation, movement and balance disorders, seizures, hearing loss at high frequencies, and speech impairment. So, timely diagnosis and treatment of neonatal jaundice are very important to prevent further complications. In our study, majority of the babies with neonatal jaundice were more than 37 weeks gestation (70%) and 7% were early preterm. Other studies found a higher percentage of premature babies admitted for neonatal jaundice in their studies[8]. Higher percentage of term babies in our study was mainly due to early pickup from postnatal wards, aggressive care for preterm babies, etc. Male gender is a known risk factor for hyperbilirubinemia.[9] Higher incidence of significant hyperbilirubinemia in male babies as compared to female babies was found in various other studies.[10] In the present study 58% newborns were delivered vaginally, 10% were instrumental deliveries and 31% were delivered by LSCS. Higher incidence of neonatal jaundice was associated with babies delivered vaginally compared to those born by LSCS. Similar findings are noted in various other studies[11,12]. Physiological jaundice was noted in 36.17% babies in our study and this is most common group. Normally some icterus appears on the second to third day, reaching its maximum on the second to fourth day and decreasing on the fifth to seventh days, mainly due to liver enzymes have not evolved enough. This jaundice is called physiologic jaundice. Various factors such as maternal diabetes, race, premature infant, medication use of mother, male gender, cephalohaematoma, breastfeeding, weight loss, delayed stools in the baby may be correlated with physiologic jaundice.[13] Since most of these are normal physiological findings, it also increases overall contribution of physiological jaundice in cases of neonatal jaundice. Second most common cause was prematurity (13.53%), which is an important cause of neonatal hyperbilirubinemia and has been well documented in the literature[7,14]. Breast milk jaundice

occurs with the bilirubin level usually peaking in the 6th to 14th day of life which is later than physiological jaundice. This late onset jaundice may develop in up to one third of healthy breast-fed infants.[15] Postulated mechanism is that, beta glucuronidases and non-esterified fatty acids in maternal milk, may inhibit normal bilirubin metabolism.[16] We noted 12.52% babies with idiopathic etiology. Various studies observed idiopathic cause as an etiology in 15.5% - 25.4% cases.[17,18] In our study we identified ABO incompatibility (8.24%) and Rh incompatibility (4.12%) as a risk factors for neonatal jaundice. Neonatal jaundice in babies with ABO incompatibility and Rh incompatibility is mainly due to hemolysis. These both are noted as a significant risk factors in many studies.[9,19] Sepsis noted as a cause of neonatal jaundice in 7.94% babies and many studies also noted sepsis as a significant risk factor for jaundice[20]. Cephalhematoma (2.06%), hemolytic anemia (2.06%), G6PD deficiency (0.59%), hypothyroidism (0.29%) were least common causes noted in our study. Cephalhematoma is collection of blood, mostly due to injury during delivery, commonly instrumental delivery. This is an avoidable cause. Jaundice in hemolytic anemia and G6PD deficiency is due to hemolysis mainly. Jaundice in hypothyroidism is mainly due to polycythemia seen in such cases.

CONCLUSION

Male gender, 2500 - 4000 gm birthweight, vaginal delivery, physiological jaundice, prematurity were common causes associated with neonatal jaundice in our study. Parental counselling and monitoring of baby is most important in management of neonatal jaundice. Though there is less incidence of progression to severe hyperbilirubinemia, complications associated to severe hyperbilirubinemia are dangerous.

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