ORIGINAL ARTICLE

Determination of Clinical Presentations and Risk Factors of Neonatal Hyperbilirubinemia

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[1] Conceived the topic and review the study & Discussion
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ABSTRACT

Objective: Assessment of the clinical presentations and risk factors of neonatal hyperbilirubinemia at the paediatrics department of tertiary care Hospital.

Study Design: This was a cross-sectional study

Place and Duration: At paediatrics department of Liaquat University Hospital Hyderabad, from January 2013 to November 2013.

Methodology: Total 114 cases of Hyperbilirubinemia less than 28 days admitted in the neonatal Unit were selected for the study. After admission all the routine laboratory investigations including detailed history of jaundice & duration, serum Bilirubin (direct, indirect), urine C/S, ultrasound Abdomen and X-ray chest were carried out. All the data regarding clinical features and causes of the hyperbilirubinemia was recorded in the proforma.

Results: In this study male were found in the majority 67.54%. 65.78% were term and 34.22% were pre term. Jaundice/ yellow discoloration of skin was the most common in 75% of the cases following by fever and refusal to feed 25.43%, and 21.42 respectively. In this study most common risk factor was the sepsis 46.69%, following by birth asphyxia was in 11.40%, hypoglycemia 11.40%, hypothermia 07.89% and hypoalbuminemia was found in 0.87% cases and in 9. 64% cases risk factors were unknown.

Conclusion: We concluded that male gender was mostly effected by Hyperbilirubinemia, Jaundice/ yellow discoloration of skin was the most common clinical presentation and neonatal sepsis is the commonest risk factor

Key Words: Clinical features, Risk factors, Neonatal hyperbilirubinemia.

Introduction

Hyperbilirubinemia is the most common and major event during the neonatal period.[1] In 8-11% of patients, the bilirubin level increased as more than 95% percentile.[2] Severe hyperbilirubinemia (total serum bilirubin) level of more than 20 mg per occurs in less than 2% of term infants and can lead to kernicterus (i.e., chronic bilirubin encephalopathy) and permanent neurodevelopmental delay.[3] Therefore, it is important to systematically evaluate all infants for hyperbilirubinemia.[3] Initial symptoms of kernicterus include lethargy, poor feeding, and loss of Moro reflexes, followed by infant's extreme weakness, decreased deep tendon reflexes, respiratory distress, opisthotonos (occasional), bulging fontanelle, abnormal movements of the face and extremities and shrill cry. Most infants, who experience these severe neurological symptoms, die early, and those who survive suffer from extreme damages. Patients with kernicterus appear normal within 2-3 months of age, whereas opisthotonos, muscular rigidity, abnormal movements and recurrent seizures occur later in the first year of life.[2] An evidence stated that lower and the middle socioeconomic countries bear the biggest burden of the

severe neonatal hyperbilirubinemia categorized by disproportionately higher ratio of the morbidity, mortality and neurodevelopmental abnormalities as compared to upper-income countries.[5] Also, the mentioned study showed that approximately 4.3% of infants with jaundice cannot normally sit or stand.[6] Despite the reduced incidence of complications associated with hyperbilirubinemia in developed countries, blood transfusion is performed in three newborns weekly in some health centers. In fact, diagnosis and appropriate treatment of newborns are not performed promptly, leading to widespread complications of jaundice in newborns.[2] In the infant's jaundice might be severe, progressing to acute bilirubin encephalopathy (ABE) or kernicterus with the significant risk of mortality of the neonates.[7] Surviving infants may obtain prolonged neurodevelopmental sequelae like as cerebral palsy, sensorineural loss of hearing, intellectual difficulties or delay gross developmental.[8,9] Clinical guidelines recommend early neonatal detection those are at the risk of severe hyperbilirubinemia to manage timely and effective prevention of the associated burden.[10,5] This study has been conducted to evaluate the clinical presentation and risk factors of neonatal hyperbilirubinemia at tertiary care hospital.

Methodology

This was the cross-sectional study and was carried out in the pediatric department of LUH Jamshoro/Hyderabad. Total 588 neonates were randomly selected out of them 114 diagnosed with Hyperbilirubinemia and these were further studied. All the babies less than 28 days admitted in the neonatal Unit were selected for the study. All neonates delivered at Liaquat University Hospital labor room by NVD, LSCS, and referred cases from the different hospital; clinics from Hyderabad city were also included. All the neonates having SB of < 12 mg/dl and neonates having jaundice but expired before treatment were excluded from the study. A detailed history was taken and full examination was done. These babies were also observed for maintenance of body temperature and dehydration. Those babies who were hypothermic were kept in an incubator with continuous phototherapy. After admission, all the routine laboratory investigations including a detailed history of jaundice & duration of other associated symptoms was taken &full relevant examination was done. Mother's blood group was taken and Rh factor, complete blood picture, blood grouping, Rh factor, Serum Bilirubin (direct, indirect), urine C/S, ultrasound Abdomen and X-ray chest were carried out. All the data regarding clinical features and causes of the hyperbilirubinemia was recorded in the proforma. SPSS version 20 was applied for the data analysis. Frequencies and the percentage were calculated for qualitative data, mean was calculated for the quantitative data.

Results

In this study male were found in the majority 67.54%, and female neonates were 32.45% Male to female ratio =2.08:1. Out of total cases, 65.78% were delivered on term and 34.22% were delivered preterm birth. (**Table I)**

Table I: Neonatal distribution according to gender and maturity (n=114)

Characteristics	Frequency (%)
Gender	
Male	77(67.54%)
Female	37(32.45%)
Maturity	
Term	75/(65.78%)
Preterm	39/(34.22%)

Male to female ratio =2.08:1

In this study 66% babies were delivered by caesarean section, 30.50% were delivered by normal vaginal deliveries and only 3.38% were delivered by instrumental vaginal deliveries. (**Figure 1)**

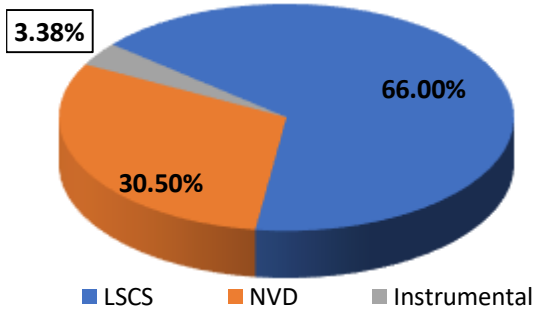

Figure 1. Mode of Deliveries (n=114)

In this study according to clinical presentation Jaundice/ yellow discoloration of skin was the most common in 75% of the cases following by fever in 29(25.43%), refusal to feed 25(21.42%), difficulty in breathing 10(08.77%), fits 9(7.89%), not cried after birth 7(6.14%), vomiting & distention of Abdomen 6(5.26%), not passing stool & urine 4(3.5%), bluish discoloration hand feet & lips 3(2.63%) and loose motion were found in 3(2.63%) patients. **Table II)**

In this study most common risk factor was the sepsis 46.69%, following by birth asphyxia was in 11.40%,

hypoglycemia 11.40%, hypothermia 07.89% and hypoalbuminemia was found in 0.87% cases and in 9. 64% cases risk factors were unknown.**(Table III)**

Table II: Clinical presentation of neonatal hyperbilirubinemia (n=114)

Clinical Presentation	Frequency	%
Jaundice/ yellow discoloration of skin	86	75%
Fever	29	25.43%
Refusal to feed Not feeding well	25	21.42%
Difficulty in breathing	10	8.77%
Fits	9	7.89%
Not cried after birth	7	6.14%
Vomiting & distention of Abdomen	6	5.26%
Not passing stool & urine	4	3.5%
Bluish discoloration hand feet & lips	3	2.63%
Loose motion	3	2.63%

Table III: Risk factors contributing to Hyperbilirubinemia in 114 study cases

Risk factors	Frequency	%
Sepsis	53	46.69%
Birth asphyxia	13	11.40%
Hypoglycemia	13	11.40%
Hypothermia	09	07.89%
Hypoalbuminemia	01	0.87%
Not known	11	9.64%

Discussion

Hyperbilirubinemia of the neonates is the commonest morbidity during the neonatal period. 65% term new born may develop clinical jaundice in the first week (in 80% preterm infants).[11] Hyperbilirubinemia of the neonates may define as TSB >95th centile for age in the hours in a term and near the term new born which required complete follow-up and management. In this study, male were found in the majority 67.54%, and female neonates were 32.45% Male to female ratio =2.08:1. Out of total cases, 65.78% were delivered on term and 34.22% were delivered preterm birth. Devi DS et al[12] reported that the incidence of neonatal hyperbilirubinemia in male babies predominated as 57%. On other hand Shetty A et al[13] reported that out of 753 neonates, males were more as compare to females.

In this study 66% babies were delivered by caesarean section, 30.50% were delivered by normal vaginal deliveries and only 3.38% were delivered by instrumental vaginal deliveries. Comparable findings were reported by Shetty A et al.[13] In this study according to clinical presentation Jaundice/ yellow discoloration of skin was the most common in 75% of the cases following by fever, refusal to feed, difficulty in breathing, fits, not cried after birth, vomiting & distention of Abdomen, not passing stool & urine, bluish discoloration hand feet & lips and loose motion were found with percentage of 25.43%, 21.42%, 8.77%, 7.89%, 6.14%, 5.26%, 3.5%, 2.63% and 2.63% respectively. Similarly in the study of Porter ML et al[14] infant clinically assessed for pallor, petechiae, extravasated blood, excessive bruising, enlarge liver and spleen, loss of weight and dehydration event. In the favor of this study Maamouri G et al[15] et al reported that 95% of the jaundice neonates with sepsis in case group were symptomatic (poor feeding, temperature elevation, and the respiratory distress. In different studies, it is reported that clinical manifestations signs and symptoms to severe illness like as poor feeding, fever, vomiting, renal failure and respiratory distress.[16,17]

In this study most common risk factor was the sepsis 46.69%, following by birth asphyxia was in 11.40%, hypoglycemia 11.40%, hypothermia 07.89% and hypoalbuminemia was found in 0.87% cases and in 9. 64% cases risk factors were unknown. Devi DS et al[12] reported that LBW, low Apgar scores and fetal asphyxia were strongly associated linked with the early neonatal jaundice development**.** Other studies reported that Hyperbilirubinemia of the neonates in preterm babies is big prevalent, and it is more severe and course more protracted than term babies as the result of exaggerated neonatal red cell and immaturity of liver and gastrointestinal tract.[18,19] Najib et al[20] reported that risk factors of the severe neonatal hyperbilirubinemia as male gender, early discharge, NVD, breast feeding and concept of using herbal medicine instead of referring to Doctor when neonate had Icter. In our study 9.64% cases were with unknown causes. As well as in the Canadian reported that majority of neonatal hyperbilirubinemia cases the underlying cause was not identified.[21]

Conclusion

We concluded that male gender was mostly affected by Hyperbilirubinemia, Jaundice/yellow discoloration of skin was the most common clinical presentation and neonatal sepsis is the commonest risk factor. Further big sample studies are required evaluate the more leading cause of neonatal hyperbilirubinemia.

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