Estimation Early Neonatal Hyperbilirubinemia Utilizing 24-hour Serum Bilirubin Level at Bhuj, Kutch

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Abstract

Background and Aim: Jaundice is the frequent irregular physical finding in the first week of life Jaundice is the noticeable form of hyperbilirubinemia. The present study was performed with an aim to evaluate the predictive value of TSB=6 mg/dl at 24±6 hours of age in identifying infants. *Material and Methods:* The present forthcoming study was performed at Department of Pediatrics, at a tertiary care hospital, Bhuj. All fit neonates were to be examining for TSB levels at 24 hours and over again at 5 days. Serum bilirubin was expected for all registered cases within 18 to 30 hour of life spectrophotometrically utilizing twin Beam method. Children after that followed up clinically for the manifestation and development of jaundice every 12 hour till discharge from the department. TSB estimation was repeated if the clinical assessment of jaundice was more than 10 mg/dl by any observer using Kramers Rule. *Results:* A total of 199 neonates were originally enrolled. 37 of 199 cases did not follow up. Significant Hyperbilirubinemia was present in 20.9% cases of those babies who developed jaundice. A TSB of <6mg/dl at 24+6 hours was there in 99 infants. In the due 49 cases the TSB at 24+6 hours was >6 mg/dl. 20 cases out of this eventually went on to develop a positive study outcome. Sensitivity of TSB at 24+6 hours >6mg/dl in recognizing those who will have hyperbilirubinemia =90.9%, Specificity was 76.12%, Positive predictive value was 41.6% and Negative predictive value was 97.9%. *Conclusion:* The current research establishes that a TSB at 24+6 hours <6mg/dl has a elevated predictive value in recognizing those infants who are doubtful to build up consequent hyperbilirubinemia and these neonates can be released before time from the hospital.

Keywords: Infants; Hyperbilirubinemia; Jaundice; Sensitivity; Specificity.

Introduction

Jaundice is the frequent irregular physical finding in the first week of life Jaundice is the noticeable form of hyperbilirubinemia. It emerges in infant skin at Serum Bilirubin >5 mg/dl. Jaundice arises in 60% of term and 80% of preterm infants. However, noteworthy jaundice occurs in 6% of term babies and is the mainly widespread cause for admission after early hospital discharge [1].

Physiologic jaundice frequently emerges on the 2nd to 3rd day of life, generally cresting by 3rd to 4th day to 6-8 mg/dl and after that fall. In early infants, the crest may be 10-12 mg/dl on the fifth day of life, perhaps increasing over 15mg/dl devoid of any exact irregularity [2].

Bilirubin which is a non-polar complex is bounce to albumin and accepted to liver, where it is in use up by hepatocytes. Bounce to a cytoplasmic protein, ligandin, it is passed to the endoplasmic reticulum for conjugation with glucoronide [3-7].

Unconjugated hyperbilirubinemia may be grounds to numerous issues that enhance the load of bilirubin. Apprehensions concerning jaundice have augmented after reports of Bilirubin induced brain damage happening in healthy term infant. Elevated levels of unconjugated bilirubin are potentially neurotoxic and can guide to extensive brain injury mainly brutally to Basal ganglia.

Early release of strong term newborn after delivery has turn out to be a widespread practice since financial restraints, only some hospital beds and

huge patient load [8-10]. Therefore, the ideas of forecast of Jaundice proffer a gorgeous alternative to choose up babies at risk of neonatal hyperbilirubinemia. It is extremely significant in background of developing country like India wherever expensive investigations and usual follow up is further than the achieve of the huge mainstream.

Material & Methods

The present forthcoming study was performed at Department of Pediatrics, at a tertiary care hospital, Bhuj. All fit neonates were to be examining for TSB levels at 24 hours and over again at 5 days. If clinical jaundice emerged in between TSB examine was done straight away and then every day till 5 days of age and the maximum interpretation was noticed as max out TSB. Hyperbilirubinemia was distinct as TSB level >17 mg/dl. Inclusion criteria were: All infants with Gestational age ≥ 35 weeks and neonatal evaluation by prolonged New Ballard Score and nonexistence of important sickness Infants of Rh-negative mothers were incorporated simply if the child was also Rh-negative.

Methodology

All children delivered the prior day in the labour room were inspected and a thorough antenatal and postnatal history was recorded. The blood sample of infant was sending for grouping and TSB opinion. The babies were then followed up clinically by 2 observers for the manifestation and sequence of jaundice each 12 hour till discharge from the department TSB assessment was repetitive if the clinical measurement of jaundice was more than 10 mg/dl by several observer using Kramers Rule. Hyerbilirubinemia was defined as TSB level ≥12 mg/dl between 24 to 48 hour of life ≥ 15 mg/dl between 48 to 72 hour of life and 17 mg/dl beyond 72 hours of life.

Bilirubin assessment was completed spectropho-tometrically by twin beam method and examined by Wako Bilirubin Tester Model SE 101 DII.

Statistical Analysis

The data was coded and entered into Microsoft Excel spreadsheet. Analysis was done using SPSS version 15 (SPSS Inc. Chicago, IL, USA) Windows software program. The variables were assessed for normality using the Kolmogorov-Smirnov test. Descriptive statistics were calculated.

Results

A total of 199 neonates were originally enrolled. 37 of 199 cases did not follow up. Seven infants were admitted to NICU afterward with a analysis of septicemia and were removed from study. All these three cases were excluded from study. Absolute information was accessible for 150 infants. Significant Hyperbilirubinemia was present in 20.9% cases of those babies who developed jaundice. A TSB of <6mg/dl at 24 +6 hours was there in 99 infants. Only two infants after this developed hyperbilirubinemia subsequently.

In the due 49 cases the TSB at 24+6 hours was >6 mg/dl. 20 cases out of this eventually went on to develop a positive study outcome. Sensitivity of TSB at 24+6 hours >6mg/dl in recognizing those who will have hyperbilirubinemia =90.9%, Specificity was 76.12%, Positive predictive value was 41.6% and Negative predictive value was 97.9%.

Table 1: Showing the incidence of Clinical Jaundice and significant Hyperbilirubinemia

Total enrollments	Clinical Jaundice present	Percentage	Significant Hyperbilir ubinemia (>17mg/dl)	Percentage
150	107	71.03	21	14.01

Discussion

The current research establishes that a TSB level ≤6 mg/dl at 24±6 hour can be utilized to calculate the reduce jeopardy for subsequent hyperbilirubinemia. Bhutani et al. [10] described that infants who develop hyperbilirubinemia have larger serum bilirubin levels, the authors found that 6.1% of neonates had pre-discharge serum bilirubin, 32.1% of these infants demonstrates hyperbilirubinemia afterward [10]. Alpay, et al accounted that TSB levels of [3] 6 mg/dl in the first 24 hour forecast jaundice in all infants consequently [5]. similar finding was reported by Awasthi et al. [11] and Agarwal et al. [12].

Grover et al. [13] described tha mean primary day TSB worth in the neonates who consequently developed hyperbilirubinemia was 7.716 mg/dl contrast to a value of 5.154 mg/dl in those who did not, statistically significant difference was observed in above findings. (p ≤0.05)

Lavanya et al. [14] described mean period of commencement of significant jaundice to be 61±32 hours. The mean period of phototherapy was 49±26 hours. In the findings by Chawla et al. [15] 997 neonates were registered, of which 931 completed follow up. Amongst registered neonates 34.5% were low birth weight. Bilirubin nomogram was build utilizing 40th, 75th and 95th percentile values of hour-specific bilirubin. Between 49 neonates with pre-discharge STB in high danger region 34 developed SHB Among 342 neonates with pre-discharge STB in low risk zone, 32 developed PHB. Region under curvature for this risk measurement strategy was 0.73. Hour-specific bilirubin nomogram and STB dimension can be utuilized for forecasting consequent require of phototherapy. Additional studies are desirable to authenticate presentation of risk separation zones definite in this hour-specific bilirubin nomogram.

Conclusion

The current research establishes that a TSB at 24+6 hours <6mg/dl has a elevated predictive value in recognizing those infants who are doubtful to build up consequent hyperbilirubinemia and these neonates can be released before time from the hospital.

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Conflict of interest: None declared

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