

Effectiveness Cord Blood Albumin as a Predictor of Neonatal Jaundice

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Abstract: Jaundice is one of the commonest issues that can happen in an infant. Numerous a times it is physiological in the infant since liver is not develop enough to handle the bilirubin and there is an expanded heap of bilirubin because of a higher coursing erythrocyte volume, a shorter erythrocyte life range and a bigger early marked bilirubin top. Early expectation will help in ahead of schedule release and counteract hospitalization of babies and mothers. Albumin is synthesized by liver and it helps in transport of unconjugated bilirubin.

Objective: This study aim is to evaluate the effectiveness of cord blood albumin in prediction of jaundice in infants. **Method:** searching the literature as systemic review of previous studies up to 2015 to be able to evaluate and investigate the different results of different evidence based studies about the cord blood albumin helping in early diagnosis of neonatal jaundice.

Result: The present study infers that 1st day (24hrs) bilirubin >5.7 mg/dl can also be used as an early predictor of neonatal hyperbilirubinemia. Knowing the fact that still many deliveries are being conducted at home or health centers where laboratory investigations facilities are not available, or by the time these babies reach to higher center it may not be possible to obtain cord blood due to dried up cord.

Conclusion: Cord bilirubin and albumin can be used as predictor for hyperbilirubinemia and for early review for jaundice especially in developing countries where regular follow up is difficult.

Keywords: Cord blood albumin, neonatal jaundice.

1. INTRODUCTION

Neonatal hyperbilirubinemia bringing about clinical jaundice is a typical issue amid the main weeks of neonates life. Most normal reason for hyperbilirubinemia in neonates is physiological hyperbilirubinemia. Albeit physiological hyperbilirubinemia is 100% curable; Follow up and the early treatment has gotten to be troublesome because of ahead of schedule release from the doctor's facility. Physiological hyperbilirubinemia results from juvenile liver cell having low uridine diphospho glucuronosyl transferase action contrasted with experienced hepatocyte, low convergence of Bilirubin tying ligand Albumin, and higher volume of short life erythrocytes in the flow. Concentrates emphatically contends for the power of bilirubin in the etiology of kernicterus. Present study: estimation of neonatal rope blood albumin and bilirubin levels and surveying their unwavering quality with the third day neonatal fringe venous specimen bilirubin levels.

Previous study in 2001, stated that to predict hyperbilirubinemia, by measuring End Tidal Carbon monoxide (ETCO), failed to improve the predictive ability of an hour-specific bilirubin normogram. But the combination of measuring serum total bilirubin with ETCO as early as around 30 hours of life, helps in identifying increase bilirubin production (eg: hemolysis) or decrease elimination of bilirubin (eg: conjugation defect) hence helps in determining early follow-up for problems like pathological jaundice or late anemia (David K Stevenson, et al, 2001).

OBJECTIVES:

The main objective of this study is to investigate the Effectiveness Cord blood albumin as a predictor of neonatal jaundice, based on a previous evidence studies, and highlight the most beneficial aspects of this method in saving the infant life, the other objective is to look whether cord blood albumin really has an effective in the diagnosis of hyperbilirubinemia or not.

2. METHODOLOGY

Life mortality is high Concern of pediatrician regarding the early discharge are reports of bilirubin induced brain damage occurred in healthy term infants even without hemolysis. Therefore, we conducted a systemic review and a literature review of studies reported in English with any of the following keywords: Cord Serum Albumin; Neonatal Hyperbilirubinemia; Prediction; Neonates, and infant. The literature review consisted of a search of MEDLINE up to 2015 December and a review of reference lists of literature identified by the search. This study will have the way of systemic review of previous studies, supported by literature review, to evaluate the Effectiveness Cord blood albumin as a predictor of neonatal jaundice.

3. RESULTS AND DISCUSSION

studies by, Narang An et al, 1997 and Singhal PK et al, 1992, demonstrates that gestational age has sway in creating hyperbilirubinemia, as 52.173% term neonates falls under situations where as in pre-tem 70% are under case bunch i.e who creates hyperbilirubinemia .Cord blood bilirubin level of ≥ 2 gm/dl has an affectability of 70% and specificity of 89% in anticipating the danger of neonatal hyperbilirubinemia.

Trivedi et al, 2013, found that the Cord blood albumin level of < 2.8 gm/dl has an affectability of 74% and specificity of 88% in foreseeing the danger of neonatal hyperbilirubinemia. Therefore by assessing the levels of cs albumin and bilirubin in infant helps in anticipating the danger of creating hyperbilirubinemia in neonates. Along these lines they prescribe including string blood albumin and bilirubin levels estimation as a standard examination in neonates to anticipate hyperbilirubinemia as ahead of schedule as would be prudent. So that Simple, sheltered and monetary phototherapy as a treatment choice is adequate to spare neonates life. Early recognition of high bilirubin levels additionally helps neonate from creating unsafe outcomes like kernicterus. This can be a decreasing measure of newborn child death rate, an all around acknowledged marker of wellbeing status.

Kramer LI et al, 1997, found in term babies physiological jaundice is seen to show up between 36 to 72 hours of age, greatest force of jaundice is seen on fourth day of life. Serum bilirubin doesn't surpass 15mg/dl and jaundice vanishes by tenth day of life. Also, physiological jaundice never seems 24hours of life.

Initially depicted by Kramer, dermal recoloring of bilirubin might be utilized as a clinical manual for the level of jaundice. Dermal recoloring in infant advances in a cephalo-caudal bearing, the infant ought to be analyzed in great sunshin. The skin should be blanched with digital pressure and the underlying color of skin and subcutaneous tissue should be noted. A rough guide for level of dermal staining with level of bilirubin is included in **table 1**.

Table 1

Area of body	Level of bilirubin
Face	4-6 mg/ dl
Chest, upper abdomen	8-10 mg/dl
Lower abdomen, thighs	12-14 mg/dl
Arms, lower legs	15-18 mg/dl
Palms, soles	15-20 mg/dl

The study population AlaaEldin A et al, 2013, consisted of 50 males and 44 females with the mean gestational age of 38.70 ± 1.38 weeks in FT compared to 35.62 ± 0.64 in late PT. It was shown that 40.4% of PT needed treatment in the form of phototherapy compared to 29.8% of FT, and no one of both groups needed exchange transfusion. The mean total cord bilirubin was higher among males, preterm, cesarean deliveries, and ABO and RH incompatibility positive newborns. It was found that when cord blood in late PT newborns was ≥ 1.75 mg/dl and ≥ 1.85 mg/dl in FT newborns, there was a probability that those newborns may need phototherapy and when the levels of total cord bilirubin were ≥ 2.05 mg/dl in PT newborns and ≥ 2.15 mg/dl in FT it means that those babies are in actual need of phototherapy. Thus the cut-off points for total cord bilirubin level in PT and FT groups were 2.05 and 2.15 mg/dl respectively.

Management of hyperbilirubinemia in the healthy term newborn (American Academy of Pediatrics)

Age (Hours)	Consider Phototherapy, if SB. mg/dl	Phototherapy, if SB.mg/dl	Exchange transfusion if intensive phototherapy Fails, if SB.mg/dl
25 – 48	≥ 12	≥ 15	≥ 20
49 – 72	≥ 15	≥ 18	≥ 25
>72	≥ 17	≥ 20	≥ 25

SB=Serum bilirubin.

4. CONCLUSION

Jaundice is a clinical condition that is often present and constitutes one of the major issues during the neonatal period. The problem is that the prediction of jaundice becomes more difficult. Severe jaundice can occur in some full-term healthy newborns with no apparent hemolytic. It is recommended to have cord blood bilirubin and cord blood albumin estimation of all healthy term babies delivered in an institution to prevent the dangerous consequences of neonatal hyperbilirubinemia like kernicterus. Cord serum bilirubin being more sensitive than cord serum albumin, is more effective to pick the babies who develop significant neonatal hyperbilirubinemia. Since all newborn are not delivered at hospitals, blood investigations on cord blood may not be possible when they reached to hospitals. In such cases first day bilirubin may help in prediction of significant hyperbilirubinemia.

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