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Accuracy of Transcutaneous Bilirubin Measurement in Term Newborns

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Abstract

Objective: 1) To evaluate the accuracy of transcutaneous bilirubin (TcB) compared with serum bilirubin (TsB) in full-term infants, 2) To compare the accuracy of TcB reading from two, three, and four measurements and, 3) To compare the accuracy of TcB measured at the forehead and sternum.

Material and Method: Full term infants who were diagnosed neonatal jaundice and underwent blood tests for TsB were eligible for enrollment. Infants who were born at gestational age less than 37 weeks, unstable, previously received phototherapy, or exchange transfusion were excluded. TcB was measured at forehead and sternum two, three, and four times at each site. TcB measurements were done within 30 minutes before or after blood sampling for TsB.

Results: The authors obtained 294 paired TcB-TsB from 257 full-term infants. TsB ranged from 1.60 to 21.18 mg/dL (mean 11.03, SD 2.73). The correlation coefficients between TcB at forehead and TsB were significant for two, three, and four measurements ($r = 0.812, 0.800, \text{ and } 0.800$ respectively). TcB measured at sternum also had significant correlation with TsB ($r = 0.829, 0.844, \text{ and } 0.823$ for two, three, and four measurements). TcB tended to underestimate TsB. Measurements at the sternum seemed to have better correlation with TsB than at the forehead.

Conclusion: TcB has good correlation coefficient to TsB. Two measurements have enough accuracy to estimate TsB level and measurement at the sternum gives better correlation with TsB than at forehead.

Keywords: Neonatal hyperbilirubinemia, Transcutaneous bilirubin, forehead, sternum

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