[8441.5] Transcutaneous Bilirubin (TcB) Levels in Outpatient Practice

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BACKGROUND: The utility of TcB measurements has been studied extensively in the newborn population but there have been few outpatient studies and none in the offices of practicing pediatricians.
OBJECTIVE: Define the utility of TcB measurements in an office-based setting.
DESIGN/METHODS: TcB measurements were obtained by office nurses in 4 private pediatric practices (n=73) and in the Pediatric Outpatient and After Hours Clinics of William Beaumont Hospital (n=43). Between November 2005 and August 2006, TcB and TSB were measured during office visits, on clinical indication, with the Draeger Air-Shields Transcutaneous Jaundice Meter, model JM-103. 86.5% of TSB measurements (diazo) were obtained within 1 hour and 13.5% within 2 hours of the TcB measurement.

RESULTS: The population was 79% white, 10% black, and 11% other. Mean TSB was 13.0 ± 3.4 (5.2-21.6) mg/dL and TcB 11.9 ± 3.1 (3.7-18.2) mg/dL. There was an excellent correlation between TcB and TSB ($r = .846$, $p = 0.0$) although TcB tended to underestimate TSB. 89/116 (77%) of TcB values were lower than TSB and the difference increased with increasing TSB levels ($r = .431$, $p = 0.0$). 34/116 (29%) TSB measurements were ≥ 15 mg/dL and for these infants the mean difference between TSB - TcB was 2.2 ± 1.8 vs. 0.7 ± 1.6 for TSB < 15 mg/dL ($p = .0001$). Age at the time of TcB measurements ranged from 1.8 to 12.6 days and had no effect on the difference between TSB and TcB ($r=0.070$, $p=0.45$). When plotted on the Beaumont TcB nomogram (Pediatrics 2006;117:1169) 38% of TcB measurements were above the 95% percentile and 46% between the 75th and 95th percentile. 14 infants were readmitted for phototherapy. Using the AAP Guidelines for phototherapy, in only 1 infant did the TcB (alone) fail to identify the need for phototherapy. However, because this TcB value was above our 95th percentile, (and within 0.2 mg/dL of the phototherapy level) a TSB was done. Our standard protocol requires a TSB for any TcB >95th percentile. Thus no case requiring phototherapy was missed.
CONCLUSIONS: TcB measurements with the JM-103 correlate well with TSB measurements in the outpatient setting. The almost systematic bias (underestimate) of the TcB measurements in this setting allows a standard correction to be made to derive an estimated TSB. TcB measurements can be used with confidence in pediatric offices to identify those infants who do or do not require a TSB measurement.

E-PAS2007:618441.5

Tuesday, May 8, 2007 10:00 AM

Poster Session: Neonatology (10:00 AM - 2:00 PM)
Board Number: 378
Course Number: 8441