

The Use of Transcutaneous Bilirubinometry in Newborns

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Introduction: Neonatal hyperbilirubinemia is one of the most common potentially pathological occurrences in newborns. The non-invasive method for measuring the concentration of bilirubin such as transcutaneous bilirubin measurement (TCB), has a great significance in reduction of the unnecessary traumatization of the newborns by repeated venipuncture in order to obtain blood for the analysis, medical expenses and hospitalization. Analyse diagnostic TCB values in healthy full term newborns based on the following parameters: the co-relation of the TCB coefficient and standard biochemical analysis (diazo method) (SBR); the level of sensitivity and the specificity of the appliance on the cut-off values; both positive and negative predictive values of the TCB; the level of TCB's efficiency; the high percentage of cutting down on the unnecessary venipunctures.

Methods: Sixty-six healthy, full term newborns were taken in for the prospective study. A yellowing of the skin was registered in all of these infants. By using both TCB SBR methods, the level of bilirubin on the second and on the third day was measured and compared. Transcutaneous bilirubinometer BILITEST M 2000, by Technomedica was used for measurement.

Results: Transcutaneous bilirubin measurement has higher coefficient of co-relation than SBR on the second and third day of life ($r= 0.758$, $p< 0.0001$). Based on our research, the highest efficient cut-off value of TCB is 215 mmol/L. At the values higher than 215 mmol/L, the sensitivity of the method is 0.92, while the specificity is 0.77. The positive predictive value is 0.49, as the negative predictive value is extremely high -0.98. Total diagnostic efficiency is 0.8. If the blood samples were taken only from the newborns with $TCB > 215$ mmol/L, the number of newborns whose blood is taken for the analyses would be reduced for 64.39%.

Conclusion: The transcutaneous bilirubin measurement is highly effective in healthy full term newborns. This method can be recommended as extremely useful for screening of the clinically significant jaundice in newborns.

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