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Correlation between levels of non-invasive measurement of carboxyhemoglobin and bilirubin in term and near term neonates as a predictor of neonatal hemolysis

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Background: Neonatal hyperbilirubinemia is common in the neonatal period. Yet, serious pathological hyperbilirubinemia may cause detrimental neurologic sequalae. Carbon monoxide is the byproduct of the breakdown of heme, it is transported as carboxyhemoglobin to the lungs to be exhaled. Thus, carboxyhemoglobin levels increase as a result of hemolysis, and is therefore considered a sensitive index for the degree and severity of the subsequent hyperbilirubinemia.

Objectives: To correlate between non-invasive measurements of carboxyhemoglobin levels and bilirubin levels in near-term and term neonates starting hour one of life.

Subjects and methods: A total of 100 near-term and term neonates were studied, by measuring carboxyhemoglobin by a Pulse Co-oximetry and serum bilirubin level (hour1) as well as transcutaneous bilirubin (TcB) hourly since birth for the 1st 6 hours then every 6 hours till the time of discharge in a cross sectional case-control study.

Results: A cut off value of 4 for non-invasive carboxyhemoglobin with sensitivity of 81.25%, specificity of 95.24% was found to the earliest noninvasive predictor for subsequent jaundice. In patients with proven hemolysis, carboxyhemoglobin when compared to TcB was found to increase significantly in the first 3 hours of life more than TcB. Starting hour 4 postnatally, it was increased yet statistically insignificant

Conclusion: We found that non-invasive measurement of carboxyhemoglobin is an effective early predictor for subsequent jaundice starting first hour of life. It can be used as a screening tool for hemolytic jaundice especially in hospitals with early discharge policy.

Key words: Neonatal jaundice, Carboxyhemoglobin, Hemolysis, Pulse co-oximetry.

Biography

Basma M. Shehata is a Lecturer of Pediatrics and Neonataology, Faculty of medicine, Ain Shams University since 2017 after completing the MD. She is a certified Neonatal Life Support instructor from the European Resuscitation Council