

Noninvasive Hemoglobin Measurement Reduce Invasive Procedures in Thalassemia Patients

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This study was conducted to investigate the agreement between laboratory hemoglobin (LabHb) measured in venous blood and noninvasive, spectrophotometric hemoglobin (SpHb) measurement and the usability of SpHb measurement in the transfusion decision-making in patients with thalassemia whose hemoglobin (Hb) was monitored by taking blood samples at frequent intervals and who were transfused. Cardiac pulse, oxygen saturation, Pleth variability index (PVI), and SpHb values were measured in patients who came to the hematology outpatient clinic for a control visit and whose Hb levels were planned to be measured. Venous blood samples were taken for LabHb measurement, which we accept as the gold standard. Cohen's kappa value was calculated for the agreement between SpHb measurements and LabHb values. The relationship and predictability between both measurement methods were evaluated by Pearson correlation analysis, a modified Bland-Altman plot and the linear regression model. In the study conducted with a total of 110 children with thalassemia, a moderate level of agreement between the two measurement methods (kappa = 0.370, $p < 0.0001$) and a significantly high correlation between the two tests ($r = 0.675$) were found. The mean bias between the differences was found to be 0.3 g/dL (-1.27 to 1.86 g/dL). The sensitivity and the specificity of SpHb in identifying patients who needed transfusions (Hb <10.0 g/dL) were calculated as 92.2 and 57.1%, respectively. Our results suggest SpHb measurement may be used to screen anemia in hemodynamically stable hemoglobinopathy patients and even for transfusion decision-making with combination clinical findings.