



Reticulocyte hemoglobin equivalent (Ret He) and assessment of iron-deficient states

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Direct measurement of the reticulocyte hemoglobin content provides useful information for the diagnosis and treatment of iron-deficient states. We have examined direct measurements of reticulocyte and red cell hemoglobin content on the Sysmex XE 2100 (Ret He and RBC He respectively) and the Bayer ADVIA 2120 (CHr and CH respectively) analyzers. Good agreement was found between Ret He and CHr ($Y = 1.04X - 1.06$; $r^2 = 0.88$) and between the RBC He and CH parameters ($Y = 0.93X + 1$; $r^2 = 0.84$; $n = 200$) in pediatric patients and in normal adults (Ret He and CHr; $Y = 1.06X - 0.43$; $r^2 = 0.83$; $n = 126$; RBC He and CH; $Y = 0.94X + 1$; $r^2 = 0.87$; $n = 126$). In 1500 blood samples from patients on chronic dialysis, Ret He was compared with traditional parameters for iron deficiency (serum iron <40 microg/dl, Tsat $<20\%$, ferritin <100 ng/ml, hemoglobin <11 g/dl) for identifying iron-deficient states. Receiver operator characteristic (ROC) curve analysis revealed values of the area under the curve for Ret He of 0.913 ($P < 0.0001$). With a Ret He cutoff level of 27.2 pg, iron deficiency could be diagnosed with a sensitivity of 93.3%, and a specificity of 83.2%. Ret He is a reliable marker of cellular hemoglobin content and can be used to identify the presence of iron-deficient states.

PMID: 16999719 [PubMed - indexed for MEDLINE]