

ABSOLUTE ERYTHROCYTOSIS?

Todorović-Tirnanić M, Pavlović S, Obradović V, Bošnjaković V

Nuclear Medicine Institute, Clinical Center of Serbia, Belgrade, Serbia & Montenegro

THE AIM was to estimate the impact of the method for optimal red cell mass (RCM) and plasma volume (PV) calculation on the interpretation of measured values.

MATERIAL AND METHODS: Autologous red blood cell labeling with $\text{Na}_2^{51}\text{CrO}_4$ was performed in 186 patients with absolute erythrocytosis (84 females and 102 males). After i.v. injection of labeled cells, RCM, PV and blood volume (BV) were measured. Obtained values were compared to optimal values, calculated using four different methods: 1. Method recommended by the International Council for Standardization in Haematology (ICSH), 2. Retzlaff's tables, 3. Ml/kg real body mass (RBM), 4. Ml/kg optimal body mass (OBM).

RESULTS: In RCM interpretation, methods 1 and 2 disagreed in 11.3% of patients, 1 and 3 in 21%, 1 and 4 in 12.9%, 2 and 3 in 12.9%, 2 and 4 in 12.4%, 3 and 4 in 19.9%. PV interpretation disagreements were: 5.4%, 15.6%, 15.1%, 13.4%, 15.6%, 21.5%, and for BV: 5.9%, 22.6%, 15.6%, 16.7%, 21.5%, 33.9%, respectively. Patients were divided into three groups, according to the deviation (D) of their real from optimal body mass: A) $D < 10\%$, B) $10\% \leq D < 20\%$, C) $D \geq 20\%$. Disagreements in RCM interpretation in A ranged from 8.1%-14.9%, in B from 6.7%-23.3%, in C from 12.8%-43.6%. BV interpretation disagreements in A ranged from 1.1%-16.1%, in B from 6.7%-40%, in C from 15.4%-66.7%. The greatest disagreement was registered between methods 3 and 4 (up to 66.7%, for group C) and 1 and 3 (up to 41%). The disagreements were more frequent in patients with greatest D. Best agreement (in 83.3%-98.9% of patients) was registered between ICSH and Retzlaff method.

CONCLUSION: Methods 1 and 2 agreed the best (they led to different conclusions in 1.1-16.7% of patients). Greatest disagreements were between methods 3 and 4, and 1 and 3 (especially in patients with high D value).