

# Role of Absolute Reticulocyte Count in the Assessment of Renal Function and Erythropoietin Response in Adults with Sick Cell Anemia Seen at the Lagos University Teaching Hospital

*American Journal of Clinical Pathology*, Volume 150, Issue suppl\_1, October 2018, Pages S114–S115,

<https://doi.org/10.1093/ajcp/aqy097.277>

Published:

21 September 2018

•



## Abstract

### Objectives

To compare absolute reticulocyte count (ARC) and serum erythropoietin (EPO) to established markers of renal impairment (eGFR-creatinine and cystatin C) in steady-state adult SCA patients and HbAA control.

### Methods

This was a cross-sectional study conducted in LUTH. Eighty participants comprising 40 SCA patients and 40 HbAA who met the inclusion criteria were recruited. Reticulocyte counts and automated FBC were done and ARC was calculated. Serum creatinine was done by Jaffe's method while EPO and cystatin C assays were done using ELISA techniques. Creatinine- and cystatin C-based eGFR was estimated using the CKD-EPI formula. Participants with ARC  $<250 \times 10^9/L$  with concomitant Hb  $<9 \text{ g/dL}$  were reinvited after 4 weeks, and those who had chronic relative reticulocytopenia (ChRR) were noted. Data were analyzed with IBM SPSS version 21. *P* value was set at .05.

### Results

There was no difference between the study ( $n = 40$ ) and the control ( $n = 40$ ) groups in median ARC ( $P = .260$ ) or mean eGFR-creatinine ( $P = .054$ ). There was a difference between study and control groups in median EPO levels (98.45 vs 16.43 U/L;  $P < .001$ ) and mean eGFR-cystatin C ( $99.0 \pm 35.12$  vs  $120.78 \pm 21.38 \text{ mL/min/1.73 m}^2$ ,  $P = .001$ ). ARC correlated with EPO ( $r = 0.716$ ,  $P = .009$ ) in SCA patients with impaired eGFR-cystatin C. There was no correlation between ARC and EPO in SCA patients with normal renal status ( $r = 0.327$ ,  $P = .09$ ). There was a difference between the SCA group with ChRR ( $n = 8$ ) and those without ChRR ( $n = 32$ ) in median ARC (54.30 [34.75–62.75] vs 103.0 [62.75–182.25]  $\times 10^9/L$ ,  $P = .002$ ), median EPO (29.30 [17.68–35.65] vs 103.45 [89.99–116.18] U/L,  $P < .001$ ), and mean eGFR-cystatin C ( $51.75 \pm 23.11$  vs  $112.22 \pm 24.27 \text{ mL/min/1.73 m}^2$ ,  $P < .001$ ). ChRR was more sensitive (63.6%) than eGFR-creatinine (18.2%) with similar specificity (96.6%) in detecting renal impairment in SCA patients.

### Conclusion

Our study identified ARC and ChRR as potential routine biomarkers for renal damage and suggests longitudinal validation of these