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### Evaluation of some trace elements and hematological parameters in adult sickle cell anemia subjects in Zaria, north western Nigeria

Garba N<sup>1</sup>, Ifeanyichukwu O M<sup>2</sup>, Amilo G I<sup>3</sup>, Ibeh N C<sup>2</sup>, Chukwuma G O<sup>2</sup>, Chukwuanukwu R C<sup>2</sup> and Audu I<sup>3</sup>

<sup>1</sup>ABU Teaching Hospital, Nigeria

<sup>2</sup>Nnamdi Azikiwe University, Nigeria

<sup>3</sup>Federal Medical Centre Gusau, Nigeria

Sickle cell anemia is a condition resulting from mutant autosomal gene responsible for the synthesis of hemoglobin S (HbS). The amino acid valine replaces glutamic acid in the sixth position of the  $\beta$ -globin chain. This is a case-control study designed to evaluate some trace elements and hematological parameters in adult sickle cell anemia patients attending sickle cell clinic Ahmadu Bello University Teaching Hospital (ABUTH), Zaria. Ethical clearance was obtained from ethics committee of ABUTH, Zaria. A total of 101 subjects aged 18 to 46 years participated in this study and these subjects were divided into 35 confirmed sickle cell anemia subjects in stable state (SS), 35 confirmed sickle cell anemia subjects with history of vaso-occlusive crises in the last three months and 31 apparently healthy subjects (Hb AA) as control subjects (C) were recruited into the study using simple random sampling technique. Under aseptic condition 6 ml of venous blood samples was collected from each subject. Approximately 4 ml of venous blood samples was collected into a plain tube, allowed to clot and serum sample separated from it was analyzed for copper, zinc and magnesium using Atomic Absorption Spectrophotometer (AAS) method. About 2 ml of blood was collected in EDTA tubes containing 2 drops of 10% EDTA for hematological analysis using Bio Max 2 Hematology analyzer. This study showed that serum copper, zinc and magnesium levels were significantly lower ( $P=0.00$ ) in SCA subjects compared with control. No significance difference was observed in the mean levels of copper, zinc and magnesium between SS and VOC subjects ( $P=0.36$ ,  $P=0.89$  and  $P=0.85$ ) respectively. SCA groups showed lower levels of (Hb), (Hct) and (RBC) ( $P=0.00$ ) but significantly higher levels of WBC, Platelets, Reticulocytes, MCV, MCH and MCHC ( $P=0.00$ ) when compared with control. However, no significance difference was observed in the mean levels of Hb, Hct, RBC, WBC, Platelets, Reticulocytes, MCV, MCH and MCHC between SS and VOC ( $P=0.93$ ,  $P=0.74$ ,  $P=0.94$ ,  $P=0.08$ ,  $P=0.81$ ,  $P=0.51$ ,  $P=0.97$ ,  $P=0.82$  and  $P=0.71$ ) respectively. Significant positive correlation was observed between copper and hemoglobin concentration ( $r=0.20$  and  $p=0.04$ ). Also, significant positive correlation was observed between zinc and hemoglobin concentration ( $r=0.40$  and  $p=0.00$ ). Equally, significant positive correlation was observed between magnesium and hemoglobin concentration ( $r=0.30$  and  $p=0.00$ ). The mean levels of trace elements were significantly lower in SCA subjects compared with control. The hematological parameters showed lower level of RBC, PCV and HCT and elevated WBC, platelets and reticulocytes, MCV, MCH and MCHC among SCA subjects in this study. Evaluation of trace elements and comprehensive hematological analysis will help in the monitoring and management of sickle cell anemia.

#### Biography

Garba N is from ABU Teaching Hospital, Nigeria, His research interests reflect in his wide range of publications in various national and international journals.

garbanani@gmail.com

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