

VOLUME 39, NUMBER 8

August 2022

ISSN 0189 - 160X

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# WAJMJ

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**WEST AFRICAN JOURNAL OF MEDICINE**

ORIGINALITY AND EXCELLENCE IN MEDICINE AND SURGERY



**OFFICIAL PUBLICATION OF**  
THE WEST AFRICAN COLLEGE OF PHYSICIANS *AND*  
WEST AFRICAN COLLEGE OF SURGEONS



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### Cardiovascular Findings in Adult Patients with Sickle Cell Anaemia in Steady State seen in Calabar, Nigeria

*Résultats cardiovasculaires chez les patients adultes atteints d'anémie drépanocytaire à l'état stable vus à Calabar, au Nigeria*

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#### ABSTRACT

**BACKGROUND:** Sickle cell anaemia (SCA) is associated with significant morbidity and mortality linked to multi-systemic complications. With recent improvements in healthcare globally, it is expected that SCA patients in Nigeria will live longer. The cardiovascular complications may thus become prevalent.

**SUBJECTS AND METHODS:** Fifty-two patients with sickle cell anemia in steady state and 52 controls were recruited. The assessment included history, physical examination, 12-lead resting electrocardiography, 2D, M-Mode and Doppler echocardiography, six-minute walk test and NTerminal pro Brain Natriuretic Peptide (NT-pro BNP) assay.

**RESULTS:** The mean age of the sickle cell patients was 28.87±7.89 years and most were post-secondary or tertiary institutions. They had faster pulse rates (84.69±9.48 vs 75.48±10.35 beats/minute, p=0.000), lower blood pressure (Systolic 112.56 ±10.87 mmHg vs 115.42 ± 14.75mmHg; Diastolic 70.79±9.03mmHg vs 71.27±9.23 mmHg) and lower Body Mass Index (21.55±3.51 vs 24.94±4.56kg/m<sup>2</sup>; p=0.000). Mean left ventricular (LV) internal diameters in systole and diastole were (3.19 ±0.57cm vs 2.81±0.45 cm; p=0.000) and (4.99±0.69cm vs 4.29±0.56 cm; p=0.00) respectively. Left and right ventricular systolic functions were normal. None of the patients with SCA met the criteria for pulmonary hypertension while 88.89% of those screened using Natriuretic peptide were at risk of developing pulmonary hypertension (NT-proBNP levels ≥ 160pg/ml). Functional status assessed by six-minute walk test was normal (373.00 ±60.40m vs 403.83±72.87 m; but significantly lower than in controls (p= 0.021)

**CONCLUSION:** The cardiovascular system is adversely affected in persons with sickle cell anaemia especially as they grow older. Despite the presence of left ventricular remodeling, the patients with SCA in this study maintained good functional status. Regular cardiovascular assessment is advised. **WJMJ 2022; 39(8): 844-851.**

**KEYWORDS:** Ventricular function, Adult sickle cell patients, Steady state, Pulmonary hypertension.

#### RÉSUMÉ

**CONTEXTE:** La drépanocytose (SCA) est associée à une morbidité et une mortalité importantes liées à des complications multisystémiques. Avec les récentes améliorations des soins de santé dans le monde, on s'attend à ce que les patients atteints d'ACS au Nigeria vivent plus longtemps. Les complications cardiovasculaires pourraient donc devenir prévalentes.

**SUJETS ET MÉTHODES:** Cinquante-deux patients atteints de drépanocytose à l'état d'équilibre et 52 témoins ont été recrutés. L'évaluation comprenait l'histoire, l'examen physique, l'électrocardiographie de repos à 12 dérivations, l'échocardiographie 2D, M-Mode et Doppler, un test de marche de six minutes et un test d'apnée du sommeil. Le dosage du NTerminal pro Brain Natriuretic Peptide (NT-pro BNP).

**RÉSULTATS:** L'âge moyen des patients drépanocytaires était de 28,87±7,89 ans et la plupart étaient issus d'établissements post-secondaires ou tertiaires. Ils avaient un pouls plus rapides (84,69±9,48 vs 75,48±10,35 battements/minute, p=0,000), une pression artérielle plus basse (Systolique 112,56 ±10,87 mmHg vs 115,42 ± 14,75 mmHg ; diastolique 70,79±9,03 mmHg vs 71,27±9,23 mmHg) et un indice de masse corporelle plus faible (21,55±3,51 vs 24,94±4,56kg/m<sup>2</sup> ; p=0,000). Les diamètres internes moyens du ventricule gauche (VG) en systole et en diastole étaient de (3,19 ±0,57 cm vs 2,81±0,45 cm ; p=0,000) et (4,99±0,69 cm vs 4,29±0,56 cm ; p=0,00) respectivement. Les fonctions systoliques des ventricules gauche et droit étaient normales. Aucun des patients atteints d'ACS ne répondait aux critères d'hypertension pulmonaire, tandis que 88,89 % des patients dépistés à l'aide du peptide natriurétique étaient à risque de développer une hypertension pulmonaire (taux de NT-proBNP ≥ 160pg/ml). L'état fonctionnel évalué par le test de marche de six minutes était normal (373,00 ±60,40 m vs 403,83±72,87 m ; mais significativement plus faible que chez les témoins (p= 0,021).

**CONCLUSION:** Le système cardiovasculaire est affecté de manière négative chez personnes atteintes de drépanocytose, en particulier lorsqu'elles vieillissent. Malgré la présence d'un remodelage ventriculaire gauche, les patients atteints d'ACS dans cette étude ont conservé un bon état fonctionnel. Une évaluation cardiovasculaire régulière est conseillée.

**WJMJ 2022; 39(8): 844-851.**

**MOTS CLÉS:** Fonction ventriculaire, Drépanocytaires adultes, État d'équilibre, Hypertension pulmonaire.

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