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Neutrophil-Lymphocyte Ratio and High Sensitivity C-Reactive Protein as Markers of Heart Failure Severity: A Study at the University of Port-Harcourt Teaching Hospital Heart Failure Clinic

Ratio Neutrophiles-Lymphocytes et Protéine C-Réactive Ultrasensible comme Marqueurs de la Gravité de l'Insuffisance Cardiaque : Une Étude à la Clinique de l'Insuffisance Cardiaque de l'Hôpital Universitaire de Port-Harcourt

¹*A. O. Ajala, ¹Sotonye Dodiya-Manuel, ²Boma Oyan, ¹Jacquelin Ejituwu, ¹Macleon Akpa

ABSTRACT

BACKGROUND: Systemic inflammatory markers, such as the Neutrophil-Lymphocyte Ratio (NLR) and high-sensitivity C-reactive protein (hs-CRP), have been linked to cardiovascular diseases, including heart failure (HF), and increased mortality rates. This study aimed to assess NLR and hs-CRP levels in chronic HF patients and determine the relationship between these markers with HF severity.

METHODS: A descriptive cross-sectional study was conducted on 136 chronic HF patients at the University of Port-Harcourt Teaching Hospital. Informed consent was obtained, and participants completed a questionnaire. Blood samples were collected for a complete blood count, hs-CRP, and N-Terminal-pro-Brain Natriuretic Peptide measurements. Echocardiography was performed for all study participants.

RESULTS: The mean age was 59 years and 51.5% were males. Among the participants, 27 (19.9%) had an NLR >2, while 91 (66.9%) had elevated hs-CRP levels. There was a non-significant positive correlation between NLR and CRP values ($r=0.131$, $p=0.128$). Elevated hs-CRP levels were found in 67.1% and 66.7% of patients with left ventricular systolic and diastolic dysfunction, respectively. However, elevated NLR >2 was found in only 21.5% and 17.6% of these patients respectively. Highly sensitive-CRP significantly correlated with NT-Pro-BNP ($0.410 < 0.0001$) but not with NYHA classification, Ejection Fraction, and Anemia.

CONCLUSION: Highly sensitive CRP was a more reliable inflammation marker in HF patients than NLR. High hs-CRP levels could predict rising NT-Pro-BNP and were associated with left ventricular systolic dysfunction than NLR. The Neutrophil-Lymphocyte ratio, while cheap and accessible in the study environment, was unable to predict worsening HF possibly due to typically lower NLR values in blacks.

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KEYWORDS: Heart failure, Inflammatory markers, Neutrophil-lymphocyte ratio, hs-CRP, chronic

RÉSUMÉ

CONTEXTE: Les marqueurs inflammatoires systémiques, tels que le ratio neutrophiles-lymphocytes (NLR) et la protéine C-réactive ultrasensible (hs-CRP), ont été liés aux maladies cardiovasculaires, y compris l'insuffisance cardiaque (IC), et à des taux de mortalité accrus. Cette étude visait à évaluer les niveaux de NLR et de hs-CRP chez les patients atteints d'IC chronique et à déterminer la relation entre ces marqueurs et la gravité de l'IC.

MÉTHODES: Une étude descriptive transversale a été menée sur 136 patients atteints d'IC chronique à l'Hôpital Universitaire de Port-Harcourt. Le consentement éclairé a été obtenu et les participants ont rempli un questionnaire. Des échantillons de sang ont été prélevés pour une numération formule sanguine complète, hs-CRP, et des mesures de peptide natriurétique de type B terminal (NT-pro-BNP). Une échocardiographie a été réalisée pour tous les participants à l'étude.

RÉSULTATS: L'âge moyen était de 59 ans et 51,5% étaient des hommes. Parmi les participants, 27 (19,9%) avaient un NLR >2, tandis que 91 (66,9%) avaient des niveaux élevés de hs-CRP. Il y avait une corrélation positive non significative entre les valeurs de NLR et de CRP ($r=0,131$, $p=0,128$). Des niveaux élevés de hs-CRP ont été trouvés chez 67,1% et 66,7% des patients atteints de dysfonction systolique et diastolique du ventricule gauche, respectivement. Cependant, un NLR élevé >2 n'a été trouvé que chez 21,5% et 17,6% de ces patients respectivement. La hs-CRP a significativement corrélé avec le NT-pro-BNP ($0,410 < 0,0001$) mais pas avec la classification NYHA, la fraction d'éjection et l'anémie.

CONCLUSION: La hs-CRP était un marqueur inflammatoire plus fiable chez les patients atteints d'IC que le NLR. Des niveaux élevés de hs-CRP pouvaient prédire une augmentation du NT-pro-BNP et étaient associés à une dysfonction systolique du ventricule gauche plutôt que le NLR. Le ratio neutrophiles-lymphocytes, bien que bon marché et accessible dans l'environnement de l'étude, n'a pas pu prédire l'aggravation de l'IC, probablement en raison de valeurs de NLR typiquement plus basses chez les noirs.

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MOTS-CLÉS: Insuffisance cardiaque, Marqueurs inflammatoires, Ratio neutrophiles-lymphocytes, hs-CRP, chronique

¹Department of Internal Medicine, University of Port Harcourt Teaching Hospital, Rivers State, Nigeria.

²Department of Internal Medicine, Rivers State University Teaching Hospital, Port Harcourt, Nigeria

*Corresponding author. Dr. Aisha. O. Ajala. Department of Internal Medicine, University of Port Harcourt Teaching Hospital, Rivers State, Nigeria.

Email: ajalabunmi@gmail.com