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Correlation between Red Cell Distribution Width and Glycaemic Control among Adults with Type II Diabetes Mellitus at Aminu Kano Teaching Hospital, North-Western Nigeria

Corrélation entre la Largeur de Distribution des Globules Rouges et le Contrôle Glycémique chez les Adultes Atteints de Diabète de Type II à l'Hôpital Universitaire Aminu Kano, au Nord-Ouest du Nigeria

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ABSTRACT

BACKGROUND: Red Blood Cell Distribution Width (RDW) measures the degree of variation in red blood cell size and it is a good predictor of complications in many conditions such as diabetes mellitus (DM). This study aimed to determine the relationship between RDW and glycaemic control in patients with type II DM.

MATERIALS AND METHODS: It was a cross-sectional comparative study where patients with type II DM and apparently healthy non-DM volunteers were recruited. Blood samples were collected and analysed for RDW, Fasting Plasma Glucose (FPG) level and Glycated Haemoglobin (HbA1c). Data were analyzed using Statacorp version 13.

RESULTS: A total of 180 participants were enrolled (90 cases, 90 controls). The mean (\pm SD) ages of cases and controls were 42 (\pm 11.94) and 34 (\pm 9.5) years, respectively. Females constituted the majority (49/90; 54.4%) in both groups. The cases had higher RDW than the controls ($15.5 \pm 1.0\%$ versus $14.3 \pm 1.7\%$, $p = 0.630$). The correlation between RDW and HbA1c revealed a weak statistically significant relationship ($r = 0.096$, $p = 0.03$) while a weak negative relationship was observed between the RDW and FPG ($r = -0.006$, $p = 0.956$) which was not statistically significant. However, a negative finding showed a positive correlation between RDW and MCH (p -value = 0.003) and MCHC (p -value = 0.0002).

CONCLUSION: Red cell distribution width has a direct relationship with HbA1c in patients with DM. Therefore, we recommend that clinicians pay attention to this detail while evaluating patients with DM. **WAJM 2023; 40(7): 720–723.**

Keywords: Red Cell Distribution Width (RDW), Glycated haemoglobin (HbA1c), Diabetes mellitus (DM).

RÉSUMÉ

CONTEXTE: La largeur de distribution des globules rouges (LDG) mesure le degré de variation de la taille des globules rouges et constitue un bon prédicteur des complications dans de nombreuses affections telles que le diabète sucré (DS). Cette étude visait à déterminer la relation entre la largeur de distribution des globules rouges et le contrôle de la glycémie chez les patients atteints de diabète de type II.

MATÉRIELS ET MÉTHODES: Il s'agit d'une étude comparative transversale dans laquelle ont été recrutés des patients atteints de diabète de type II et des volontaires non diabétiques apparemment en bonne santé. Des échantillons de sang ont été prélevés et analysés pour déterminer le temps de travail quotidien, le taux de glucose plasmatique à jeun et l'hémoglobine glyquée (HbA1c). Les données ont été analysées à l'aide de la version 13 de Statacorp.

RÉSULTATS: Au total, 180 participants ont été recrutés (90 cas, 90 témoins). Les âges moyens (\pm SD) des cas et des témoins étaient respectivement de 42 (\pm 11,94) et 34 (\pm 9,5) ans. Les femmes constituaient la majorité (49/90; 54,4%) dans les deux groupes. Les cas avaient un TDR plus élevé que les témoins ($15,5 \pm 1,0\%$ contre $14,3 \pm 1,7\%$, $p = 0,630$). La corrélation entre le TDR et l'HbA1c a révélé une faible relation statistiquement significative ($r = 0,096$, $p = 0,03$), tandis qu'une faible relation négative a été observée entre le TDR et la glycémie ($r = -0,006$, $p = 0,956$), qui n'était pas statistiquement significative. Cependant, une corrélation positive a été observée entre le RDW et la MCH (valeur $p = 0,003$) et la MCHC (valeur $p = 0,0002$).

CONCLUSION: La largeur de distribution des globules rouges a une relation directe avec l'HbA1c chez les patients atteints de diabète. Par conséquent, nous recommandons aux cliniciens de prêter attention à ce détail lors de l'évaluation des patients atteints de diabète. **WAJM 2023; 40(7): 720–723.**

Mots clés: Largeur de distribution des globules rouges (RDW), Hémoglobine glyquée (HbA1c), Diabète sucré (DM)

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