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Association between Alanine Aminotransferase, Hypertension and Obesity in Nigerians

Association entre l'Alanine Amino-Transférase, l'Hypertension et l'Obésité chez les Nigériens

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ABSTRACT

BACKGROUND: Cardiovascular diseases (CVDs) are the leading causes of morbidity and mortality worldwide. Alanine aminotransferase (ALT) is associated with hypertension and obesity.

OBJECTIVES: To determine the association between ALT within the reference range with hypertension and obesity.

METHODS: This study utilized the data of a cross-sectional health survey involving 558 adult participants. Anthropometry, blood pressure, and plasma glucose were determined with standard protocols. Quartiles of log-transformed ALT were generated and the association with obesity/hypertension was determined with ANOVA and regression analysis.

RESULTS: There were 205 (36.7%) men. The mean fasting plasma glucose (FPG) of all participants was 4.7 (1.6) mmol/L. In men, there was a positive correlation between ALT and body mass index (BMI) ($r=0.148$; $p=0.038$), waist circumference (WC) ($r=0.166$; $p=0.020$), and waist-to-height-ratio (WHtR) ($r=0.163$; $p=0.021$). No correlation was observed between ALT and anthropometric indices in women, or with blood pressure indices in both genders. In men, only WHtR (p for trend, 0.045) was significantly associated with ALT quartiles, whereas in women, only WC (p for trend, 0.028) was significantly associated with ALT quartiles. In men, compared to 1st quartile, the OR for general obesity of the 4th quartile of Log ALT was 2.662 (95% CI 1.219 - 5.816; $p=0.014$). In women, the OR for hypertension of the 3rd quartile of Log ALT versus the 1st quartile was 1.955 (95% CI 0.694 - 2.416; $p=0.041$). Log ALT did not predict hypertension and obesity in men and women, respectively.

CONCLUSIONS: The risks of obesity and hypertension increase as the ALT level increases within the normal ALT range. People with normal levels of ALT in the upper limits need to be evaluated for metabolic disorders. **WAJM 2023; 40 (12): 1291 - 1297**

KEYWORDS: Cardiovascular diseases, Obesity, Hypertension, Alanine aminotransferase

RÉSUMÉ

CONTEXTE: Les maladies cardiovasculaires (MCV) sont des causes principales de morbidité et de mortalité dans le monde. L'alanine aminotransférase (ALT) est associée à l'hypertension et à l'obésité.

OBJECTIFS: Déterminer l'association entre l'ALT dans la plage de référence avec l'hypertension et l'obésité.

MÉTHODES: Cette étude utilise les données d'une enquête transversale sur la santé impliquant 558 participants adultes. L'anthropométrie, la pression artérielle et la glycémie plasmatique ont été déterminées selon des protocoles standard. Les quartiles de l'ALT transformée en logarithme ont été générés et son association avec l'obésité/l'hypertension a été déterminée avec une analyse de variance (ANOVA) et une analyse de régression.

RÉSULTATS: Il y avait 205 hommes (36,7%). La glycémie plasmatique à jeun moyenne (FPG) de tous les participants était de 4,7 (1,6) mmol/L. Chez les hommes, il y avait une corrélation positive entre l'ALT et l'indice de masse corporelle (IMC) ($r=0,148$, $p<0,038$), la circonférence de taille (CT) ($r=0,166$, $p<0,020$) et le rapport tour de taille/taille (WHtR) ($r=0,163$, $p<0,021$). Aucune corrélation n'a été observée entre l'ALT et les indices anthropométriques chez les femmes, ni entre les indices de pression artérielle dans les deux sexes. Chez les hommes, seul le WHtR (p pour la tendance, 0,045) était significativement associé aux quartiles de l'ALT, tandis que chez les femmes, seule la CT (p pour la tendance, 0,028) était significativement associée aux quartiles de l'ALT. Chez les hommes, par rapport au 1er quartile, le rapport de cotes (RC) pour l'obésité générale du 4ème quartile de Log ALT était (2,662, IC à 95%, 1,219-5,816 ; $p=0,014$). Chez les femmes, le RC pour l'hypertension du 3ème quartile de Log ALT versus le 1er quartile était (1,955, IC à 95%, 0,694-2,416 ; $p=0,041$). Le Log ALT n'a pas prédit l'hypertension et l'obésité chez les hommes et les femmes respectivement.

CONCLUSIONS: Le risque d'obésité et d'hypertension augmente à mesure que le niveau d'ALT augmente dans la plage normale d'ALT. Les personnes présentant un niveau normal d'ALT aux limites supérieures doivent être évaluées pour des troubles métaboliques. **WAJM 2023; 40 (12): 1291 - 1297**

MOTS-CLÉS: Maladies cardiovasculaires, Obésité, Hypertension, Alanine aminotransferase

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