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Exposure to Agrochemicals and Markers of Kidney Damage among Farmers in Rural Communities in Southwestern Nigeria

Exposition aux Produits Agrochimiques et Marqueurs de Dommages Rénaux Chez les Agriculteurs des Communautés Rurales du Sud-Ouest du Nigeria

S. O. Ajayi*[†], Y. R. Raji[†], O. S. Michael[‡], D. Adewole[§], T. Akande[†], B. Abiola[¶], S. Aminu[¶], A. Olugbenga-Bello^{††}, A. Arije[†]

ABSTRACT

BACKGROUND: Chronic kidney disease of unknown origin (CKDu) is assuming an epidemic proportion, especially in farming communities worldwide. We explored the relationship between CKD markers and agrochemical exposure among rural farmers in South Western Nigeria.

METHODS: We studied selected farming communities in Southwestern Nigeria where the use of agrochemicals was widespread. A pre-tested questionnaire was administered to participants. Anthropometric data, information on use of agrochemicals; urine and blood samples were obtained. Informed consent was obtained from participants. The study was approved by the Institutional Ethics committee and complied with 1975 Helsinki declaration, as revised in 2000.

RESULTS: A total of 438 farmers made up of 202 males (46.1%) and 236 females (53.9%) were studied. The mean microalbuminuria was 30.2 ±11.7 mg/dl. Majority of the farmers had CKD stage 2(42.0%) and CKD stage 3 (37.7%). The type of farming engaged in had a positive, but not significant, correlation with eGFR (r=0.012, p=0.832). There was positive correlation between type of farming and GFR category (r=0.24, p=0.000). Frequency of use of hexachlorocyclohexane had a positive and significant correlation with eGFR (r=0.111, p=0.045). Annual crop farming had a correlation with UACR (r=0.149, p=0.024).

CONCLUSION: Annual crop farming had a positive correlation with UACR, eGFR and GFR category. The prolonged use of agrochemicals on an annual basis can cause kidney damage. *WAJM 2021; 38(1): 48–53.*

Keywords: Agrochemicals, Farming, Kidney damage, Nigeria.

RÉSUMÉ

CONTEXTE: La maladie rénale chronique d'origine inconnue (MRCI) prend des proportions épidémiques, en particulier dans les communautés agricoles du monde entier. Nous avons étudié la relation entre les marqueurs de la MRC et l'exposition aux produits agrochimiques chez les agriculteurs du sud-ouest du Nigeria

MÉTHODES: Nous avons étudié des communautés agricoles sélectionnées dans le sud-ouest du Nigeria où l'utilisation de produits agrochimiques est très répandue. Un questionnaire pré-testé a été administré aux participants. Des données anthropométriques, des informations sur l'utilisation de produits agrochimiques, des échantillons d'urine et de sang ont été obtenus. Le consentement éclairé des participants a été obtenu. L'étude a été approuvée par le comité d'éthique institutionnel et était conforme à la déclaration d'Helsinki de 1975, telle que révisée en 2000.

RÉSULTATS: Au total, 438 agriculteurs, dont 202 hommes (46,1 %) et 236 femmes (53,9 %), ont été étudiés. La microalbuminurie moyenne était de 30,2 ±11,7 mg/dl. La majorité des agriculteurs présentaient un stade 2 (42,0 %) et un stade 3 (37,7 %). Le type d'élevage pratiqué présentait une corrélation positive, mais non significative, avec le DFGe (r=0,012, p=0,832). Il y avait une corrélation positive entre le type d'agriculture et la catégorie de DFG (r=0,24, p=0,000). La fréquence d'utilisation de l'hexachlorocyclohexane présentait une corrélation positive et significative avec le DFGe (r=0,111, p=0,045). La culture de plantes annuelles avait une corrélation avec l'UACR (r=0,149, p=0,024).

CONCLUSION: Les cultures annuelles présentent une corrélation positive avec l'UACR, le DFGe et la catégorie de DFG. L'utilisation prolongée de produits agrochimiques sur une base annuelle peut provoquer des lésions rénales. *WAJM 2021; 38(1): 48–53.*

Mots-clés: Agrochimie, Agriculture, Lésions rénales, Nigeria.

Departments of [†]Medicine, College of Medicine, University of Ibadan, Ibadan, Oyo State, Nigeria; [‡]Pharmacology and Therapeutics, College of Medicine, University of Ibadan, Ibadan, Oyo State, Nigeria; [§]Health Policy and Management, College of Medicine, University of Ibadan, Ibadan, Oyo State, Nigeria; [¶]Medicine, University College Hospital, Ibadan; ^{††}Community Medicine, Ladoko Akintola University of Technology, Ogbomoso, Oyo State, Nigeria.

*Correspondence: Dr Samuel Ajayi, Department of Medicine, College of Medicine/University College Hospital, University of Ibadan, Ibadan. Email: soajayi@hotmail.com Telephone: +2348034713299

Abbreviations: CKDu, Chronic Kidney Disease of unknown origin.