EVALUATION OF NEPHROTOXICITY IN OCCUPATIONALLY AND ENVIRONMENTALLY EXPOSED INDIVIDUALS TO DIFFERENT CHEMICAL SUBSTANCES

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INTRODUCTION: Chronic exposure to environmental and occupational contaminants represents a significant public health concern. Farmers exposed to pesticides and riverside dwellers exposed to mercury are considered vulnerable groups with distinct risk profiles, especially concerning kidney damage. Pesticides and mercury may induce renal injury through different mechanisms, affecting specific nephron segments and often resulting in silent alterations. Therefore, early biomarkers of both tubular and glomerular kidney injury deserve attention in studies involving populations exposed to chemical substances. **OBJECTIVE:** To investigate the concentration of promising urinary biomarkers of renal injury in individuals exposed to different xenobiotics through environmental and occupational routes, and their potential contribution to nephrotoxicity risk. **MATERIALS AND METHODS:** This study included two exposed groups: farmers (n=16) (Ethics approval: UFRGS CEP 5.752.224; CAAE 69865417.1.0000.5347) and riverside dwellers from Rondônia (n=9), chronically exposed to environmental mercury (CAAE 67704023.9.3006.5347). Urinary microalbumin, urinary and serum creatinine were quantified using commercial kits in the semi-automated analyzer BS-120 (Mindray®). NAG was quantified according to Maruhn (1976) and expressed as U/g creatinine. The biomarkers KIM-1 and NGAL were analyzed by ELISA. All concentrations were normalized by urinary creatinine. Statistical analysis used non-parametric tests ($p < 0.05$). **RESULTS:** Urinary microalbumin levels were above reference values in both exposed groups, while serum creatinine remained within normal limits. NGAL levels were significantly higher in farmers compared to riverside dwellers (4.33 [1.97–8.98] vs. 2.36 [1.10–8.00], respectively; $p < 0.05$). For NAG, values were 0.058 (0.006–8.83) and 0.033 (0.013–5.55), respectively; and for KIM-1, 0.72 (0.27–4.85) and 0.87 (0.23–3.19), respectively ($p > 0.05$). **CONCLUSION:** Although preliminary, the results suggest that both occupational exposure to pesticides and environmental exposure to mercury may contribute to glomerular injury. Additionally, only farmers showed evidence of tubular damage. Among the biomarkers evaluated (NGAL, KIM-1, and NAG), NGAL appeared to be the most sensitive indicator of tubular injury in individuals exposed to xenobiotics.