EVALUATION OF IMMUNOTOXICOLOGICAL BIOMARKERS FROM VECTOR CONTROL WORKERS (VCW) EXPOSED TO PESTICIDES (AGROTOXICS) IN THE STATE OF RIO DE JANEIRO

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INTRODUCTION: Vector Control Workers (VCW) play a vital role in public health in Brazil, mainly in controlling vectors responsible for endemic diseases. However, their work involves intense exposure to pesticides, combined with insufficient training and insufficient provision of personal protective equipment (PPE). These factors contribute to poor working conditions, health deterioration, and premature mortality, with an average age of death around 55 years. Chronic exposure to pesticides has been associated with changes in the immune system, including inflammatory imbalance, cellular alterations, and oxidative stress, which may contribute to the development of diseases such as cancer, respiratory and endocrine disorders. **OBJECTIVE:** Evaluate the immunotoxicological effects of occupational pesticide exposure on the immune system of VCW. **METHODS**: The study included 127 VCW and 42 non-occupationally exposed individuals. Peripheral blood mononuclear cells (PBMCs) were isolated and cultured to assess cell count. Supernatants were analyzed for nitric oxide production using the Griess method. Additionally, plasma samples were used to quantify cytokines (Th1, Th2, Th17, Treg) and to evaluate agrotoxics residues using high-performance liquid chromatography (HPLC). The study is part of a Multicenter Project and was approved by the Ethics Committee CAAE: 03323018.4.0000.5240. **RESULTS:** The average age of the exposed group was 57.49 years (range 22–73 years), and 42.19 years (range 21–75 years) for the unexposed group. The average work duration among VCW was 20.5 years (range 1–35 years) and 52% of workers had detectable DDT residues in their plasma. VCW showed a lower percentage of PBMCs and reduced nitrite concentrations compared to the unexposed group. Despite this lower cell count, VCW exhibited higher plasma levels of inflammatory cytokines IL-17A and TNF-α, as well as increased IL-10 levels, indicating both an inflammatory and regulatory immune response. **CONCLUSION:** The findings reveal significant alterations in the immune biomarkers of VCW compared to unexposed individuals. These differences suggest that pesticides used in their occupational routine may cause harmful effects through immune modulation, as described in the literature. The data highlight the urgent need for changes in the work process, improved protective measures, and implementation of health monitoring for these workers.

Keywords: pesticide exposure - immune system - Vector Control Workers