Abstract

Introduction. Due to the importance of acetylcholinesterase inhibiting chemicals as pesticides in developing countries, the Instituto Nacional de Salud in Colombia designed the organophosphate and carbamate epidemiological surveillance program for the period 2002-2005. Objective. The acetylcholinesterase activity was determined in study participants with a history of organophosphate and carbamate exposure and the most commonly used pesticides were identified in each study area. Materials and methods. The information was compiled from reports sent to the Instituto Nacional de Salud organophosphate and carbamate epidemiological surveillance program from each of 11 provinces in Colombia. The analytical determination of the biomarker was performed by acetylcholinesterase activity determined with the Lovibond field equipment. Results. A total of 28,303 people were designated as having risk of exposure to pesticides. Most were men (81.4%). Abnormal determinations averaged 9.3% (9.9% in men and 7.0% in women). The 18-25 year old age group showed the highest prevalence of abnormal results (12.3%), followed by the group of 0-5 year olds (10.7%). The highest prevalence of abnormal acetylcholinesterase activity was in farm workers (27.0%), followed by general outdoor activities (26.1%). In the province of Meta, 80% of participants showed abnormal values of enzyme activity. The most commonly used pesticides were organophosphates (39.7%) and carbamates (16.6%). Conclusion. The increase in the prevalence of abnormal values of acetylcholinesterase activity and the risk of exposure to pesticides in children necessitates a lowering of use and commercialization of high risk pesticides, and a need for developing safer methods for pest management.

Keywords

Acetylcholinesterase, pesticides, cholinesterase inhibitors, organophosphates, insecticides, carbamates, occupational exposure.