RISK OF PARKINSON'S DISEASE AND AGRICULTURAL PESTICIDE EXPOSURE.

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Background and Aims: Several studies have found an association between agricultural pesticide exposure and Parkinson's disease (PD), but uncertainties remain about the characteristics of exposure that are involved. Our objective was to determine agricultural pesticide exposures associated with PD in a French case-control study.
Methods: The study was conducted in 2007 in five French districts in an agricultural population (≤ 80 years). Cases were identified through antiparkinsonian drug claims; PD diagnosis was verified by clinical examination. Two controls per case were matched for age, sex, and district. A comprehensive questionnaire described tasks associated with pesticide use. The cumulative number of pesticide applications and years of exposure, and the average number of applications per year were computed overall, by type of products (herbicides, fungicides, insecticides), and by target (crops, livestock). The Mini Mental State Examination (MMSE) assessed cognitive performances. Analyses were performed using conditional logistic regression and restricted to men whose main occupation was farming.
Results: The study included 192 cases (72% farmers) and 382 controls (72% farmers). After adjustment for confounders (smoking, coffee, MMSE, pesticide use for gardening), PD was not associated with the cumulative number of applications (p-trend=0.070) or years of exposure (p-trend=0.566), but an association was observed with the average number of applications per year (p-trend=0.011). PD was associated with the average number of applications of fungicides per year (p-trend=0.037) but not with insecticides or herbicides. An association was observed with the number of pesticide applications for crops (p-trend=0.046) but not for livestock.
Conclusions: A detailed description of agricultural pesticide exposure is important in order to better understand the association between PD and pesticides. We found a stronger association with the intensity of applications than with the cumulative number of applications or duration of exposure. In addition, fungicides and applications for crops were more particularly associated with PD.