Cancer in Banana Plantation Workers in Costa Rica

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BACKGROUND: Costa Rica has population and disease registries with potential value for epidemiological research. Pesticides have been intensively used on banana plantations, for example dibromochloropropane (DBCP). This study was planned to examine the quality of the cancer and civil registries and the feasibility of record linkages, and to explore cancer patterns among a highly exposed group.

METHODS: A retrospective cohort study was carried out. Workers on the payrolls of banana companies, as reported to the Social Security System at any time between 1972 and 1979, were followed up in the cancer registry between 1981 and 1992: 29 565 men and 4892 women for 407 468 person-years. The observed cases of cancer were compared to the expected values, derived from the national incidence rates.

RESULTS: We identified 368 cancer cases, 292 among men (standardized incidence ratio [SIR] = 76, 95% confidence interval [CI] 67–84) and 76 among women (SIR = 116, 95% CI: 90–142). Among men increased SIR were observed for melanoma (SIR = 197, 95% CI: 94–362) and penile cancer (SIR = 149, 95% CI: 55–324); among women for cervix cancer (SIR = 182, 95% CI: 122–241) and leukaemia (SIR = 274, 95% CI: 86–639). Risk estimates for lung cancer were elevated among male workers with the longest time of employment.

CONCLUSIONS: Follow-up was difficult due to deficient identification variables in the cancer registry and to easier identification of the living compared to the deceased in the civil registry at the end of the observation period. The various systematic errors in this study are likely to produce an underestimation of the relative risk estimates. This study contributes to improvements of the registries and increases the potential for cancer epidemiology in Costa Rica and other developing countries.

Keywords cohort study, registries, cancer, pesticides, DBCP, developing country, banana workers, agriculture

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