EXHIBIT 63

CARWH 2016: Advancing Research to Improve Work and Health
October 16-18, 2016
Toronto

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Abstract Details

Title: A detailed assessment of glyphosate use and the risks of non-Hodgkin lymphoma overall and for major histological sub-types: findings from the North American Pooled Project (NAPP)

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Session: Cancer at work: exposure, risk, and beyond - Armoury, 17 Oct 2016, 10:15 AM - 11:45 AM

Background & Objectives

Glyphosate is one of the most frequently used herbicides in Canada and worldwide. In 2015 the International Agency for Research on Cancer classified glyphosate as a probable (Group 2A) carcinogen for non-Hodgkin lymphoma (NHL), but the epidemiological studies considered were limited by small sample sizes and a lack of exposure-response data for NHL sub-types. We evaluated potential associations between different exposure metrics of glyphosate use and NHL risk using data from the North American Pooled Project (NAPP).

Methods

Data from NHL cases (N=1690) and population-based controls (N=5131), recruited during the 1980s and 1990s for four different studies in Canada and the Midwest U.S., were pooled for the NAPP. Self-reported information on ever/never, duration, frequency, and lifetime-days of glyphosate use was applied in evaluations of possible associations with NHL overall and by major histological sub-types (follicular lymphoma [FL], diffuse large B-cell lymphoma [DLBCL], small lymphocytic lymphoma [SLL], and other). Odds ratios (OR) and 95% confidence intervals (CI) were estimated using multiple logistic regression models adjusted for demographic and NHL risk factors.

Results

Unadjusted for other pesticides, subjects who ever used glyphosate (N=133) had a significantly elevated NHL risk (OR=1.43, 95% CI: 1.11, 1.83). Risks were elevated for most NHL sub-types, except FL (OR=1.00, 95% CI: 0.65, 1.54). When glyphosate use was examined by duration, there was a general inverse trend in risks except for SLL, where glyphosate use for >3.5 years increased SLL risk (OR=1.98, 95% CI: 0.89, 4.39). ORs from categorical analyses of frequency and lifetime-days metrics showed mostly positive exposure-response gradients. Handling glyphosate for >2 days/year was associated with significantly higher odds of NHL (OR=2.42, 95% CI: 1.48, 3.96) and DLBCL (OR=2.83, 95% CI: 1.48, 5.41). There were suggestive risk increases (p-value ≤0.02) for NHL, FL, and SLL with greater lifetime-days of glyphosate use. Except for SLL, risks attenuated when adjusted for the pesticides 2,4-D, dicamba, and malathion.

Conclusions

This analysis suggested that glyphosate use was associated with increased NHL risk. Risk differences by histological sub-type were not consistent across glyphosate use metrics and may have been chance findings. Nevertheless, the NAPP's large sample size yielded more precise results than previously possible.