

PubMed

U.S. National Library of Medicine
National Institutes of Health

Display Settings: Abstract

[Occup Environ Med.](#) 2010 Aug 25. [Epub ahead of print]

Comparison of occupational exposure assessment methods in a case-control study of lead, genetic susceptibility and risk of adult brain tumours.

Bhatti P, Stewart PA, Linet MS, Blair A, Inskip PD, Rajaraman P.

Program in Epidemiology, Division of Public Health Sciences, Fred Hutchinson Cancer Research Center, Seattle, Washington, USA.

Abstract

Objectives There is great interest in evaluating gene-environment interactions with chemical exposures, but exposure assessment poses a unique challenge in case-control studies. Expert assessment of detailed work history data is usually considered the best approach, but it is a laborious and time-consuming process. We set out to determine if a less intensive method of exposure assessment (a job exposure matrix (JEM)) would produce similar results to a previous analysis that found evidence of effect modification of the association between expert-assessed lead exposure and risk of brain tumours by a single nucleotide polymorphism in the ALAD gene (rs1800435). **Methods** We used data from a study of 355 patients with glioma, 151 patients with meningioma and 505 controls. Logistic regression models were used to examine associations between brain tumour risk and lead exposure and effect modification by genotype. We evaluated Cohen's kappa, sensitivity and specificity for the JEM compared to the expert-assessed exposure metrics. **Results** Although effect estimates were imprecise and driven by a small number of cases, we found evidence of effect modification between lead exposure and ALAD genotype when using expert- but not JEM-derived lead exposure estimates. kappa Values indicated only modest agreement (<0.5) for the exposure metrics, with the JEM indicating high specificity (approximately 0.9) but poor sensitivity (approximately 0.5). Disagreement between the two methods was generally due to having additional information in the detailed work history. **Conclusion** These results provide preliminary evidence suggesting that high quality exposure data are likely to improve the ability to detect genetic effect modification.

PMID: 20798009 [PubMed - as supplied by publisher]

[LinkOut](#) - more resources