Household exposure to pesticides and risk of childhood hematopoietic malignancies: The ESACLE study (SFCE).

Jérémie Rudant, Florence Menegaux, Guy Leverger, André Baruchel, Brigitte Nelken, Yves Bertrand, Catherine Patte, Hélène Pacquement, Cécile Vérité, Alain Robert, et al.

To cite this version:
Jérémie Rudant, Florence Menegaux, Guy Leverger, André Baruchel, Brigitte Nelken, et al.. Household exposure to pesticides and risk of childhood hematopoietic malignancies: The ESCALE study (SFCE). Environmental Health Perspectives, National Institute of Environmental Health Sciences, 2007, 115 (12), pp.1787-93. 10.1289/ehp.10596. inserm-00250367

HAL Id: inserm-00250367
https://www.hal.inserm.fr/inserm-00250367
Submitted on 11 Feb 2008

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L’archive ouverte pluridisciplinaire HAL, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d’enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.
Household Exposure to Pesticides and Risk of Childhood Haematopoietic Malignancies: the ESACLE Study (SFCE)

Jérémie Rudant, Florence Menegaux, Guy Leverger, André Baruchel, Brigitte Nelken, Yves Bertrand, Catherine Patte, Hélène Pacquement, Cécile Vérité, Alain Robert, Gérard Michel, Geneviève Margueritte, Virginie Gandemer, Denis Hémon, Jacqueline Clavel

doi:10.1289/ehp.10596 (available at http://dx.doi.org/)
Online 25 September 2007
Household Exposure to Pesticides and Risk of Childhood Haematopoietic Malignancies: the ESCALE Study (SFCE)

Jérémie Rudant1,2, Florence Menegaux1,2, Guy Leverger3, André Baruchel4, Brigitte Nelken5, Yves Bertrand6, Catherine Patte7, Hélène Pacquement8, Cécile Vérité9, Alain Robert10, Gérard Michel11, Geneviève Margueritte12, Virginie Gandemer13, Denis Hémon1,2, Jacqueline Clavel1,2,14

1INSERM, U754, IFR69, Villejuif, France.
2Univ Paris-Sud, UMR-S754, IFR69, Villejuif, France.
3AP HP, Hôpital Armand Trousseau, Paris, France.
4AP HP, Hôpital Saint-Louis and Hôpital Robert-Debré, Paris, France.
5Hôpital Jeanne de Flandre, Lille, France.
6Hôpital Debrousse, Lyon, France.
7Institut Gustave Roussy, Villejuif, France.
8Institut Curie, Paris, France.
9Hôpital Pellegrin Tripode, Bordeaux, France.
10Hôpital des Enfants, Toulouse, France.
11Hôpital La Timone, Marseille, France.
12Hôpital Arnaud de Villeneuve, Montpellier, France.
13CHU-hôpital Sud, Rennes, France.
14French National Registry of Childhood Blood malignancies (RNHE), Villejuif, France

SFCE : Société Française de lutte contre les Cancers de l'Enfant et de l'Adolescent

Correspondence to Jérémie Rudant, INSERM U754, 16, AV. Paul Vaillant Couturier, F-94807 Villejuif Cedex, France
Tel: +33 1 45 59 50 37 ; fax : +33 1 45 59 51 51 ;
e-mail: rudant@vjf.inserm.fr
Acknowledgements and Grants

We are grateful to Marie-Hélène Da Silva, Christophe Steffen, Aurélie Goubin and the staff of the French National Registry of Childhood Blood Malignancies, Catherine Tricoche and the team of interviewers (Callson), Sabine Mélèze and Marie-Anne Noel (Institut CSA).

Grant sponsors: INSERM, Fondation de France, ARC, AFSSAPS, AFSSET and Cent pour sang la vie.

This work, presented at the Grell Meeting 2007 in Montreal, was awarded the "Enrico Anglesio" Prize, offered by the "Anglesio Moroni Foundation", Turin, Italy.

The authors declare they have no competing financial interests.

Running title: Pesticides and Childhood leukaemia and lymphoma

Type of article: Research article in epidemiology

Key words: acute leukaemia, children, Hodgkin’s lymphoma, non-Hodgkin’s lymphoma, pesticide, pregnancy

Abbreviations used:

| Abbreviation | Description                          |
|--------------|--------------------------------------|
| AL           | Acute leukaemia                      |
| ALL          | Acute lymphoblastic leukaemia        |
| AML          | Acute myeloblastic leukaemia         |
| HL           | Hodgkin’s lymphoma                   |
| NHL          | Non-Hodgkin’s lymphoma               |
| CI           | Confidence interval                  |
| OR           | Odds ratio                           |
Outline of section headers

Abstract

Introduction

Patients and methods
  Cases and controls ascertainment
    Cases
    Controls
  Data collection
  Statistical analysis

Results
  Cases and controls comparability
  Exposure to pesticides

Discussion

Conclusion

References

Appendix

Tables
Abstract

Objectives
Investigating the role of household exposure to pesticides in the aetiology of childhood haematopoietic malignancies.

Methods
The national registry-based case-control study ESCALE was carried out in France over the period 2003-2004. Population controls were frequency matched with the cases on age and gender. Maternal household use of pesticides during pregnancy and paternal use during pregnancy or childhood were reported by the mothers in a structured telephone questionnaire. Insecticides, used at home, on pets, or for garden crops, herbicides and fungicides were distinguished. We estimated odds ratios (OR) using unconditional regression models closely adjusting for age, gender, degree of urbanization and type of housing (flat or house).

Results
We included a total of 764 cases of acute leukaemia (AL), 130 of Hodgkin’s lymphoma (HL), 166 of non-Hodgkin’s lymphoma (NHL) and 1681 controls. Insecticide use during pregnancy was significantly associated with childhood AL (OR=2.1 [1.7-2.5]), both lymphoblastic and myeloblastic, NHL (OR=1.8 [1.3-2.6]), mainly for Burkitt’s lymphoma (OR=2.7 [1.6-4.5]), and mixed-cell HL (OR=4.1 [1.4-11.8]), but not nodular sclerosis HL (OR=1.1 [0.6-1.9]). Paternal household use of pesticides was also related to AL (OR=1.5 [1.2-1.8]) and NHL (OR=1.7 [1.2-2.6]), but, for AL, the relationships did not remain after adjustment for maternal pesticide use during pregnancy.

Conclusion
The study findings strengthen the hypothesis that domestic use of pesticides may play a role in the aetiology of childhood haematopoietic malignancies. The consistency of the findings with those of previous studies on AL raises the question of the advisability of preventing pesticide use by pregnant women.