



ORIGINAL ARTICLE

Mother and child characteristics at birth and early age leukemia: a case-cohort population-based study in Brazil^{☆,☆☆}

Q1 Rejane de Souza Reis^a, Neimar de Paula Silva^b, Marceli de Oliveira Santos^a,
Julio Fernando Pinto Oliveira^a, Luiz Claudio Santos Thuler^c, Beatriz de Camargo^b,
Maria S. Pombo-de-Oliveira^{b,*}

^a Instituto Nacional do Câncer (INCA), Coordenação de Prevenção e Vigilância, Divisão de Vigilância e Análise de Situação, Rio de Janeiro, RJ, Brazil

^b Instituto Nacional do Câncer (INCA), Centro de Pesquisa, Programa de Pesquisa Pediátrica em Hematologia e Oncologia, Rio de Janeiro, RJ, Brazil

^c Instituto Nacional do Câncer (INCA), Centro de Pesquisa, Rio de Janeiro, RJ, Brazil

Received 13 September 2016; accepted 22 December 2016

KEYWORDS

Brazil;
Q2 Early age leukemia;
Birth characteristics;
Maternal characteristics;
Maternal occupation;
Birth weight

Abstract

Objective: The population-based cancer registries (PBCR) and the Information System on Live Births in Brazil (Sistema de Informações sobre Nascidos Vivos [SINASC]) have information that enables the test for risk factors associated with leukemia at an early age. The aim of this study was to identify maternal and birth characteristics associated with early-age acute leukemia (EAL) in Brazil.

Methods: A case-cohort study was performed using secondary dataset information of PBCR and SINASC. The risk association variables were grouped into (i) characteristics of the child at birth and (ii) characteristics of maternal exposure during pregnancy. The case-control ratio was 1:4. Linkage was performed using R software; odds ratio (OR) and 95% confidence interval (CI) were calculated by logistic regression models.

Results: EAL was associated with maternal occupational exposure to chemicals (agricultural, chemical, and petrochemical industry; adjOR: 2.18, 95% CI: 1.16–4.10) and with birth defects (adjOR: 3.62, 95% CI: 1.19–11.00).

[☆] Please cite this article as: Reis RS, Silva NP, Santos MO, Oliveira JF, Thuler LC, de Camargo B, et al. Mother and child characteristics at birth and early age leukemia: a case-cohort population-based study in Brazil. J Pediatr (Rio J). 2017. <http://dx.doi.org/10.1016/j.jpmed.2016.12.009>

^{☆☆} Study conducted at Instituto Nacional do Câncer (INCA), Centro de Pesquisa, Rio de Janeiro, RJ, Brazil.

* Corresponding author.

E-mail: mpombo@inca.gov.br (M.S. Pombo-de-Oliveira).

<http://dx.doi.org/10.1016/j.jpmed.2016.12.009>

0021-7557/© 2017 Sociedade Brasileira de Pediatria. Published by Elsevier Editora Ltda. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

28
29
30
31
32
3334
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57**PALAVRAS-CHAVE**

Brasil;
Leucemias na
Infância;
Características ao
nascimento;
Exposições maternas;
Fatores de risco;
Registros de câncer

Conclusions: The results of this study, with the identification of EAL risk factors in population-based case-cohort study, strengthen the knowledge and improve databases, contributing to investigations on risk factors associated with childhood leukemia worldwide.

© 2017 Sociedade Brasileira de Pediatria. Published by Elsevier Editora Ltda. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Características mãe-filho ao nascer e leucemias na primeira infância: um estudo de caso-coorte de base populacional no Brasil

Resumo

Objetivos: Os registros de câncer de base populacional (RCBP) e o Sistema Nacional de Nascidos Vivos (SINASC) possuem informações que possibilitam testar hipóteses sobre fatores de riscos associados às leucemias. O objetivo principal deste projeto é identificar quais as características ao nascimento das crianças que estariam associadas ao risco de desenvolver Leucemia Aguda (LA) na primeira infância.

Métodos: Foram utilizadas informações de 12 RCBP e do Sistema de Informação de Nascidos Vivos das mesmas localidades. Foram elegíveis 272 casos e 1.088 controles no período de 1996 a 2010. As associações de riscos de LA foram agrupadas em, (i) características da criança ao nascer, e (ii) características de exposição materna durante a gestação da criança. A relação de casos e controles foi de 1:4. As análises para padronização, estruturação do banco de dados e análises estatísticas foram realizadas através dos aplicativos Excel, R-Studio e SPSS 21.

Resultados: Houve associação entre anomalias congênicas (RC 3,62, IC95% 1,19-11,00) e exposição ocupacional materna a produtos químicos (OR 2,18, p 0,002) com o risco do desenvolvimento de LA.

Conclusão: A utilização de banco de dados secundários populacionais para a identificação de fatores de risco para LA fortaleceu o intercâmbio de conhecimentos e melhoria das bases de dados, e contribuiu para investigações sobre as associações de riscos nas leucemias agudas em contexto mundial.

© 2017 Sociedade Brasileira de Pediatria. Publicado por Elsevier Editora Ltda. Este é um artigo Open Access sob uma licença CC BY-NC-ND (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

Worldwide, leukemia is the most common malignancy diagnosed in children under the age of 5 years. The incidence rate of acute lymphoblastic leukemia (ALL) has a sharp peak between 2 and 4 years of age at diagnosis, and tends to affect more boys than girls.¹ The etiology of childhood leukemia remains a challenge, although the premise that early-age leukemia (EAL) arises from somatic clonal cells originating during fetal life encourages the research toward factors associated with environmental exposures.¹

The concept of causality has been established based on evidences that need further testing. This is particularly true in public health and social sciences. For childhood leukemia, a causal study-model should take into consideration that leukemias have diverse, age-dependent, biological subtypes, and above all a multistep pathogenesis. Some perinatal characteristics, such as birth weight, birth order, mode of delivery, maternal age, and maternal occupational exposure, have been associated with childhood leukemia in case-control studies.²⁻⁶ Since classic case-control studies can be inefficient in the case of rare diseases such as EAL, a methodological alternative is to combine a case-control study into a cohort. This study aimed to investigate maternal and birth characteristics associated

with EAL risk factors using a case-cohort model. The variables were assessed through information gathered from secondary population-based registries.

Materials and methods

Study design

A population-based case-cohort study was performed. Cases and controls were obtained from 12 population-based cancer registries (PBCR) and from the Information System on Live Births in Brazil (Sistema de Informações sobre Nascidos Vivos [SINASC]) from the same cities as the PBCR. This strategy allowed all individuals of the population base to have the same probability of being selected to form the control group, regardless of when the data was collected.

Data

Initially, 372 total cases of leukemia were identified from 12 PBCR cities: Aracaju, Belém, Belo Horizonte, Cuiabá, Curitiba, Fortaleza, João Pessoa, Manaus, Natal, Porto Alegre, Recife, and Vitória, with information available overtime (2000–2009). The inclusion criteria were: children born after

58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
8182
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

Download English Version:

<https://daneshyari.com/en/article/8809755>

Download Persian Version:

<https://daneshyari.com/article/8809755>

[Daneshyari.com](https://daneshyari.com)