

EPIDEMIOLOGY

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Epidemiology. 18(1):158-161, January 2007.

*Mejia-Arangure, Juan Manuel **; *Fajardo-Gutierrez, Arturo **; *Perez-Saldivar, Maria Luisa **; *Gorodezky, Clara +*; *Martinez-Avalos, Armando ++*; *Romero-Guzman, Lina [S]*; *Campo-Martinez, Maria Angeles [P]*; *Flores-Lujano, Janet **; *Salamanca-Gomez, Fabio [//]*; *Velasquez-Perez, Leora ***

Abstract:

Background: We analyzed effects of exposure to magnetic fields on the expression of acute leukemia in children with Down syndrome (who have a 20-fold higher risk of leukemia).

Methods: We performed a case-control study that included 42 children with both acute leukemia and Down syndrome as cases and 124 healthy children with Down syndrome as controls. We obtained demographic information concerning the children and took spot measurements of magnetic fields at each residence.

Results: The odds ratio for direct measurements of magnetic fields ≥ 6.00 mG was 3.7 (95% confidence interval = 1.05-13.1).

Conclusion: The association between magnetic fields and leukemia in children with Down syndrome suggests the possibility of a causal role for magnetic fields in the etiology of leukemia among a genetically susceptible subgroup of children.

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Hypothesis: the risk of childhood leukemia is related to combinations of power-frequency and static magnetic fields. Bioelectromagnetics. 1995;16(1):48-59.
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PMID: 2687132 [PubMed - indexed for MEDLINE]

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Exposure to power-frequency magnetic fields and the risk of childhood cancer. UK Childhood Cancer Study Investigators.

Lancet. 1999 Dec 4;354(9194):1925-31.

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Maternal Occupational Exposure to Extremely Low Frequency Magnetic Fields During Pregnancy and Childhood Leukemia.

ORIGINAL ARTICLES

Epidemiology. 14(4):437-441, July 2003.

*Infante-Rivard, Claire *+; Deadman, Jan Erik **

Abstract:

Background: Pregnancy is a target period for events that could induce childhood leukemia. There has been little attention to possible effects of maternal occupational exposure to extremely low frequency magnetic fields (ELF-MF) during pregnancy.

Methods: We conducted a population-based, case-control study of 491 incident cases of acute lymphoblastic leukemia in children 0-9 years of age, matched on age and sex to 491 healthy controls. Cases were diagnosed in the Province of Quebec between 1980 and 1993. Mothers were interviewed to obtain detailed prenatal occupational history; individual exposure to ELF-MF was estimated based on a method we recently developed. We used 3 metrics for analyzing exposure: cumulative, average and maximum levels. Analyses were carried out among all study women and among working women only.

Results: Comparing the highest 10% of exposed mothers to the others, the risk of leukemia among offspring was moderately increased by using any metric, in

all women and among working women only. The highest odds ratio of 2.5 (95% confidence interval = 1.2-5.0) was found for maximum exposure attained in an occupation (≥ 0.4 microtesla).

Conclusions: Our results are compatible with an increased risk of childhood leukemia among children whose mothers were exposed to the highest occupational levels of ELF-MF during pregnancy.

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