Int J Cancer. 2006 Aug 1;119(3):643-50.

Childhood leukemia and magnetic fields in Japan: a case-control study of childhood leukemia and residential power-frequency magnetic fields in Japan.

Kabuto M, Nitta H, Yamamoto S, Yamaguchi N, Akiba S, Honda Y, Hagihara J, Isaka K, Saito T, Ojima T, Nakamura Y, Mizoue T, Ito S, Eboshida A, Yamazaki S, Sokejima S, Kurokawa Y, Kubo O.

Source

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Abstract

Residential power-frequency magnetic fields (MFs) were labeled as a possible human carcinogen by the International Agency for Research on Cancer panel. In response to great public concern, the World Health Organization urged that further epidemiologic studies be conducted in high-exposure areas such as Japan. We conducted a population-based case-control study, which covered areas inhabited by 54% of Japanese children. We analyzed 312 case children (0-15 years old) newly diagnosed with acute lymphoblastic leukemia (ALL) or acute myelocytic leukemia (AML) in 1999-2001 (2.3 years) and 603 controls matched for gender, age and residential area. Weekly mean MF level was determined for the child's bedroom. MF measurements in each set of a case and controls were carried out as closely in time as possible to control for seasonal variation. We evaluated the association using conditional logistic regression models. The odds ratios for children whose bedrooms had MF levels of 0.4 microT or higher compared with the reference category (MF levels below 0.1 microT) was 2.6 (95% CI=0.76-8.6) for AML+ALL and 4.7 (1.15-19.0) for ALL only. Controlling for some possible confounding factors did not alter the results appreciably. Even an analysis in which selection bias was maximized did not fully explain the association. Most of the leukemia cases in the highest exposure category had MF levels far above 0.4 microT. Our results provided additional evidence that high MF exposure was associated with a higher risk of childhood leukemia, particularly of ALL.

PMID: 16496405 [PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms

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