



THE SELECTED ABSTRACTS

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401 Occupational Extremely Low Frequency magnetic field exposure and cancer incidence in a large prospective cohort study

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Abstract

Objectives: This study investigated the association between exposure to occupational extremely low frequency magnetic fields (ELF-MF) and various types of cancer within the prospective Netherlands Cohort Study (NLCS).

Methods: For this case-cohort analysis, 120,852 men and women aged 55 to 69 years at time of enrollment in 1986 were followed up (17.3 years) for incident cases of lung, breast, brain and hematopoietic cancers and their subtypes. Information on occupational history and potential confounders such as sex, age, smoking, alcohol use and attained educational level were collected at baseline through a self-administered questionnaire.

Occupations were coded using the International Standard Classification of Occupations (ISCO-88).

Occupational ELF-MF exposure was assigned by using a semi-quantitative ELF job-exposure matrix which assigns ordinal exposure levels (background, low and high exposure) based on intensity and probability of exposure. Metrics of ELF-MF exposure were ever low and ever high exposure versus background exposure, duration of exposure, and cumulative exposure to ELF-MF up to baseline. Associations with cancer incidence were analyzed with Cox-regression using attained age as underlying time scale.

Results: Ever low or ever high exposure to ELF-MF showed no effect on cancer incidence of lung, breast, brain cancer, nor any of the assessed subtypes. Duration and cumulative exposure also showed no effect of ELF-MF exposure on these cancer sites. Ever high exposed to ELF-MF showed a significant association with acute myeloid leukemia (AML) (hazard ratio [HR] 2.09; 95% confidence interval [CI] 1.05 - 4.15) and follicular lymphoma (HR 2.40; 95%CI 1.00 - 5.77). In addition, cumulative exposure to ELF-MF showed a positive association with follicular lymphoma.

Conclusions: In this large prospective cohort study, we found indications of an association of ELF-MF exposure with AML and follicular lymphoma, but not with other types of cancer. These results warrant further research in the possible association of ELF-MF and hematopoietic cancers.