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Int J Cancer. 2011 Sep 15;129(6):1477-84. doi: 10.1002/ijc.25765. Epub 2011 Jan 12.

Occupational and residential exposure to electromagnetic fields and risk of brain tumors in adults: A case-control study in Gironde, France.

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Abstract

The etiology of brain tumors remains largely unknown. Among potential risk factors, exposure to electromagnetic fields is suspected. We analyzed the relationship between residential and occupational exposure to electromagnetic field and brain tumors in adults. A case-control study was carried out in southwestern France between May 1999 and April 2001. A total of 221 central nervous system tumors (105 gliomas, 67 meningiomas, 33 neurinomas and 16 others) and 442 individually age- and sex-matched controls selected from general population were included. Electromagnetic field exposure [extremely low frequency (ELF) and radiofrequency separately was assessed in occupational settings through expert judgement based on complete job calendar, and at home by assessing the distance to power lines with the help of a geographical information system. Confounders such as education, use of home pesticide, residency in a rural area and occupational exposure to chemicals were taken into account. Separate analyses were performed for gliomas, meningiomas and acoustic neurinomas. A nonsignificant increase in risk was found for occupational exposure to electromagnetic fields [odds ratio (OR = 1.52, 0.92-2.51)]. This increase became significant for meningiomas, especially when considering ELF separately [OR = 3.02; 95 percent confidence interval (95% CI) = 1.10-8.25]. The risk of meningioma was also higher in subjects living in the vicinity of power lines (<100 m), even if not significant (OR = 2.99, 95% CI 0.86-10.40). These data suggest that occupational or residential exposure to ELF may play a role in the occurrence of meningioma.

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PMID: 21792884 [PubMed - in process]

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